

Technology Integration Lesson Plan

SUBJECT AREA: Chemistry

GRADE LEVEL: 10-12

LESSON TITLE: Come Together: An Internet Sampler on Chemical Bonding

TIME FRAME: One to two 90-minute periods

CONTENT OBJECTIVE(S):

1. Define chemical bond.
2. Explain why most atoms form chemical bonds.
3. Identify the properties of ionic, covalent, and metallic bonds.
4. Differentiate between polar and nonpolar covalent bonds.

CONTENT TEKS: §112.45 4D, 6A, 8A, 8B, 8C

NISD PERFORMANCE STANDARD (if applicable): Chemistry IIG

TECHNOLOGY OBJECTIVE(S):

1. Use the Internet to gather information.
2. Record information and paste images in a word processing document.

RESOURCES/MATERIALS:

1. Computer lab or class set of laptops.
2. Internet access.
3. Printer.
4. Student periodic tables (optional, for reference).
5. Student floppy disks (optional).
6. FunBrain.com account (optional, but recommended)

LESSON PROCEDURE:

- A. Students should already have an understanding of atomic structure and the periodic table. Important background concepts: metals vs. nonmetals, electron configuration and stability, periodic patterns in ion charges.
- B. Allow one to two 90-minute periods to complete the [web-based activity](#). Before beginning the activity, briefly review the background topics.
- C. Have students open and save their worksheets to record their responses throughout the activity. If you prefer to have students hand-write their responses, be sure to insert sufficient space for each response before printing a hard copy.

- D. Each hyperlink will open up a separate window to facilitate toggling back and forth between screens. To avoid a large number of open windows, have students close the extra windows after each subtopic.
- E. Before completing the Conclusion (assessment) portion of the activity, students should print a copy of their completed worksheet.
- F. To use the online quiz feature, you will need to set up an account at FunBrain.com (www.funbrain.com/quiz).
 - 1. Click on “Quiz Lab Sign up Now!” and enter the appropriate information.
 - 2. Option 1: Email the [author](#) to request access to the quiz. You need to provide your username and the quiz name “Chemical Bonds – Types of Bonds” in your email. You will then be able to access the quiz by choosing “View & Edit Existing Quizzes.”
Option 2: Choose “Create a Custom Quiz” to create a quiz from scratch using the attached questions or your own set of questions.
 - 3. On the “Come Together” webpage, students will need to enter the Secret Word (you designate this when creating your account) and their name. You will then be able to view each student’s score from the FunBrain website.

ASSESSMENT (TECHNOLOGY & CONTENT):

- 1. Students should score 8/10 or higher on the online quiz to confirm the accuracy of their worksheet information.
- 2. Students will create a product to demonstrate their understanding of the material. This product may be completed at home and does not require use of the computer lab.

Quiz Name: Chemical Bonds - Types of Bonds (Teacher Key)

- 1) In which type of bond are electrons shared between two atoms?
a) ionic
b) covalent
c) metallic
- 2) Which type of bond creates a crystalline structure?
a) **ionic**
b) covalent
c) metallic
- 3) Which type of bond usually forms between two nonmetals?
a) ionic
b) covalent
c) metallic
- 4) Which type of bond is often described as an "electron sea"?
a) ionic
b) covalent
c) metallic
- 5) Which type of bond is characterized by the formation of oppositely charged particles?
a) covalent
b) ionic
c) metallic
- 6) Which of the following is NOT a characteristic of ionic substances?
a) Are usually gases at room temperature.
b) Conduct electricity in solution form.
c) Have high melting points.
d) Usually dissolve in water.
- 7) Which of the following is NOT a characteristic of metallic substances?
a) Malleable and ductile.
b) Conduct electricity.
c) Have low melting points.
d) Are usually solids at room temperature.
- 8) Which of the following is NOT a characteristic of covalent substances?
a) Have low melting points.
b) Sometimes dissolve in water.
c) Form individual molecules.
d) Conduct electricity.
- 9) Why do atoms form chemical bonds?
a) To increase their potential energy.
b) To become more stable.
c) To gain more valence electrons.
d) To obtain a higher electronegativity.
- 10) Select the statement that correctly describes a polar covalent bond.
a) Electrons are shared equally between the atoms.
b) One atom has a greater attraction for electrons (electronegativity) than the other.
c) Partial positive and negative charges are produced.
d) Both a and b.
e) Both b and c.