

Introduction

A learning tool commonly used in classrooms is the KWL chart. It is used to elicit students' prior **K**nowledge, determine questions students **W**ant to know answers to, and document what has been **L**earned.

Primary Connections has developed an adaptation called the **TWLH** chart.

T - 'What we think we know' is used to elicit students' background knowledge and document existing understanding and beliefs. It acknowledges that what we 'know' might not be the currently accepted scientific understanding.

W - 'What we want to learn' encourages students to list questions for investigation. Further questions can be added as students develop their understanding. L - 'What we learned' is introduced as students develop explanations for their observations. These become documented as 'claims'.

H - 'How we know' or 'How we came to our conclusion' is completed at the same time as third column (L) and encourages students to record the evidence and reasoning that lead to their new claim, which is a key characteristic of science. This last question requires students to reflect on their investigations and learning, and to justify their claims.

As students reflect on their observations and understandings to complete the third and fourth columns, ideas recorded in the first column should be reconsidered and possibly confirmed, amended or discarded, depending on the investigation findings.

Tips:

- The TWLH chart could be used to scaffold students' representations of their developing understanding. In their science journal, students representing current thinking based on evidence they've gathered during hands-on investigations.
- Sort students' ideas into rows to categorise them by sub-topic on the TWLH chart. This is useful for tracking the change in conceptual understanding over time. E.g. sub-topics when learning about natural disasters could be volcanoes, earthquakes, tsunamis etc. Sub-topics when learning about eucalypts could be seeds, habitats, animals, life cycles, etc. See samples below.

Using a TWLH chart to document inquiry

with Primary Connections

Sample

1 row of a TWLH chart

Topic: Earth and Space sciences, Natural disasters (Year 6)

What we think we know	What we want to learn	What we learned <small>(What are our claims)</small>	How we know <small>(What is our evidence, and where did our data come from)</small>
Volcanoes are all over the world.	Where are volcanoes located?	Most volcanoes are located around the 'Ring of Fire'.	We plotted secondary data of volcanic eruptions on a map each week.

Sample

1 row of a TWLH chart

Topic: Biological sciences, Gum trees (Year 4)

What we think we know	What we want to learn	What we learned <small>(What are our claims)</small>	How we know <small>(What is our evidence, and where did our data come from)</small>
Seeds need light to grow.	Can eucalypt seeds grow if they are covered by leaves on the ground and don't get any light?	The amount of light affects the germination of eucalypt seeds.	No seeds germinated from the eucalypt seeds that were covered by leaves. Six seeds germinated from the eucalypt seeds that weren't covered by leaves.*

*The TWLH chart tracks learning through inquiry. In doing so it is a living record, co-created with students, and may demonstrate evidence of lingering alternative conceptions worthy of further interrogation, questioning and investigation. This is a great way to support students' questioning and thinking like scientists.