TECH TALK FOR PRINCIPALS

ScopeIT Education – Term 2, 2019 Edition #11

Interpreting the Digital Technologies curriculum

Digital Technologies is hard to teach. Why?

We work with over 200 schools each year and the most common reason schools give us for engaging our services are:

- **Teachers haven't learned this subject themselves**
- **Schools don't have enough computers, adequate internet access or enough teachers to get to all students**
- **Teachers don't understand some of the terminology**
- **If teachers don't understand the terminology, how can they teach the subject?**

In our last edition of *Tech Talk for Principals*, we provided a list of terminology from the Digital Technologies curriculum and provided meanings to help you decipher some of the language *(if you missed it, please email us and we will send you a copy)*.

With an aim to provide you with useful solutions, in this edition we explore the challenges of understanding and implementing a difficult curriculum outcome, and how you might unpack it and implement solutions to address it.

Data

Here is an example of a data related outcome from Digital Technologies: *acquire, store, access and validate different types of data, and use a range of software to present, interpret and visualise data.*

Immediately there may be some challenges in the initial interpretation of this outcome. Do you know the jargon? Do you have technical knowledge on the subject matter? Do you have an understanding of the specifics, and use of the technology involved? In a previous *Tech Talk for Principals* we covered jargon including some of these terms.

In this outcome we see a variety of actions applied to data; acquire, store, access, validate, present, interpret, visualise. With such a long list of actions, it is possible to get confused about the point and focus of the outcome. However a useful way to look at this is that these actions give you freedom to explore the task in many ways. Let's look at each in isolation;

Acquire: To acquire data is the process of collecting data. For example, measuring how far each snail travelled in a timed snail race. The data here is the distance for each snail.

Store: Storing data may seem obvious, and in a digital technologies context there are further options, for example, did we write down the data on a piece of paper, or is it stored in a digital system like a database or spreadsheet? Perhaps we recorded the data on paper and then stored it digitally in a spreadsheet.

Access: In its simplest form, accessing data is the retrieval of data from storage. It means to look up data in order to use it. The potential to delve deeper here is in concepts like filtering - if you are accessing a large set of data, you may only want to look at a smaller set. For example, in a list of ships that sailed to Australia you may only want to see those that arrived between two dates.

Validate: To validate data means to check for its correctness prior to using the data. To make sure the data is right. If you collected some dates as data, are they in the correct format and do they lie in the correct range of dates? Are all your picture files pictures or is one a video? If you have calculated data, do the calculated results make sense?

Does your number data include some wayward text? This is a common task in spreadsheets and databases, where you can apply data validation on a range of data. It is also common to apply data validation on a form to prevent a user from inputting false data at the time of collection.

Present: Presenting data is how we show and express the data for someone else to view, or for documentation. This includes elements such as considering the target audience and purpose.

Interpret: With data, as with any information, it is subject to interpretation. How does the data lead us to a certain result? What insight can be gleaned from the data? What question is being asked about the data? Interpreting data can be a tricky task for students, and it a very valuable activity since it involves searching for the truth in a set of data, and applying critical thinking and analysis.

Visualise: Mainly to do with presenting data, visualisation involves presenting data in some kind of visual way such as a pie chart, bar graph, etc. There are many tricks with presenting information visually to ensure the communication of information is effective, and that the information is represented honestly.

Putting it together

Now that we have explored each action, we can start to build up strategies to address the curriculum outcome effectively, and also to bring the actions together in a complementary way to create a highly engaging sequence for students.

The basic flow of this outcome is to define a task that allows some kind of information to be collected in the form of data. This data will then be stored in some way and checked to make sure it is correct. Then students will access that data for the purpose of interpreting any truths, especially related to some kind of inquiry questions. Finally the task completes by presenting this data visually.

When we understand the jargon, and the task is expressed like this, there are many possible ideas that come to mind;

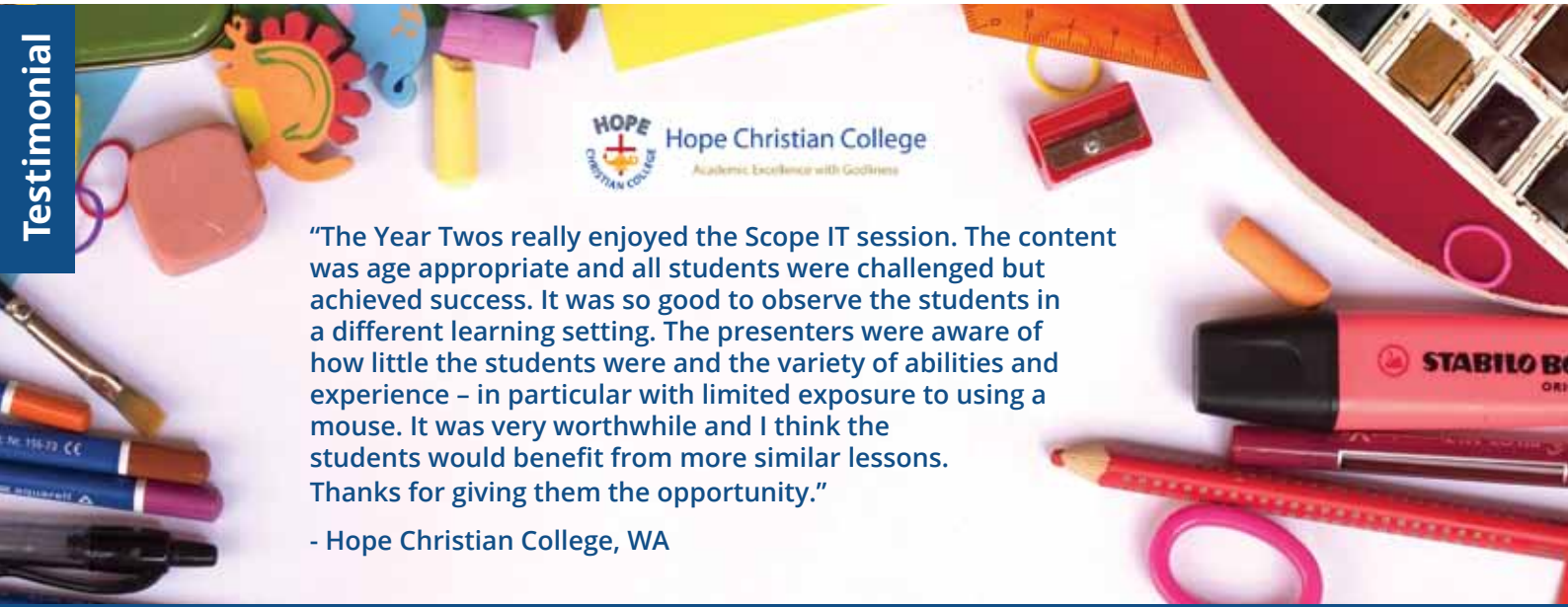
- **What objects are in the classroom, and which are the most common?**
- **Run a timed snail race. Show how far the snails travelled, who was the winner, and do bigger snails travel further?**
- **What colour eyes is the rarest in the class?**
- **Which pet is the most popular in the school among teachers?**
- **In the most recent Olympics, display all Australian swimming medal winners' times in order. Who won a gold medal in swimming in the quickest time?**

Let's use the example of a timed snail race. Students would be challenged to undertake a snail race with the purpose of collecting data to answer questions. This involves consideration related to data, such as what is the correct data to collect to answer the question, who is collecting it, how are they collecting it, and measuring it accurately. The data would then need to be stored and this is a good opportunity to use a spreadsheet. Students need to validate the data, for example the data would include distances, so is the distance data validated to be numbers, and do the numbers make sense (did a snail really travel 500 centimetres?). The data will need to be interpreted to answer the question of "who was the winner", and since students will need to "show how far the snails travelled", they will have to present a visualisation of the data in the form of a bar graph showing travel distances, sorted to show the furthest on top. The extra question about snail size also ensures that students are collecting more than one type of data, and must also analyse and visually present a second set of data that may not correlate to the first set.

What started as a challenging curriculum outcome can be unpacked into its components, understood, and then evaluated together to create a compelling sequence which engages students. This method of breaking hard problems into smaller chunks is called computational thinking and is a core strength of the ScopeIT Education program. We teach this way of thinking throughout our courses. Here we have shown how this core competency can even be applied to the curriculum itself to understand and apply a curriculum outcome.

If we can provide further assistance to help you implement a robust Digital Technologies program in your school, please reach out. Whether it's engaging us to deliver face to face lessons, Professional Development or something in between, talk to us, we want to help.

Testimonial



"The Year Twos really enjoyed the Scope IT session. The content was age appropriate and all students were challenged but achieved success. It was so good to observe the students in a different learning setting. The presenters were aware of how little the students were and the variety of abilities and experience – in particular with limited exposure to using a mouse. It was very worthwhile and I think the students would benefit from more similar lessons. Thanks for giving them the opportunity."

- Hope Christian College, WA