

Activity

GROW YOUR OWN

Build important skills as a scientist: grow a plant from seed and make careful observations of the process, recording these clearly.

what should I do?

Let Nicola Davies explain...

Visit the Authorfy website and discover their 10 Minute Challenges page:

<https://authorfy.com/10minutechallenges/>. Scroll down to find Nicola Davies. Those of you who have read some of Nicola's books will know she's particularly interested in biology – studying living things. She has recently written *Grow: Secrets of Our DNA* (2020), which is about how and why living things grow based on their genetic codes.

In this video, Nicola sets a fun 10-day challenge – 'to grow something and record the results'. Watch the video! (If you have trouble playing it, try refreshing the page and/or check your browser – we find it tends to work best in something like Chrome.)

She tells us, 'Some of the first and most important skills of a scientist are to look, and record, and think, and ask questions.'

That's what you're going to do!

Choose your plant(s)

First, you'll need to plant some seeds. Cress and mustard grow very quickly and you can have fun designing containers for them to sprout in, e.g. can you draw funny faces on eggshells so once your seeds have grown, the shells will look like people with green hair?! You may want to try planting a few different things so there is always something for you to look at and write about: marigolds and sunflowers grow quite quickly, or you might want to try some simple fruit and vegetables such as radishes, tomatoes, strawberries. You can grow some flowers from bulbs, e.g. hyacinth, and watch the roots develop. Be prepared to patiently wait for some plants though!

Nicola suggests growing some easy things you may have lying around at home:

- packet of vegetable seeds;
- the pips from an orange;
- dried (not tinned!) beans.

Make sure you find out the best things to try growing at this time in the year. Will you plant indoors or outside? In a pot or straight into the ground? Talk about this with someone and do a bit of research before deciding.

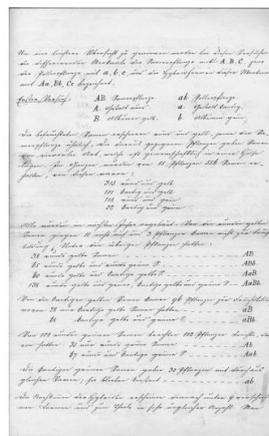
Watch and record

Your challenge is to watch this growing process very, very carefully and over a period of time record the changes that you observe, no matter how tiny. Nicola says, 'write them down; make drawings; ...try and measure the size of little shoots...'

Every day, make time to look and write. What is different from the day before? Even if nothing seems to change in the first few days, write this down and describe what you see; perhaps complete some drawings.

Think about...

- ...the **vocabulary** you may need to use. In order to be clear, you will want to choose the 'proper' words to describe what you observe. Collect a bank of useful terms to help you talk about plants, e.g. root, shoot, tendril, stalk, stem, petal, carpel, etc. You may want to investigate some synonyms for colours too – greens could be useful! - and make sure you know exactly what shades they suggest; not all words for green mean the same.



Mendel's manuscript; the middle part of his work on peas – image from <https://www.agriculturejournals.cz/publicFiles/124110.pdf>

- ...what would be the best **units of measurement** to use – you need to keep to the same choices throughout so as not to confuse anyone.
- ...**recording details** such as the date and time of each observation; this will be important if you're aiming to sound like a scientist. Be precise!
- ...how to **set out your notes**. Will you need numbered points? Where are labelled drawings best placed? Might subheadings for different points in the growing process help organise your observations?
- ...getting into the habit of **asking questions daily** and writing these down, then going back and adding to them if and when you begin to get some answers or have more questions.
- ...**the style you will write in**. Do you want to be a bit more chatty, keeping this as a personal notebook with rough sketches and your thoughts included as well as the more 'scientific' notes? Will you try to sound like a knowledgeable expert?

Share your work

How might you also share your work with your friends and your teacher(s)? Can you film yourself reading your writing, or take photographs, then email or upload to a shared area? Could you create a copy of your work to post?

You may even be able to bring your plant into school, eventually, and add it to other people's in a nature area, or collect them on a classroom windowsill for everyone to marvel at and enjoy!

You can tweet what you've been up to using the Twitter handle @BabcockLDPEng and the hashtag #BabcockEnglishAtHome.

IMPORTANT: If you decide to share your finished work publicly, just remember everything you have been taught about staying safe online, and do check with the person who looks after you before posting anything.

Things that
could help me

The California Academy of Sciences has some useful advice for keeping Science notebooks: <https://www.calacademy.org/educators/lesson-plans/introduction-to-scientific-sketching>. Here, you can view a PowerPoint to learn some good rules for scientific sketching: <https://drive.google.com/file/d/0B5MCdB3zH82pdXFHb1dabkFacVk/view>, as well as a few examples. You might want to ask your teacher or a parent to explore some of these ideas with you.

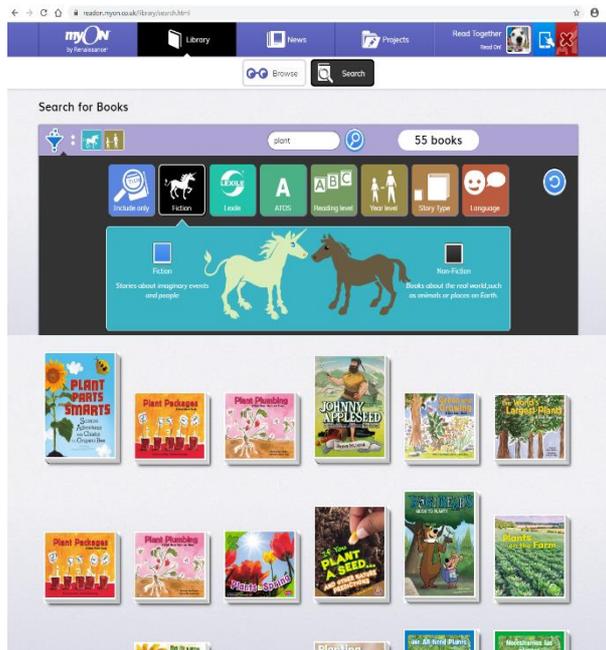
BBC Bitesize has some nice pages to help you revise your understanding of plants at <https://www.bbc.co.uk/bitesize/topics/zpxnyrd> (KS1) and learn a little more at <https://www.bbc.co.uk/bitesize/topics/zy66fg8> (KS2), or find out more about adaptation, inheritance and evolution at <https://www.bbc.co.uk/bitesize/topics/zvhhvcw>.

You can find a good online dictionary at <https://www.collinsdictionary.com/>.

Change it up!
...Go further!

- A) Explore Nicola's website to discover more about her and her books: <https://www.nicola-davies.com/>. She has also written a little about her new book here: <http://fcbg.org.uk/grow-secrets-of-our-dna/>
- B) Find out about Johann Gregor Mendel (1822–1884) and his experiments on pea plants.

- C) Browse for online books on growing things, and enjoy finding out more about plants. Visit <https://www.babcockidp.co.uk/improving-schools-settings/english/home-learning> for links, e.g. to MyON, where you can find 1,029 books on Life Science & Plants: <https://readon.myon.co.uk/library/browse.html?category=53> (free to access during the coronavirus crisis). You can search for non-fiction by year group, using a keyword, e.g. 'plant' or 'DNA':



Take a look at *Planting Seeds* by Kathryn Clay (R), or *Green and Growing: A Book About Plants* to find how plants are the same as and different from one another (Y1).

Double Helix: How an Image Sparked the Discovery of the Secret of Life by Danielle Smith-Llera is suitable for older children, recommended for Y6-10s who want to find out more about DNA. (You can choose to have the books read to you if you'd prefer.)

- D) There is lots of other writing you can have a go at:

Instructions - When you plant your seeds or bulbs (...or seedlings!), make a note of everything you do. You could even get someone to film you so that you don't miss a thing! If you think about the details of each little action, you should then be able to write some really good instructions to share with someone and help them to plant something too. Things to remember:

- Provide an equipment list so the person can gather all they will need before they begin planting.
- Number each step clearly and write about what to do in a sensible order.
- Use adverbs and adverbial phrases to explain where and when and how someone should perform an action, e.g. gently, carefully, with a finger,... once it is full,... in the centre of the pot,...
- Think about whether diagram or photographs would help your reader to understand even better. What caption could you write for each one?
- Include extra advice or warnings or further explanation if you need to, e.g. dos and don'ts; a short introduction or conclusion about the plant that is being grown.

Recounts – These come in many different forms and you could have a go at a few of them! Think about what you might include in and how you could write...

- A series of **diary entries**. Diaries tend to be personal and used to record your own thoughts and feelings about things that have happened during the day. You might want to change this up though: pretend to be a world famous gardener, a Victorian botanist, an alien exploring life on Earth...! How would these write differently about the growth of a plant? Think about the vocabulary and style of sentence they might use. How friendly or distant would they sound? How formal or informal would their language choices be? etc.
- **Letters** – from whom to whom? Again, you could write in role and maybe include a letter in response so you create a whole chain of letters going back and forth between different people discussing plant growth!
- **Report** – Can you just retell what you did to someone else so they know how much fun planting seeds and watching them grow can be?
- **Newspaper report** – Once you've read a number of example of newspaper reports to get a better idea of their content and style (this is not easy to copy!), try

reporting the planting of your seeds as the most sensational piece of news ever!
Who might give you a soundbite to quote?

Poems – Could you write one or several different poems describing different points of the plant's growth? Should they be descriptive? Funny? To be enjoyed quietly or performed aloud? Don't forget to fully explore all the vocabulary choices you could use.

...What else can you think of?

Notes for
parents and
teachers

The idea of growing something is a simple one that could lead to some lovely topic-based work with great Science and Art links, lots of associated reading, and plenty of opportunities for writing in many different forms. It is something children can be asked to do whether learning at home or in school; there may even be an area in school where plants can at some point be brought in from home and replanted to join everyone else's (unless you choose to grow something like mustard or cress!).