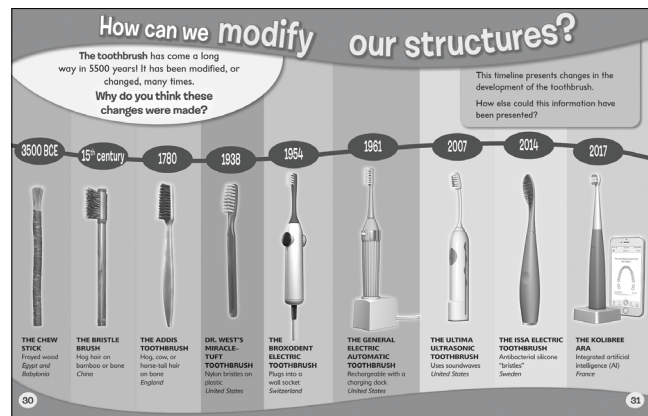


How Can We Modify and Present Our Structures?



Focus: Students use feedback from others to improve their structure and write a collaborative report.

Specific Curriculum Outcomes

Students will be expected to:

- 36.0 identify ways of modifying a structure to increase its strength and stability [GCO 1/3]
- 17.0 communicate procedures and results [GCO 2]

Performance Indicators

Students who achieve these outcomes will be able to:

- consider the contributions and ideas of others
- make modifications to improve their structure
- collaborate on a group report

NOTES:

Attitude Outcome Statements

Encourage students to:

- consider their own observations and ideas when drawing a conclusion [GCO 4]

Cross-Curricular Connections

English Language Arts

Students will be expected to:

- communicate information and ideas effectively and clearly, and to respond personally and critically [GCO 2]
- use a range of strategies to develop effective writing and representing and to enhance their clarity and effectiveness [GCO 10]

Getting Organized

Components	Materials	Before You Begin	Vocabulary
• Student Magazine pages 30–31 • IWB Activity 9	• cellphone • images of telephones over time • groups' TAG Feedback forms from the previous class • students' Science Journals • report-writing materials • poster-making materials	• Gather images of several telephone designs from the past century, either in hard copy or digitally.	• modification • modify

ACTIVATE

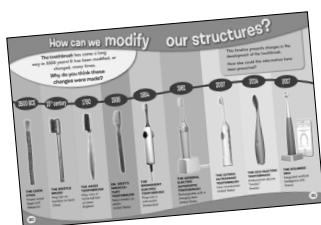
Structures Change Over Time

Display a common structure that has changed over time such as a cellphone. Ask students if telephones have always looked like this. Show them some images of telephones over time, and ask students what they notice (the size and shape of phones have changed; new functions have been added).

History of the Toothbrush

Allow students time to examine pages 30–31 of the Student Magazine. Read the title question aloud to the class: *How can we modify our structures?* Then encourage students to read the text and discuss why they think these changes to the toothbrush were made. Draw out the ideas that change can come as a result of failure or bad design, as a response to changing demand, as an opportunity to use new materials and technology, etc.

Invite students to discuss with a partner other ways the information could have been presented.



CONNECT

TAG Feedback

Tell students that changes or modifications to something often come from outside advice or ideas. Give each group the *TAG Feedback* form that was left for their structure during the Gallery Walk in the last teaching plan. Groups can discuss the questions on the forms and the suggestions for improving their structure then they can then implement any changes they think will make their structure stronger or more stable, and retest the structure.

CONSOLIDATE

Build a Structure (continued)

Step 4: Share your solution and what you learned.

Invite students to share their revised structures and have a whole-class discussion about some of the modifications the groups made to their structures. List these on a chart as they are described. Modifications may include

- **making the foundation larger or reinforcing it,**
- **adding cross-beams to create triangles,**
- **reinforcing joints, and**
- **shortening posts and/or beams.**

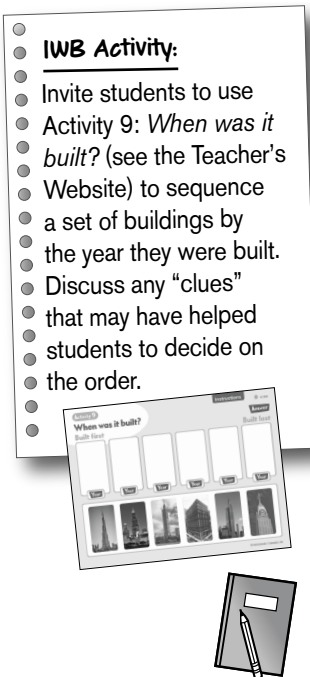
Group Reports

Have groups revisit the notes they wrote in their Science Journals during the design process. Each student in the group will write a brief report on one or two steps of the process, and then the group will consolidate all reports into one. Students can create reports in any format they choose. Consolidated reports should include the successes and failures the group had, any problems they encountered and the solutions they came up with, and any further suggestions for how to improve the structure.

EXPLORE MORE

Structures Fair

Students can hold a “Structures Fair,” to which they invite other classes and family members. In preparation for the fair, groups may wish to make their structure more attractive (without compromising its strength and stability) and should create one or two posters with information from their combined report. During the fair, students should be available and ready to answer questions about their structure and the process undertaken in its development.



WRAPPING UP THE UNIT



Revisit any remaining questions posted on the I Wonder Wall and have students discuss answers in small groups or with a partner. If there are questions that cannot be answered at the time, these can remain on the I Wonder Wall for students to research independently. Discuss what students have learned about materials and structures, including how they can be described; how their materials, joints, and fasteners are chosen; and how they can be made strong and stable.