Please refer to the online lesson plan on the DT Hub to access all website links and additional resources.

## Learning hook

1. Introduce the project and its focus.
2. Use the distribution of the school newsletter as a teachable moment. Pose these questions.
   * Who is the audience of the newsletter?
   * How long does it take to produce?
   * What is the format of the newsletter (print/digital)?
   * Where do people read the newsletter?
   * What is the length of time it takes to read?
   * Is the newsletter re-read during the week? How is it disposed of?
   * Does the newsletter have an environmental impact?
   * What is the cost of newsletter production to the school?
   * How successful is the newsletter in getting its message across?
   * How many actually get read?
   * Are there alternatives?
3. Write out these questions individually, so that they can be displayed on noticeboards/whiteboards around the learning area.

**Additional Scaffolding**

**Additional means of Engagement and Expression:**

If you have access to a collaborative word processor like Google Docs or Microsoft Word 365, or an online form like Google Forms or Survey Monkey, you could list these questions electronically for students to then type their responses to.

1. Let students think about the answers to 2 or 3 of the questions by themselves. Give them 2 or 3 sticky notes for them to write responses on.
2. After students have stuck their sticky notes around the room and discussed ideas in small groups, bring them back into a larger group.
3. Lead a discussion to find out any key issues that have come up in the small groups.

Some copies of the school newsletter (print or digital)

Examples of newsletters from surrounding schools (print or digital)

Lists of URLs of school newsletters. Search the web for these, they are easy to find as they are mostly attached to a school website.

View sample newsletters (see online lesson)

Read the article about Features of a ‘good’ school newsletter.

## Learning map and outcomes

1. Read Graphic Organiser for this activity (see online lesson)
2. Introduce the focus of this series of lessons: Home/school communications are vital to the good running of any school, as everyone needs to be informed and needs to feel involved.
3. After group discussion ask students what information may be useful to answer the first part of what will now be called the Big Question, which you now put to them: Is there a more efficient and sustainable online and/or mobile solution to our home/school communication? (What are the digital alternatives?)
   * Hopefully, students will highlight in the discussion that they need more information to answer this question.

Introduce the concept of big data. Show the Common Craft Big Data Explained video and discuss. Focus discussions on data collection.

* Ask: ‘How do we decide what we are measuring?’
* Explain how data can be quantitative (data that can be counted) or qualitative (data that describes).
* Reiterate the Big Question again. Is there a more efficient and sustainable online and/or mobile solution to our home/school communication? (What are the digital alternatives?)
* Explain to students that they may need to read and analyse some big data to investigate the possibilities of an online and/or mobile solution for home/school communication, and that they may also have to construct a survey to find data about the views of their school community.
* Introduce the Assessment rubric. Explain what is being assessed, the terminology involved, the need for goal-setting and how students might work out whether they are on track or not.
  + The rubric should be reiterated during the series of lessons so that the students will be aware of their learning progress, understand what they need to do next and what further assistance/explicit teaching they may require.
  + This rubric can be used for student self-assessment, for peer assessment and for formative assessment by the teacher.

## Learning input

1. Reiterate the Big Question. Is there a more efficient and sustainable online and/or mobile solution to home/school communication? (What are the digital alternatives?)
2. Discuss the importance of evidence-based decision making.
3. Ask students: What questions might need to be answered when using data in this project? What are we looking for?
   * Ask students: Would a solution that requires a robust internet and a high level of device ownership (especially smartphone/tablet ownership) be useful for our school community?
   * What does national data say about that? (Reading/analysing datasets).

 **Reducing Working Memory Load:**

As an alternative approach for reduced complexity and to keep the lesson simple, focus on readership and how often parents and students read the newsletter. Explain to students that the goal of the newsletter is for parents and students to read it. Thus, students need to come up with ideas as to how to find out how many students and parents read it each week (or month). Once they come up with ideas, then ask if it would be easier if the newsletter was online, or via email, text message, or printed. Perhaps draw up a table (on the whiteboard or in a word document projected onto the board) where students can write down pros and cons for each method of distribution. You can extend this activity by then having students consider how phone/tablet/computer ownership affects readership.

1. Introduce to students the datasets from the OECD/ ABS/ ACMA/mobile phone providers.
2. Assist students in making sense of the big data websites (Skill: Reading/manipulating/analysing).
   * As these sites are data-rich and complex, you will need to model how to access the useful data for this project, without ‘getting lost’. A whole-class or group session navigating through a dataset, with discussion, is vital here.
3. Set up a space for students to record findings and opinions; for example, a collaborative online space, a whiteboard on which the student recordings can remain until the end of the series of lessons, or a sticky-note wall (again which can remain until the end of the series of lessons).
4. Provide students with a template for this big data activity.
   * Name of data set.
   * Ease of use, how ‘friendly’ was the website?
   * What assistance did you need to understand the website?
   * Top five ‘takeaways’ from looking at this data set.
   * How useful was the dataset in providing you with information to answer the Big Question?
5. Place students in groups of 5–6. Divide the datasets from the OECD/ABS/ACMA (online versions, in preference to printed) amongst the groups. As this data is dense have each group of students just looking a one or two datasets (depending upon the time available for this lesson sequence).
6. Ask students to record their findings and opinions about the data. In groups, they should be able to find 5 or 6 key points.
   * If they already have access to a collaborative website (for example a Google Doc or online forum) they could use that; however, any recording method would be fine (for example, whiteboard, sticky notes) as long as it the results can be seen by all, added to, and edited.
7. Support/scaffold and teach around the following questions:
   * How do we know what sort of newsletter does our school community want?
   * How can we find this out? How will we get this data? Do we need to conduct our own survey? (Skill: Making our own datasets)
8. Teach students how to make an online survey. (See Resources for online resources that will assist you.)

**Additional Scaffolding:**

**Multiple means of Expression:**

Alternatively, students can write or type up a survey. They could then go around and survey teachers and students and/or send a copy home for parents to fill out and return.

1. Ask students: What data will this project survey try to capture? (Skill: Making survey questions)
2. Teach students of how to frame effective questions. See Resources for things that will assist you.
3. Reiterate to students the purpose of the survey: ‘How do we know what sort of newsletter does our school community want?’ Student survey questions should cover issues around preferred newsletter format, connectivity, device ownership, privacy, etc.
4. Ask: ‘How will we organise and sort the data we collect?’ (Skill: Manipulating spreadsheets by sorting). See Resources for things that will assist you.
5. Ask: ‘How do we analyse this data?’ (Skill: Data Analysis)
   * Demonstrate how a spreadsheet can organise data, which makes it easier to understand.
6. Have students find, discuss and report on survey data about preferred newsletter format, connectivity, device ownership, privacy, etc.
   * Ask: What actions will be informed by this data?
   * Monitor responses (see above) from the collaborative space, whiteboard, sticky notes notes and provide feedback for students.

Please refer to the online lesson plan on the DT Hub to access all website links and additional resources.

Datasets

OECD Data ICT Internet Access

ABS Data Household Use of Information Technology, Australia, 2016-17

ABS Data Personal Internet Use

ABS Data Types of Internet Access

ACMA Data Australians get mobile

Mobile phone providers coverage maps

View the coverage maps of Telstra, Optus, and Vodafone

How to use Microsoft Forms

Making good survey questions

Sorting an Excel Spreadsheet

Sorting a Google Sheet

Sorting Apple Numbers Spreadsheet

## Learning construction

1. Monitor progress of student input so you are aware of what insights students have and what support and skills that they may need.
2. Provide sticky notes for students.
3. Support/scaffold and teach around the following.
   * planning a survey to capture quantitative and qualitative data
   * thinking of setting questions which lead to one or two supplementary questions, (explicit teaching, if required)
   * organising and sorting data (explicit teaching of how to manipulate spreadsheets and use functions)
   * analysing data (see Learning Input section).
4. Provide students access to the videos (see Resources) on survey questions, setting up an online survey and sorting spreadsheets, mentioned in the Learning Input section.
5. Work with groups of students (as needed) on planning and project managing their evidence-based solutions to the Big Question.
6. Teach students mind mapping/concept mapping (if necessary) so they can meet beginning and emerging in the Assessment Rubric.
7. Introduce flowcharts to students so they can meet Developing and Proficient in the Assessment Rubric
   * Show students the Flow chart videos listed in Resources, and how to use flowchart shapes.
   * See Sample Flowchart Home-School Comm in Resources.

Provide safe forms of survey applications such as Microsoft forms. Choose the option for anonymous responses to ensure that the data is de-identified.

Use spreadsheeting software such as Microsoft Excel, Numbers for Apple or Google sheets.

Provide mind mapping software such as:

* Popplet - An easy-to-use tool for capturing and organizing ideas visually. It’s great for brainstorming and creating mind maps
* Inspiration - A visual thinking tool for creating mind maps, concept maps, diagrams, graphic organisers, outlines, and presentations.

Flowchart can be hand drawn or composed using shape tools of desktop publishing applications such as Microsoft Word. There are also some online flowchart makers and a Flowchart tutorial.

## Learning demo

1. Provide adequate time and support for students to share ideas, demonstrate and showcase their work as well as asking for feedback.
2. Give feedback, and encourage other students to give feedback to each other.
3. Conduct an individual/group/whole-class discussion how each group dealt with the Big Question: Is there a more efficient and sustainable online and/or mobile solution to our home/school communication? (What are the digital alternatives?)

Students have an opportunity to discuss what they have learnt from this project. This could be in a report/blog/interview/demonstration format.

They should report on one of the following:

* understanding big data sets
* survey construction and collection
* data analysis and reporting
* designing a home/school communication user interface (UI).
* home/school communication prototype construction.

Students can report on goal setting, work flow, task management, collaboration.

Students can report on challenges that they overcame. Were there any that they didn’t?

## Learning reflection

Reflect on the following.(One way of doing this is with video software and a webcam on a computer or tablet. Record your thoughts at the start, during the lessons and at the conclusion. Another way to reflect is by blogging.)

* Did the students have the required knowledge to start this unit? How was this assessed?
* Did you understand the Digital Technologies terminology? Where you able to use this in your lessons? Did your students start using it during the lessons?
* How successfully were you in enabling your students to understand data enough to make evidence-based decisions?
* How successfully were you in enabling your students to use data analysis, planning and project management to solve a real-world problem (home/school communication)?
* Have you modelled learning reflection for your students?

## Curriculum links

| Links with Digital Technologies Curriculum Area | |
| --- | --- |
| **Strand** | **Content Description** |
| **Processes and Production Skills** | Define problems with given or co-developed design criteria and by creating user stories (AC9TDI6P01) .  Investigate how data is transmitted and secured in wired and wireless networks including the internet (AC9TDI8K02) . |

| Links with other Learning Areas | |
| --- | --- |
| **Learning Area** | **Strand and Content Description** |
| **English** | Literacy  Creating texts   * Plan, create, edit and publish written and multimodal texts whose purposes may be imaginative, informative and persuasive, developing ideas using visual features, text structure appropriate to the topic and purpose, text connectives, expanded noun groups, specialist and technical vocabulary, and punctuation including dialogue punctuation (AC9E5LY06 ) |
| **Mathematics** | Statistics   * Plan and conduct statistical investigations by posing questions or identifying a problem and collecting relevant data; choose appropriate displays and interpret the data; communicate findings within the context of the investigation (AC9M5ST03 ) * Acquire, validate and represent data for nominal and ordinal categorical and discrete numerical variables, to address a question of interest or purpose using software including spreadsheets; discuss and report on data distributions in terms of highest frequency (mode) and shape, in the context of the data (AC9M5ST01 ) |
| **Science** | Science Inquiry Skills (5–6) Processing and analysing data and information   * Construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships (AC9S5I04 )   Evaluating   * Compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions (AC9S5I05 ) |
| **Humanities and Social Sciences** | Skills (5–6) Interpreting, analysing and evaluating   * Evaluate primary and secondary sources to determine origin, purpose and perspectives (AC9HS5S04 ), (AC9HS6S04 ) |

## Assessment rubric

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Understanding big data sets** | **Survey construction and collection** | **Data analysis and reporting** | **Designing a home/school communication product/user interface (UI).** | **Extension activity Home/school communication prototype construction** |
| **Digital Technologies skill set** | Interpreting data from public websites (text/graphs)  Searching data  Filtering data  Selecting data to re-use in a new (and attributed) data visualisation | Planning survey to capture quantitative and qualitative data  Thinking of setting questions which lead to one or two supplementary questions  Online survey constructed, tested and collected | Data collected exported into format where it can be opened in a spreadsheet. This data needs to be sorted, have a function applied (e.g. Sum) and made into a chart/graph. | Synthesising the public data about connectivity and device ownership with the locally generated data about school communication effectiveness.  Planning using a flowchart a home/school communication user interface (UI). | Project managing the construction of an evidence based improved home/school communication user interface (UI).  Testing the product with a sample of users.  Evaluating the user experience.  Modifiying UI  Release of new home/school communication user interface (UI). |
| **Beginning** | Can find required web pages.  Understands the importance of data.  Can make sense of text and graphs to make simple statements to show meaning. | Understands different types of questions (e.g. open/closed).  Can plan some basic questions to capture data for the project.  With guidance can construct a simple online survey and collect data. | Can collect data from online survey and export a different format for analysis.  Can make this data into a chart/graph.  Makes statements about the data from the online survey and the data on connectivity and device ownership.  Can make a simple report on findings. | Using the information from the survey and connectivity/device ownership findings report as to how home/school communications could be improved.  Demonstrate simple graphical planning, with assistance, for a home/school communication user interface (UI).  Make some simple statements on how this project could proceed | Makes a simple project plan for home/school communication product.  With assistance, makes a simple tablet app/a mobile device optimised website/an interactive newsletter.  Asks others for feedback. |
| **Emerging** | Understands that data comes from many sources.  Can make sense of text and graphs from two different sources to make simple statements to show meaning.  Can explore filtering or searching of data with any supplied online tools.  With support can use data/text/graphs in the planning for an improved school/home communication product. | Constructs a simple online survey with a range of questions to generate data for the project.  Understands that there are different types of questions that will generate different types of data.  Tests survey on others and, with guidance, judges appropriateness of the survey.  Conducts survey with a cohort to collect data. | Can collect data from online survey and export into a different format for analysis.  Can export survey data into a spreadsheet.  Can, with guidance, sort this spreadsheet data, apply a function (e.g. Sum) and make into a chart/graph.  Can, with guidance, analyse the data from the online survey and the data on connectivity and device ownership.  Can make a useful report on findings. | With guidance, can make statements about the two datasets: the public data about connectivity and device ownership and the locally generated data about school communication effectiveness.  Demonstrate graphical planning, with guidance, for a home/school communication user interface (UI), based on what they have learned from the data.  Makes some recommendations as to how this would be built. | Makes a simple project plan for an improved home/school communication user interface (UI).  With guidance, makes a simple tablet app/a mobile device optimised website/an interactive newsletter.  Tests the product with a sample of users and gets feedback.  Makes changes, if necessary. |
| **Developing** | Can make sense of text and graphs from multiple sources to make statements of increasing sophistication to show understanding.  Can filter or search data with supplied online tools  Can use data/text/graphs in the planning for an improved school/home communication product. | Constructs an online survey with a range of questions to elicit useful data on the project.  Understands that there are different types of data generated by different question types.  Tests survey on others and judges appropriateness of survey.  Conducts survey with a cohort and collects data | Can collect data from online survey and export into a different format for analysis.  Can export survey data into a spreadsheet.  Can sort this spreadsheet data and apply a function (e.g. Sum).  Can make a useful analysis of the data from the online survey and the data on connectivity and device ownership.  Can make a report on findings showing analysis and recommendations. | Demonstrates an understanding of the public data about connectivity and device ownership and the locally generated data about school communication effectiveness and how this evidence will inform decision making.  Can plan and make a flowchart (using flowchart symbols) for a home/school communication user interface (UI).  Makes some recommendations as to how this would be built.  Develops a simple project management plan for how this home/school communication user interface (UI) would be built. | Makes a project plan for the construction of an evidence-based improved home/school communication user interface (UI).  Tests the product with a sample of users.  Evaluates the user experience.  Modifies the UI, if necessary.  Asks for feedback to see whether the solution is evidence based and is likely to improve home/school communication. |
| **Proficient** | Can interpret data from public websites (text and graphs).  Can search for relevant data.  Can filter and search data with supplied online tools.  Effectively selects and uses these datasets to inform planning in this project. | Can construct an online survey with a range of questions to elicit sophisticated data on the project.  Can explain the difference between quantitative and qualitative data.  Constructs questions which can lead to supplementary (IF) questions.  Tests survey on a sample and makes modifications if necessary.  Conducts survey with a selected cohort to collect data | Can collect data from online survey and export into a different format for analysis.  Can export survey data into a spreadsheet.  Can sort this spreadsheet data, apply a function (e.g. Sum) and make into a chart/graph.  Can analyse the data from the online survey and the data on connectivity and device ownership.  Can make a sophisticated report on findings. | Can synthesise the public data about connectivity and device ownership with the locally generated data about school communication effectiveness.  Can plan, make and test a flowchart (using flowchart symbols) for a home/school communication user interface (UI).  Makes technical recommendations as to how this would be built  Develops a project management plan (timeline, resources, personnel, budget) for how this home/school communication user interface (UI) would be built. | Project manages, (timeline, resources, personnel, budget), the construction of an evidence-based improved home/school communication user interface (UI).  Tests the product with a sample of users.  Evaluates the user experience.  Modifies the UI, if necessary.  Asks for feedback to see whether the solution is evidence based and is likely improve home/school communication.  Negotiates the release of new home/school communication user interface (UI) for use. |