

Taxonomy

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Teacher Researcher in Partnership program (TRiPP)

STEM Taxonomy unit

TRiPP project overview and link

I was fortunate enough to work with Dr Lisa-Ann Gershwin, who specialises in jellyfish. Her research investigates their biology, ecology, evolution, toxicology and the impacts on human safety. During my two days at the CSIRO in Hobart with Lisa, we focused on two particular aspects of her many research focuses. The first day was spent going through the taxonomy identification process of two new species of jellyfish. As someone who has no experience of working with jellyfish, this was a daunting task, allowing me to experience what a student might feel when asking them to learn taxonomy in grade 7 ([ACSSU111](#)). However, this allowed me to have a fresh eye over the specimens and discover some characteristics that may have been overlooked. On the second day, I focused on the impacts that Irukanji has on tourism in Queensland, focusing on finding appropriate data that might be linked to jellyfish blooms.

Nature of the problem Grade 7 students are given an assessment that comprises of short tasks that allows them to explore the importance of Taxonomy and having a universal system of identifying all living things around the world. This allows the students to explore the concept throughout the assessment, exploring open ended questions, such as:

- How are living things sorted and identified by so many different people (scientists, gardeners, bird watches, etc)?
- How do scientists know when they have found a new species?
- What do scientists do when they think they have found a new species?

Suitable Year Levels and subject area Grade 7 Science.

Curriculum Links

Grade 7 Science:

Classification helps organise the diverse group of organisms ([ACSSU111](#))

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available ([ACSHE119](#))

Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures ([ACSHE223](#))

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ([AC SIS133](#))

Learning Objectives Students will learn the importance of the taxonomy system and the detail required of scientists within this field. This includes the identification of living things through a taxonomic key, creating a taxonomic key through the exploration of key characteristics.

Student Learning Outcomes Students will be able to identify key characteristics of living things and describe them to other students.

Students will be able to create and use a taxonomy identification key.

Students will be able to describe the importance of taxonomy for scientists and the broader community.

Format Field journal that includes description of key characteristics of living things and the creation of a taxonomic key. Creation of a scientific report of the students' findings.

Assessment Outcomes

Formative assessment – Through class discussions. Key questions include:

- How do we identify living things?
- Why is it important that all people use the same name / way to identify living things?

Also through the components of the assessment task by providing the students with lesson goals that they complete. The teacher has the ability to monitor the students' progress and provide feedback to students to help guide them through the assessment.

Summative assessment – Through the scientific field journal and report produced at the end of the unit.

Information and communications technology (ICT) Not necessary as books can be used, but if possible, access to internet research will be helpful with this assessment. The [Atlas of Living Australia](#) may be a useful site

Taxonomy Assessment

All living things have a name. This assignment will allow you to explore the importance of taxonomy.

Task 1 – Discovered species:

Choose a plant or animal to investigate in your scientific field journal. You must include the following in your journal from the perspective of a scientist that may have discovered a new species:

- Key physical characteristics
- Key behavioural characteristics
- The location of the specimen
- Possible key characteristics to use in a taxonomic key

When you go back to the laboratory, you find out that the species has already been discovered. In your journal incorporate common names of your species, the key that is used to identify the species and the scientific name. Explain the importance of a scientific name in your journal.

Task 2 – New species observations:

A new species has been discovered and you are given the task of identifying it. In your field journal include the following:

- List key features, including descriptions
- Include diagrams of the whole species from all relevant angles (remember your scientific drawing guidelines)
- Give an example of a possible dichotomous key that could help other individuals identify the new species

- As the scientist that has discovered the species, you can name the organism. Include a common name and scientific name. Justify both names.
- Using only words, include a description of your unknown species that another person could draw the organism (NOTE: three fellow students will be doing this in the next lesson)

Task 3 – Scientific drawings and feedback:

You will be given three species description from your fellow students. Draw how you think the species will look. Provide constructive feedback that could have helped you with the drawings.

Task 4 – Scientific report:

Create a scientific report on the new species that you have identified. Use the feedback from your peers to help guide any changes or improvements to your initial observations. Include the importance of a universal taxonomy system in the scientific community and the broader community

Assessment section	Below standard	At standard	Above standard
<u>Task 1 – Discovered species</u>	Field journal includes basic components of task and some are incomplete. More detail is required to fully describe the species.	Field journal includes: Key physical characteristics Key behavioural characteristics The location of the specimen Possible key characteristics to use in a taxonomic key Discussion of the importance of a scientific name.	Scientific language has been used throughout the task. Justified explanation has been included.
<u>Task 2 – New species observations</u>	Field journal includes basic components of task and some are incomplete. More detail is required to fully describe the species.	The field journal includes: List key features with adequate detail for another person to draw the species. Diagrams of the whole species from all relevant angles. This includes scientific drawing guidelines (e.g. labels and headings). Possible dichotomous key to identify your new species. A common name and scientific names with justify of both names. A description of the organism.	Use of scientific language has been used throughout the task which has been explained so anyone reading it can understand the written explanation of the species. Detailed diagrams and descriptions have been included that required limited improvement.
<u>Task 3 – Scientific drawings and feedback</u>	Drawings have been included based on some of the description provided. Limited feedback has been incorporated.	3 drawings of other students' organism. Feedback has been provided that includes positives and constructive feedback that will help the student improve their work.	Detailed drawings have been included with labels. Feedback is thorough and well thought out to be constructive.

<u>Task 4 – Scientific report</u>	The scientific report has been attempted, with some proportions of the report missing from the report.	All components of a scientific report has been included: Aim, Introduction, Materials and Methods, Results, Discussion, Conclusion.	Scientific language has been used throughout the report that adheres to the conventions of a scientific report. All components of the report are included and statements have been justified with evidence.
References	No references or not referenced incorrectly.	References included correctly.	More than 3 references included in assessment.
Submission	Submitted after the due date.	Submitted on or before the due date.	Submitted by the due date. Then revised and resubmitted.