COLLECTING DATA WITH TECHNOLOGY

Levels F-2

These series of lessons were created in collaboration with the Digital Technologies Specialist teacher from Mackay Christian College, Queensland.

Unit Overview

Coinciding with students being taught about biological science. They will collect data on the changes of meal worms and record these changes using iPads and the camera function. This lesson will be part of a Unit of Work that focuses on investigating how living things grow and change. The focus of these lessons to collect data and capturing changes of living and nonliving things. After the data collection process is complete, students will interpret their data and generate a range of statements. To present their data they will follow a sequence of steps to learn to use digital software programs. Students will choose an app and present their data to show the changes to the meal worms.

Other Curriculum Targeted Areas

Other curriculum areas can be targeted and assessed within this unit. Areas of interest may include:

- Mathematics – Data
- English – Reading
- Science Biological Science

Further investigation into these areas is required to ensure they align with the following activities. Activities may need to be modified to ensure content descriptions and achievement standards are met.

Australian Curriculum Alignment

The following sessions have been created using the Australian Curriculum: Digital Technologies Curriculum. Tasks may need to be modified to ensure state Digital Technologies Curriculum content descriptions and achievement standards are met. ACS has support and documents to help align this unit to other Digital Technology Curricula.

Session

'Session' has been used to define the order of tasks to complete the unit. It does not define a set time required to complete the task. Time allocated to complete a session is the teacher's discretion. This allows for flexibility for the teacher to drive the duration of the task and make modifications if necessary. Sessions can be merged into one set period or one session may run over multiple periods.

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Key Preparation

ACS Resources

Resources have been created to help teachers and students unpack and understand topics found within the Digital Technologies Curriculum. These give brief explanations of the topic and the expectations to teach the topic at the curriculum year level. It is intended the information is presented in a way that will set the foundation for further research. You can access these resources via: https://www.acs.org.au/ict-educators.html.

Digital Systems

Some activities (learning to use iPads and Bee-bits) are included in this units. If digital devices are unavailable, modifications may need to occur to suit students/school and lessons. There are a range of Sequence of Steps activities found within out ICT Educators Community that can easily be replaced with those that are not applicable. To assist with modifying the sequence of steps for your school or students, we have set up and open file in Canva, access is here.

Key Understandings

Students will:

- Collect data over the course of a selected time frame (at teacher discretion)
- Use a digital device to collect and represent the data
- Interpret the data they have collected.
- Identify the main hardware and software of an iPad.
- Create a sequence of steps to program a Bee-Bot to solve a simple problem.

Key Questions

- Why is it important to collect data?
- What data will you collect?
- How will you use a digital device/iPad to record your data?
- How will you use your digital device/iPad present your data?
- What have you found out by collecting the data?
- What are sequence of steps?
- What instructions do you need to follow to use different iPad apps?

Key Vocabulary

Data, data collection, sort, data representation, pictures, diagrams, images, predictions, interpretations, hardware, software sequence of steps, instructions, iPad, apps.

Session Number	Session Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
1.	Sequence of Steps (taking a photo with the iPad)	**Learning Intention** Students will identify and explain simple steps to use the iPad in classes. **Success Criteria** I can follow the instructions to take a photo on an iPad.	Together read through and follow the sequence of steps to take a photo with the iPad.	Students are provided with the sequence of steps out of order and they need to put them back into the correct order. Students then commence practicing following the instructions and taking photos with the iPad.
Session Resources	**Student Resources** • Taking a photo (out of order) – sequence of steps, located at the end of the unit.		**Teacher Resources** • Taking a photo (in order) – sequence of steps, located at the end of the unit.	
2.	Data collection	**Learning Intention** Students will represent data as images. **Success Criteria** I can use a camera to take a photo to collect data of my living thing changing.	Bring in a living thing (plant or small animal) as a stimulus for the lesson. Initiate a discussion about making prediction about what will happen to the living thing over one day, two days and even longer period of time. Steer the conversation about keeping record of the data the best way to capture the data. Use the whole class living object stimulus to model how to take photos and record observable changes.	Students will commence collecting data of how their living object has changed over time. They will take a photo of their object (daily, every second day). Ensure the collection of the data is occurred over a long period of time (at least couple of weeks to have observable changes). This session will occur multiple times for a duration depicted by the teacher.
Session Resources	**Student Resources** •		**Teacher Resources** • ACS Teacher Resource: Data	

Session Number	Session Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
3.	Sequence of Steps (Using Book Creator)	**Learning Intention** Students will follow a sequence of steps and learn the basics of using Book Creator. **Success Criteria** I can follow a sequence of steps to learn how to use Book Creator.	Students to take photo of their living thing. Discuss with the class any observable changes. If possible, compare photo from previous session. Introduce students to the sequence of steps to use Book Creator. Students follow the sequence of steps to use Book Creator. Discuss other sequence of steps that can be added.	Students focus on learning how to open and use book creator. They follow the sequence of steps to open and create a new book. Students are given time to create a virtual book. They create a book about themselves by adding in videos, and images. Each page can contain something new about them – eg; family, pets, likes and dislikes.
Session Resources	**Student Resources** •		**Teacher Resources** • Using Book Creator – sequence of steps, located at the end of the unit.	
4.	Sequence of Steps (Using Clips)	**Learning Intention** Students will follow a sequence of steps and learn the basics of using Clips. **Success Criteria** I can follow a sequence of steps to learn how to use Clips.	Students to take photo of their living thing. Discuss with the class any observable changes. If possible, compare photo from previous session. Introduce students to the sequence of steps to use Clips. Students follow the sequence of steps to use Clips. Discuss other sequence of steps that can be added.	Students focus on learning how to open and use Clips. They follow the sequence of steps to open and create a new book. Students are given time to create a video. They create a video about their classroom and showcase where everything is located in the classroom.
Session Resources	**Student Resources** •		**Teacher Resources** • Using Clips – sequence of steps, located at the end of the unit.	

Session Number	Session Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
5.	Sequence of Steps (Using Slides)	**Learning Intention** Students will follow a sequence of steps and learn the basics of using Keynote. **Success Criteria** I can follow a sequence of steps to learn how to use Keynote.	Students to take photo of their living thing. Discuss with the class any observable changes. If possible, compare photo from previous session. Introduce students to the sequence of steps to use Clips. Students follow the sequence of steps to use Keynote. Discuss other sequence of steps that can be added.	Students focus on learning how to open and use Slides. They follow the sequence of steps to open and create a new slide show presentation. Students are given time to create a slide of a topic of their choosing.
Session Resources	**Student Resources** •		**Teacher Resources** • Using Keynote – sequence of steps, located at the end of the unit.	
6.	Sequence of Steps (Using Seesaw)	**Learning Intention** Students will follow a sequence of steps and learn the basics of using SeeSaw **Success Criteria** I can follow a sequence of steps to learn how to use Slides.	Students to take photo of their living thing. Discuss with the class any observable changes. If possible, compare photo from previous session. Introduce students to the sequence of steps to use SeeSaw. Students follow the sequence of steps to use SeeSaw. Discuss other sequence of steps that can be added.	Students will complete one of the projects they started over the course of the previous 3 session. They follow the sequence of steps to open and upload information into SeeSaw.
Session Resources	**Student Resources** •		**Teacher Resources** • Using Seesaw – sequence of steps, located at the end of the unit.	

Session Number	Session Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
7.	Sorting data	**Learning Intention** Students will visually represent their data they have collected over the course of the unit to to interpret it. **Success Criteria** I can use digital technology to organise my data.	Students to take photo of their living thing. Discuss with the class any observable changes. If possible, compare photo from previous session. Discuss with students how to access their photos and how they can be sorts to make looking at the photos easier. Discuss how the programs they used over the past sessions can be	Students take photos of the data they have collected over the duration and using digital technology to represent the data. Students can choose which platform they will use to create a
Session Resources	**Student Resources** •		**Teacher Resources** •	
8.	Presenting data	**Learning Intention** Students will share their data and interpret their data to make statements. **Success Criteria** I can share my data with my class.	Create a list of statements and questions that students can answer to help them interpret their data. Questions might be: • What changes have occurred? • What have you noticed about size and colour?	Working in groups, students share their digital representations of their data. Together, they look for similarities and differences and patterns in the data they have collected.
Session Resources	**Student Resources** •		**Teacher Resources** •	

Session Number	Session Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
9.	Using technology for a purpose	**Learning Intention** Students will explain the purpose of using the camera to collect data. **Success Criteria** I can explain why the camera was used as a purpose to collect data.	Create a list of positive and negative reasons of using the camera to collect data. Discuss how the photos were taken and how they were saved.	Students create a short reflection (video or written) about why and how the camera was used purposefully to collect data. They identify and explain the software that they used to order their data.
Session Resources	**Student Resources**		**Teacher Resources** • ACS Teacher Resource: Hardware and Software	
10.	Sequence of steps (Bee-Bots)	**Learning Intention** Students will follow instructions to program a Bee-Bot. **Success Criteria** I can follow instructions to move and program the Bee-Bots.	Introduce students to the sequence of steps activity sheet that explains how to use and program a Bee-Bot. Demonstrate and follow the instructions.	Do cut and paste of how to use the Bee-Bots. Students free play with the Bee-Bots, following the instructions to learn to program the Bee-Bot.
Session Resources	**Student Resources** • Using the Bee-Bot (out of order) - sequence of steps activity sheet, located at the end of the document.		**Teacher Resources** • Using the Bee-Bot (in order) - sequence of steps activity sheet, located at the end of the document.	

Assessment – Australian Digital Technologies Curriculum			
Content Description	**Session Number**	**Assessment Piece**	**Assessment Statement**
Recognise and explore digital systems (hardware and software) components for a purpose (ACTDIK001)	9	Exploring digital systems to take photos	Students explored the hardware of a digital camera to take photos to collect data. They recognised through their reflection why the technology was used and how it benefited their data collection.
Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (ACTDIK002)	1 & 2	Data collection	Students used software to digital represent data that depicted growth and change of living things.
Collect, explore and sort data, and use digital systems to present the data creatively (ACTDIP003)	8	Digital presentation of their data	Students collated data to demonstrate how living things grow and change. They used cameras on a digital device to collect photos.
Following, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (ACTDIP004)	3-6	Sequence of steps recorded in correct order and following sequence of steps	Students followed and described a simple sequence of events to learn how to use a selection of apps on the iPad.
Explore how people safely use common information systems to meet information, communication and recreation needs (ACTDIP005)	N/A		
Create and organise ideas and information using information systems independently and with others, and share these with known people in safe online environments (ACTDIP006)	6	Learning to use SeeSaw	Students followed a sequence of steps to learn how to use SeeSaw and shared their work with their class.

Assessment – Victorian Digital Technologies Curriculum			
Content Description	**Session Number**	**Assessment Piece**	**Assessment Statement**
Identify and explore digital systems (hardware and software components) for a purpose (VCDTDS013)	9	Exploring digital systems to take photos	Students explored the hardware of a digital camera to take photos to collect data. They recognised through their reflection why the technology was used and how it benefited their data collection.
Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (VCDTDI014)	1 & 2	Data collection	Students used software to digital represent data that depicted growth and change of living things.
Collect, explore and sort data, and use digital systems to present the data creatively (VCDTDI015)	8	Digital presentation of their data	Students collated data to demonstrate how living things grow and change. They used cameras on a digital device to collect photos.
Independently and with others create and organise ideas and information using information systems, and share these with known people in safe online environments (VCDTDI016)	6	Learning to use SeeSaw	Students followed a sequence of steps to learn how to use SeeSaw and shared their work with their class.
Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (VCDTCD017)	3-6	Sequence of steps recorded in correct order and following sequence of steps	Students followed and described a simple sequence of events to learn how to use a selection of apps on the iPad.
Explore how people safely use common information systems to meet information, communication and recreation needs (VCDTCD018)	N/A		

Assessment – New South Wales Science and Technology Syllabus			
Outcomes and Objectives	**Session Number**	**Assessment Piece**	**Stage Statement**
observes, questions and collects data to communicate and compare ideas (ST1-1WS-S)	Over the course of the unit	Interpretation of data	Students observed the changings of living things and compared these to nonliving things. They collected data to help them make valid conclusions and they communicated these ideas with their peers.
collect, sort, organise and present data to communicate information (ACTDIP003)	1 & 2	Data collection	Students collated data to demonstrate how living things grow and change. They used cameras on a digital device to collect photos. Students used software to digital represent data that depicted growth and change of living things.
Identifies digital systems and explores how instructions are used to control digital devices (ST-e7DI-T)	9	Exploring digital systems to take photos	Students explored the hardware of a digital camera to take photos to collect data.

Assessment – Western Australian Digital Technologies Curriculum			
Year 1 Syllabus			
Content Descriptions	**Session Number**	**Assessment Piece**	**Assessment Statement**
Digital systems (hardware and software) are used in everyday life and have specific features (ACTDIK001)	9	Exploring digital systems to take photos	Students explored the hardware of a digital camera to take photos to collect data. They recognised through their reflection why the technology was used and how it benefited their data collection.
Data can have patterns and can be represented as pictures, symbols and diagrams (ACTDIK002)	1 & 2	Data collection	Students used software to digital represent data that depicted growth and change of living things.
Present data of any kind using a variety of digital tools (ACTDIP003)	1 & 2	Data collection	Students used software to digital represent data that depicted growth and change of living things.
Use data to solve a simple task/problem (ACTDIP003)	1 & 2	Data collection	Students used software to digital represent data that depicted growth and change of living things.
Share and publish information with known people in an online environment, modelling strategies to stay safe online (ACTDIP006)	6	Learning to use SeeSaw	Students followed a sequence of steps to learn how to use SeeSaw and shared their work with their class.
Explore opportunities for design (WATPPS06)	N/A		
Develop and communicate design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps (WATPPS07)	3-6	Sequence of steps recorded in correct order and following sequence of steps	Students followed and described a simple sequence of events to learn how to use a selection of apps on the iPad.
Use given components and equipment to safely make solutions (WATPPS08)	3-6	Sequence of steps recorded in correct order and following sequence of steps	Students followed and described a simple sequence of events to learn how to use a selection of apps on the iPad.
Use personal preferences to evaluate the success of design processes (WATPPS09)	N/A		
Work independently, or with others when required, to create and safely share sequenced steps for solutions (WATPPS10)	6	Learning to use SeeSaw	Students followed a sequence of steps to learn how to use SeeSaw and shared their work with their class.

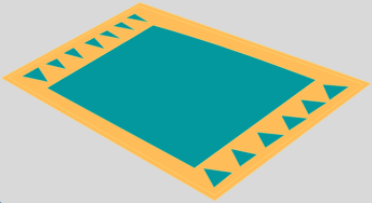
Assessment – Western Australian Digital Technologies Curriculum			
Year 2 Syllabus			
Content Descriptions	**Session Number**	**Assessment Piece**	**Assessment Statement**
Digital systems (hardware and software) are used for an identified purpose (ACTDIK001)	9	Exploring digital systems to take photos	Students explored the hardware of a digital camera to take photos to collect data. They recognised through their reflection why the technology was used and how it benefited their data collection.
Data can have patterns and can be represented and used to make simple conclusions (ACTDIK002)	8	Digital presentation of their data	Students collated data to demonstrate how living things grow and change. They used cameras on a digital device to collect photos.
Present data using a variety of digital tools (ACTDIP003)	8	Digital presentation of their data	Students collated data to demonstrate how living things grow and change. They used cameras on a digital device to collect photos.
Use data to solve similar tasks/problems (ACTDIP003)			
Share and publish information in a safe online environment, with known people (ACTDIP006)	6	Learning to use SeeSaw	Students followed a sequence of steps to learn how to use SeeSaw and shared their work with their class.
Explore design to meet needs or opportunities (WATPPS11)	N/A		
Develop, communicate and discuss design ideas through describing, drawing, modelling and/or a sequence of steps (WATPPS12)	N/A		
Use components and given equipment to safely make solutions (WATPPS13)	Throughout the unit	Using different apps	Students learnt to use a selection of apps to create a presentation of the growth of their meal worm.
Use simple criteria to evaluate the success of design processes and solutions (WATPPS14)	N/A		
Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions (WATPPS15)	6	Learning to use SeeSaw	Students followed a sequence of steps to learn how to use SeeSaw and shared their work with their class.

SEQUENCE OF STEPS: USING AN IPAD

STEP 1
Carry with 2 hands.

STEP 2
Disconnect earphones.

STEP 3
Sit down on the mat when using the iPad.

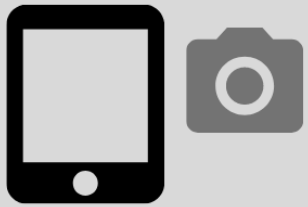


STEP 4
Only use apps directed by the teacher.

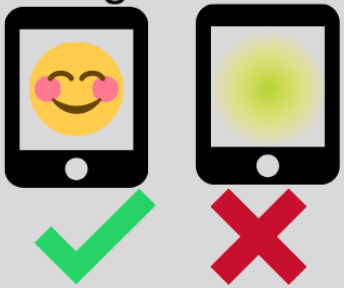
STEP 5
Turn off the screen when the teacher is talking.

SEQUENCE OF STEPS: TAKING A PHOTO ON AN IPAD

STEP 1
Open the Camera.



STEP 2
Make sure the image is clear.



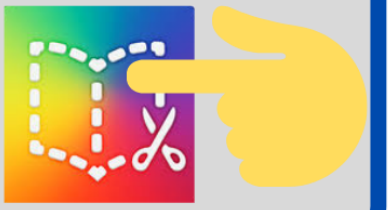
STEP 3
Hold the iPad still with one hand.

STEP 4
Press the white button to take a photo.

STEP 5
Take 1 photo only.

SEQUENCE OF STEPS: USING BOOK CREATOR

STEP 1
Tap on the app to open Book Creator.

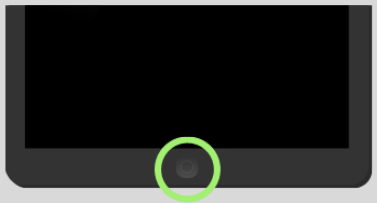


STEP 2
Tap on the + add features to your book.

STEP 3
Press the microphone to add a sound.

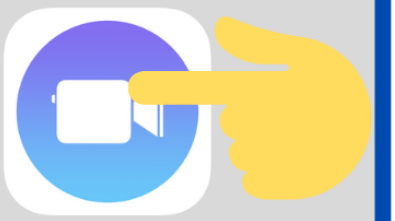
STEP 4
Press the camera to add a picture.

STEP 5
Press the home button to exit the app.



SEQUENCE OF STEPS: USING CLIPS

STEP 1
Tap on the app to open Clips.



STEP 2
Press and hold the pink button to record a video.

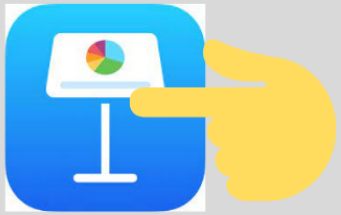
STEP 3
Press the round circle to take a photo.

STEP 4
Press the coloured star to add effects.

STEP 5
Press the triangle to play your video.

SEQUENCE OF STEPS: KEYNTOE

STEP 1
Tap on the app to open Keynote



STEP 2
Double tap the slide to edit it.

STEP 3
Add text.

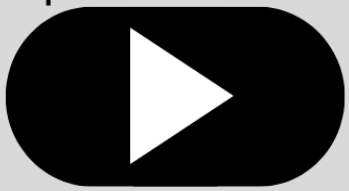
Aa

Text

STEP 4
Add photos.

Photo

STEP 5
Press play to present your presentation



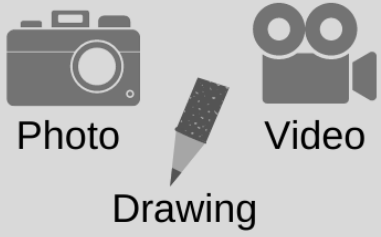
SEQUENCE OF STEPS: USING SEESAW

STEP 1
Tap on the app to open Seesaw.

STEP 2
Press the green Add button.

STEP 3
Choose pencil.

STEP 4
Choose Photo Drawing or Video.



STEP 5
Press the green tick.