

The teachFASTly.com resources are not intended as a complete curriculum. The activities are designed to be woven into your existing teaching. This Quick Stop Lesson Plan is therefore not a single lesson plan, but rather a quick way of exploring the themes of an Activity Map. It includes one Discover activity, one Delve activity, and one Debrief activity. Together, these may take more than a class period, and you may want to add other activities between them. For more information, visit www.teachfastly.com.

Homework

Assigning homework is such a basic, everyday practice for most schools, that it often goes unexamined. This Activity Map invites reflection on the purposes of assigning homework to students, and offers resources for expanding the possibilities of what homework could contribute to their learning experience.

Teachers assign homework for many reasons. A common feature of most homework tasks is that students are expected to complete them alone. What if the design of homework activities could contribute to normal subject learning, but not be done in isolation? What if homework could strengthen relationships and connections inside and outside the family, engage students in making creative connections in their thinking, promote the practice of virtues, and deepen learning about faith and science?

These are the questions explored by the activities in this Activity Map. The activities are intended to be seeded into your curriculum occasionally, throughout the year. They can act as a supplement to more content-focused teaching and offer an opportunity to bring other classwork into the context of relationships.

This Quick Stop Lesson Plan on **Homework** contains the following activities and attachments from www.teachfastly.com, which are combined for your ease of use in a downloadable ZIP file:

DISCOVER Activity: Discussing Science and Change

Activity Attachment

- *Discussing Science and Change Handout*

DELVE Activity: Interview (Science)

Activity Attachment

- *Interview 2 Slideshow*

DEBRIEF Activity: Home Demonstrations

Activity Attachments

- *Home Demonstrations Handout*
- *Gracious Interviews Handout*

DISCOVER

Activity: Discussing Science and Change

Time: Extended

In Brief

This homework activity can be used to support work in class on the nature of science. It engages students in discussion with an adult about changes in scientific understanding.

Goals

Students will discuss with an adult the nature of science, and the experience of changes in understanding brought about by new knowledge.

Students will practice representing fairly the ideas of an adult conversation partner.

Thinking Ahead

Use this short assignment to get students talking with a parent or another adult about the first few days of school and what they've been learning in science class. If you plan to regularly involve parents and other adults in homework activities, it is advisable to communicate with them early in the school year about why this is happening, so that expectations are clear. (See the Activity Map on Engaging Parents.)

This assignment should be given following an in-class discussion of the nature of science (see the Activity Map on Faith and the Nature of Science). This activity makes connections in two ways between learning about the nature of science and learning about virtues:

- It includes reflection on how humility might be related to the nature of science.
- It asks students to practice listening well and representing another person's ideas fairly, skills that are relevant to both science and virtue.

Consider how to reinforce these connections in your regular classroom practices. Do students get opportunities to check whether they are listening well and representing others' ideas fairly? Do they see a practical connection between virtue and learning science?

Once students recognize that science is a body of knowledge that is continually changing, rather than a collection of immutable facts, as it is often perceived, they are ready for this assignment.

Preparing the Activity

Needed:

- A copy for each student of the **Discussing Science and Change Handout**

Teaching the Activity

In connection with work in class on the nature of science (see the Activity Map on Faith and the Nature of Science), give students copies of the **Discussing Science and Change Handout**. For homework, ask them to complete this with an adult conversation partner.

Take time in class to prepare students for this task, emphasizing the following points:

1. Students can complete the assignment with any adult. Encourage students to find someone who is willing to have a thoughtful and respectful conversation with them. It may be best if students can work with an adult who knew them as a young child (such as a parent), so that the adult can help them think of misconceptions they had when they were younger.
2. Explain that one purpose of the assignment is to discuss the nature of science as an on-going process of inquiry, rather than a fixed set of findings. Another purpose is to practice respectful discussion, good listening, and fair representation of others' ideas. Let them know that they will need to have their adult conversation partner look over and sign their notes. Students should also be aware that the handout asks the adult whether their ideas have been represented well.
3. Conduct a brief discussion in class of some things adults might mention as having changed during their lifetime. Some adults may need prompts from their student to arrive at examples, so you need to prepare students well. Examples might include what they were taught about the number of planets, or about whether dinosaurs had feathers, or about more general matters, such as use of household chemicals, health risks, or our effects on the environment. Having a few ideas might enable students to offer a prompt if their adult partner is stuck for ideas; however, students should listen first, and only offer help if needed.
4. Make sure students notice that the first question should be completed ahead of their conversation with an adult. Optionally, you could have students complete this part in class.

Once students have had their conversations with an adult, split the class into small groups and have them discuss their findings together. Ask each group to pick one or two students who can share with the class what they wrote for #5 (on the **Discussing Science and Change Handout**). Some examples may be humorous, but watch out for ridicule—emphasize that we have all left ideas behind. Ask students to reflect on any reluctance they had sharing their childhood misconceptions with their peers. Was it a bit humbling for them to share? Ask how this relates to the nature of science—how might humility be needed in the practice of science (e.g., when new results undermine current convictions)?

Finally, reflect briefly, but explicitly, on how faith can relate to science learning, both in terms of thinking about how faith ideas relate to scientific concepts, and by leading us to focus on how science learning, like everything we do, lives in the context of our relationships with those around us. Faith calls us to inquiry into truth, as well as to practice love for others and to honor them in our practices.

DELVE

Activity: Interview (Science)

Time: Extended

In Brief

This activity aims to help students think about how to ask thoughtful and open-ended questions when discussing faith and science issues, and also to engage students with the wider community around these topics. It adds a focus on how those who work in the sciences feel supported by faith communities. This activity requires students to interview someone in a scientific career, in order to hear his or her perspective on ideas related to science.

Goals

Students will learn how to ask thoughtful, open-ended questions of others about faith and science.

Students will learn the views on faith and science held by community members in scientific careers.

Thinking Ahead

The learning involved in this activity comes as much from the process of thinking about and crafting the questions as from the interview itself—both have importance. In this activity, an additional theme is present: students are asked to find out whether people working in scientific careers feel welcomed and supported by believers and faith communities. This aspect opens opportunities for students to learn and practice respectful interviewing and dialogue about faith and science in the wider community.

Preparing the Activity

Needed:

- Slides from **Interview 2**

Teaching the Activity

Inform students that they are going to interview someone who works in a scientific career. Tell them that the goal is to learn how that person thinks about the relationship between faith and science. Tell them that their first task will be to design appropriate and engaging questions. Explain that they want to ask questions that:

- will prompt the interviewee to share more extended ideas, rather than leading to a simple yes or no answer
- will communicate openness, and not be worded in such a way that the question tells the interviewee what the correct or expected answer is
- will not imply hidden premises (such as that science and faith must be in conflict)

- will prompt concrete ideas, rather than being so broad that the interviewee does not know where to begin
- will explore something interesting in relation to faith and science

Use the first slide of **Interview 2** to prompt a class discussion concerning helpful and unhelpful questions. Move through the questions on the slide, and ask students to discuss briefly with a partner whether the question is helpful or unhelpful, and why they believe this is so. Then draw the class back together to discuss their conclusions, either after each question, or after allowing time for partners to work through all the questions.

- What do you think about faith and science? (Although this is open-ended, it is probably too vague and general to elicit very good answers.)
- How do you think the Bible and science are related? (Helpful—open interest in finding out something that might be relevant to evaluating other answers.)
- Why don't scientists believe the Bible? (Unhelpful—assumes that scientists don't believe the Bible, when according to surveys many of them do.)
- Does science ever challenge your faith? (Helpful—open interest in finding out something that might be relevant to evaluating other answers.)
- Where has your own knowledge of science come from? (Helpful—open interest in finding out something that might be relevant to evaluating other answers.)
- Do you think the Bible is true? (Unhelpful—invites a yes or no answer, rather than opening conversation.)
- Do you believe the Bible is true, or do you think science has all the answers? (Unhelpful—offers only two choices, implies a necessary conflict, and forces the interviewee toward one answer.)
- Do you think science can give evidence for or against God? (Helpful—open interest in finding out something that might be relevant to evaluating other answers.)
- How do the “heavens declare the glory of God”? Now that we know more about the stars and the heavens, does that change how they declare God's glory? (Helpful with the follow-up question—open interest in finding out something about an important faith/science question.)
- What advice would you give to a Christian studying or working in the natural sciences? (Helpful—open-ended question that allows the interviewee to share what is important to him or her.)
- Do you believe God created the world in six days a few thousand years ago, or do you believe that it all happened through evolution, without God? (Unhelpful—these are not the only two possibilities, and the question tries to force a person toward a detailed position they may not hold.)

Once you are confident that students understand some of the main differences between helpful and unhelpful questions, show Slide 2. In pairs, have students design their own set of eight

to ten questions to use in their interviews. Remind them that they need to find some concrete ways of asking about these broad topics. Let students know that they may include a question or two about a specific issue that interests them. Have each student turn in his or her completed list of questions for you to evaluate. Checking students' questions at this point maximizes their learning from the eventual interview, while also ensuring interviewees' time is well-used. Once you have approved the students' questions, they can move onto the interview phase.

Ask students to identify a person in a scientific career whom they can interview. When they have chosen an appropriate subject, they should schedule a time to interview him or her. Tell students to communicate the purpose of the interview clearly when they contact their subject. Spend some time in class reviewing successful interviewing behaviors that communicate respect and open listening, as well as some that do not. Let students know that the interview can be semi-structured; rather than asking their questions one by one in a rigid sequence, the students can have flexibility. They can listen for interesting ideas, and pursue those with follow-up questions, allowing their interviewee's knowledge and interests to influence the direction of the conversation.

Students should interview in pairs, splitting the question-asking time between them. Working in pairs will require fewer interviewees, lead to better note-taking, and allow students to compare notes after the interview. Instruct students that both should take notes during all parts of the interview. After the interview, each student should write up an account of the interviewee's views and share it with the interviewee in order to confirm whether the student has represented the interviewee's thoughts accurately and fairly. Have students obtain a note to this effect from their interviewee.

In class, join the pairs of students into larger groups of four or six, and allow time for them to share what they heard during their interviews, and discuss similarities and differences. Conclude with a whole class discussion in which students share what they found interesting or surprising. Have each student turn in his or her written account of the interview.

Finally, reflect briefly, but explicitly, on how faith can relate to science learning, both in terms of thinking about how faith ideas relate to scientific concepts, and by leading us to focus on how science learning, like everything we do, lives in the context of our relationships with those around us. Faith calls us to inquiry into truth, as well as to practice love for others and to honor them in our practices.

DEBRIEF

Activity: Home Demonstrations

Time: Extended

In Brief

This activity reviews in-class science learning and invests in strengthening relationships between students and a parent or another adult. It engages students in conducting demonstrations at home and communicating graciously with a parent or another adult about the results.

Goals

Students will conduct and explain a scientific demonstration with an adult audience.

Thinking Ahead

These short demos or experiments bring in-class learning home and encourage conversations between students and a parent or another adult.

Be sure to give multiple nights for students to complete this assignment, to allow for a convenient time to be arranged for conducting the activity.

In preparation for this activity, consider how you imagine the role of parents or adult guardians in relation to students' learning:

- Are parents or adult guardians there to help monitor deadlines?
- Are they potential sources of complaints, who must be kept happy?
- Can key relationships provide a rich context of learning?
- What do school practices imply about the relational context of learning?

If you plan to regularly involve parents and other adults in homework activities, it is advisable to communicate with them early in the school year about why this is happening, so that expectations are clear. (See the activity map on Engaging Parents.)

Preparing the Activity

Needed:

- A copy for each student of at least one activity from the **Home Demonstrations Handout**
- A copy for each student of the handout on **Gracious Interviews**, if you choose to incorporate it

Teaching the Activity

The downloadable file **Home Demonstrations** contains instructions for two demonstration experiments that can be conducted at home with readily available materials. This activity could easily be extended to additional experiments and demonstrations. The demonstrations are included as a way of reviewing learning covered in class; home demonstrations like this could also be used to preview an upcoming topic.

As you give students instructions for this assignment, focus explicitly on how important it is for them to be gracious in the conversation they have with their parent or another adult. Ask students to name specific behaviors that could communicate lack of graciousness, such as eye-rolling if predictions seem foolish, or gloating if their prediction was more accurate than that of the adult. You can use the handout on **Gracious Interviews** to support this. If students already know the outcome of a demonstration and the adult predicts incorrectly, what might a gracious response look like? If students are teaching the adult a correct explanation after having learned it in class, how can the student convey that he or she, too, may have initially been incorrect?

Finally, reflect briefly, but explicitly, on how faith can relate to science learning, both in terms of thinking about how faith ideas relate to scientific concepts, and by leading us to focus on how science learning, like everything we do, lives in the context of our relationships with those around us. Faith calls us to inquiry into truth, as well as to practice love for others and to honor them in our practices.