## Learning hook

1. Explain to students that their first task will be to identify the seven Gulumoerrgin seasons (Monsoon Season, Spear Grass and Goose Egg Time, Barramundi and Bush Fruit Season, Heavy Dew Time, Big Wind Season, Build Up, and Rainy Season).
2. Tell the students: ‘You have been commissioned to produce a searchable database that will capture data using the two data sources you now have: the printed an online versions of CSIRO’s Gulumoerrgin calendar. You may supplement this with relevant data you may find online.’
3. Ask students to examine the [colour-printed version of the calendar](https://publications.csiro.au/rpr/download?pid=legacy:377&dsid=DS1" \t "_blank).
4. Introduce students to the [interactive online version](http://www.larrakia.csiro.au/#/calendar/balnba).
5. Ask students to begin by creating a simple table listing a number of events for each season, using pen and paper.

## Learning map and outcomes

This project allows students to examine and organise accurate data that is presented qualitatively, originates from Aboriginal traditional culture and is based on firsthand observation. Students learn how best to present the data to meet the research needs of school students.

They develop preliminary specifications and consider the reliability, user-friendliness, portability and robustness of their solution.

You could also focus on the skillset and mindsets that learners mind need to adopt and use during this project, this ties in with the [Creative and Critical Thinking Capabilities](http://www.australiancurriculum.edu.au/generalcapabilities/critical-and-creative-thinking/introduction/key-ideas).

## Learning input

1. Distribute [colour copies of the calendar](https://publications.csiro.au/rpr/download?pid=legacy:377&dsid=DS1" \t "_blank).
2. With the students, examine the printed, colour version of the calendar.
3. Through discussion with the class, establish elements of a preliminary specification for the database. You could consider using no‐hands up here and the pose, pause, pounce, bounce strategy.
4. Advise students that you will now further explain the elements of the database specification. As you do this, they should record aspects they will need to address when developing the specification themselves. Continue with the instructions below.

**Database specification elements: what to address**

* **Scope and purpose**  
  Define the database’s purpose(s). Be specific about the functions the database must perform and who the users might be (for example Geography teachers and students, anthropologists, university students). This definition should details the features and functions of the deliverables your project will produce. It should answer the question of what is being produced rather than why or how it will be produced.
* **Boundaries**  
  A project can grow bigger and bigger. Set a limit on how much you hope to achieve in the time available.
* **Solution alternatives**  
  Consider if the objectives could be met by some other solution. Is a database the best way to fulfil the purpose?
* **Entities**  
  Identify the entities about which information will be collected (for example, weather, animals, plants, activities, calendar months, seasonal markers, trees, fish). For each of these entities, list the types of information needed. Note: It is important here to develop careful ways of classifying entities.
* **Data types and data acquisition**  
  Consider what data types are expected. The data provided contains audio, video, images and text. The interactive calendar has additional information in audio buttons beside each season’s name. How will you collect and classify all this data?
* **Relationships**  
  Provide background descriptions and images for various animals and plants. Consider whether these will be linked from another table. Use a diagram to describe how each entity above relates to other entities (for example, ‘an animal may belong to one or more seasons’, ‘a season contains one or more calendar months’.
* **Functional requirements**  
  Work out the functional requirements (for example, speed of processing, ease of ability to add data, the quality of reports, user- friendliness).  
  Consider the user interface: how it should look and operate, navigation, searching, adding new records, updating existing records.
* **Non-functional requirements**  
  For example, consider how the requirements of reliability, user-friendliness, portability and robustness could affect the solution.
* **Data accuracy**  
  Consider the accuracy of this data. Is it kept up to date? Who will be responsible? Do they have a stake in the accuracy of the data? What are the risks associated with incomplete or inaccurate data?
* **Reports**  
  Describe any reports that are required. This would include listing the specific information to be contained in each report, as well as details of any calculations, sorting, grouping or filters to be applied to the data.   
  Users of reports are the best people to decide such things.
* **Security**  
  Think about whether access to your data needs to be restricted in any way.
* **Software and hardware**  
  Consider what the requirements for these will be.

## Learning construction

1. Invite a Geography teacher to a class interview. Ask the teacher to familiarise themselves with the interactive online calendar before the visit. Give the teacher an advance list of questions relating to user requirements.
2. State before the Geography teacher and the class the**need**: ‘Although there is much data in these calendars and it is attractively presented, it is very difficult to search.’
3. State that the student **task** is to design a database or other suitable solution using the data available in the CSIRO Aboriginal seasonal calendar for the Gulumoerrgin (Larrakia) language group.
4. Students complete a **Problem statement** and a **Table of requirements**, each marked either as functional or non-functional.  
   * Examples of functional requirements include increasing the speed, quality, accuracy and completeness of various queries.
   * Examples of non-functional requirements include reliability, interface design, ease-of-use, portability.
5. The class-members interview the guest Geography teacher (who had been given an advance list of questions relating to user requirements) about what their requirements might be of a database (or other solution) that uses the data available in the CSIRO Aboriginal seasonal calendar for the Gulumoerrgin (Larrakia) language group.
6. Students form pairs and produce a **specification report** using each of the headings in ‘Learning input’, above.
7. Working in pairs, students list all the tasks involved in producing both clear specifications and a prototype. Assign specific roles to each student in the pair.
8. Student pairs design and populate their databases.
9. Students prepare a questionnaire for users.

## Learning demo

Students test their prototype on a pre-determined set of users and collect feedback.

## Curriculum links

| Links with Digital Technologies Curriculum Area | |
| --- | --- |
| **Strand** | **Content Description** |
| **Processes and Production Skills** | Define and decompose real-world problems with design criteria and by interviewing stakeholders to create user stories [(AC9TDI10P04)](https://v9.australiancurriculum.edu.au/f-10-curriculum.html/learning-areas/digital-technologies/year-9_year-10/content-description?subject-identifier=TECTDIY910&content-description-code=AC9TDI10P04&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=1&strands-start-index=0&subjects-start-index=0&view=quick). |

## Assessment

Note: learning criteria are cumulative.

|  | **Quantity of Knowledge** | | | **Quality of Understanding** | |
| --- | --- | --- | --- | --- | --- |
| **Defining and decomposing a real-world problem** | No evidence of understanding | Student is able to create a basic database given real-world data | Student is able to write a problem statement and a table of requirements with each marked either as functional or non-functional | Student is able to design and populate a database that addresses their stated specifications | Student is able to test their database with users and successfully modify it to better address user needs |
| **Optional Score** | 0 | 1 | 2 | 3 | 4 |