

LET'S DO CHEMISTRY

Atoms to Atoms Training Guide

TRAINING LEARNING GOALS

By doing and debriefing this activity, learners will develop positive attitudes toward learning about chemistry and cultivate strategies for supporting interest, relevance, and self-efficacy when leading the *Let's Do Chemistry* kit activities with participants.

- Learners will increase their feelings of **interest** in chemistry by exploring chemistry concepts.
- Learners will increase their understanding of the **relevance** of chemistry by exploring the applications of chemistry and connections to everyday life.
- Learners will increase their **sense of self-efficacy** related to learning and talking about chemistry through an interactive game that many have played before.

Learners will explore chemistry concepts, tools, and practices:

- Learners will discuss chemistry related phenomena, technology, and tools that illustrate what chemistry is and what chemists do.

MATERIALS

- One pack of yellow "Atoms to Atoms" word cards
- One pack of purple "Atoms to Atoms" object cards
- Training Guide
- Rules sheet

SAFETY

Always follow and model prudent practices when doing chemistry activities.

Think about:

- What **hazards** exist and what associated risks may arise from these hazards?
- How to minimize **risks** through protocols we have designed into the activities and training materials.
- How **safe practices and protocols** should best be communicated with facilitators, participants, and others.

There are no safety specific concerns with this card based activity. Your institution may have special rules or protocols for chemistry related activities, so check with your facilities staff, safety committee, and/or others. Learn more about safe practices in the *Let's Do Chemistry: Safety Guide* included in the physical kit and with the online digital kit resources.

FACILITATION NOTES

This activity is formatted as a professional training activity for the *Let's Do Chemistry* event training. As the facilitator leading the training you can help model key strategies to that cultivate interest, relevance, and feelings of self-efficacy with participants.

The game is very similar to the popular party game Apples to Apples™. It is a word association game where you choose a word from your hand of word cards that best fits with the object card in the middle. We've called our version "Atoms to Atoms!" Staff, volunteers, and scientist facilitators participating in the training will broaden their ideas about what chemistry is and what chemists do. And have fun!

First, break training participants into small groups with about 4–8 learners/professionals in each group. Divide the object cards and word cards between the groups. If doing this training with a larger group, you can print off more cards, encourage professionals to pair up to choose a word card or play the role of judge in each round, or have a subset of professionals demo the game while everyone else watches.

Game Rules

- Gather 4–8 players together.
- Deal a hand of yellow word cards to every player. Players should all receive the same number of cards. The exact number depends on the size of the group. Try to give everyone at least 3 word cards.
- Place the purple deck of cards face-down in the middle of the group.
- Pick a judge for round one. The judge flips over one of the purple cards and reads it out loud.
- All players, except the judge, choose one of their word cards that they think best matches how they feel about the chemistry-related card. Players place their chosen card face-down in the middle to make a pile.
- Then the judge turns over all the yellow cards in the pile and chooses which one they think fits best.
- **Discuss** as a group why the judge chose that word and why everyone else picked the word that they did.
- If the judge picked your word card, you have won that round! Keep the winning card to track how many rounds you win.
- Pick a new judge for the next round, and play continues as before.
- The game ends when you run out of word or chemistry cards.

Discuss as a group what strategies helped you win a round. Were there things you could do to help or hurt your chances of having your card picked? How did your own values or those of the other players factor into the game?

Discuss as a group how these cards relate to each other. Was there anything surprising about the cards? Anything interesting? If you were to make your own object card what would it be about?

Debrief Discussion

Encourage members of the training to think about how you facilitated this game and how the techniques you used supported learning about what chemistry is and what chemists do.

Ask the groups, “What object cards did you have?” “What word was chosen to associate with that card?” “What did your group discuss? Was there anything surprising, new, funny, interesting...”

Together, think about a group definition for chemistry. You can re-share the project definition from the training slides. And think about what else you might want to add or change.

Chemists are scientists that study: What everything is made of. How different materials behave and change. And how materials interact with each other and combine to make new things. **Chemistry** can help us understand the world around us and solve problems.

As the group is discussing “What is chemistry?” it is valuable to point out that players may have different perspectives related to the object cards, and as a facilitator you do not have to agree with or “correct” them. You can demonstrate this by encouraging the training participants to think about different perspectives connected to the object cards. Are they all good? Are they all bad? How do our personal values shape how we think about, develop, and adopt new technologies and products?

Help highlight connections to interest, relevance, and self-efficacy. How can we support interest, relevance, and self-efficacy in this activity and in the other *Let's Do Chemistry* event activities?

Interest is supported in this activity by exploring the chemistry content. How do the word and object cards help define the topic of chemistry?

Relevance is supported in this activity by learning and talking about applications and uses of chemistry, and connections to everyday life.

Self-efficacy is supported by the open-ended nature of this game. Science and technology are shaped by public values. This game reveals the values and opinions of you and your fellow players. Together, everyone can discuss and explore ideas and choices.

PUBLIC AUDIENCES

This activity can easily be done with public audiences. The game play and rules stay the same, but there are a few important things to keep in mind. If doing this activity with the public, it's important to also consider that some participants may not want to stay for the whole game and others will never leave. (This is true for all of the activities!) You can always move people along by suggesting they explore another activity or exhibit.

Visitors will come in the middle of the activity. Be prepared to quickly deal in another person and briefly explain the game or ask another player to explain the rules. This will happen with other activities and some are easier to handle multiple entries than others.

Young visitors may not understand some of the cards. Try to give them more information, whether it is a definition or something relating the object card to an aspect of their daily lives. Or pair them with an older player or adult.

To reset the activity, just gather up and reshuffle the cards.

An activity training video is available at vimeo.com/channels/nisenet.

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