



Using Peer-Mediated Embedded Instruction to Teach Inquiry Science in an Inclusive Setting

Objective: To teach students to respond correctly to 6th grade science questions across three units on the following topics (a) Technology and Energy, (b) Kinetic and Potential Energy, and (c) Continents and Tectonic Plates, as well as, use a KWHL chart during inclusive inquiry science lessons.

Setting and Materials:

Settings: Inclusion Classroom (General education science classroom at a middle school and students were grouped into 6 groups of 4 or 5 students).

Materials:

- PowerPoint for Peer Training session
- Checklist for Peers to self-monitor their trials
- Sample materials for Peer Training session

Materials for Class Instruction:

- KWHL Chart for students (i.e., K = what do you Know?; W = What do you want to know?; H = How will you find out?; L = what did you Learn?; KWHL)
- Poster sized KWHL Chart for the teacher to display on the white board
- Science Textbook
- Interactive whiteboard or physical white boards for each group (6 groups of 4 or 5 students)
- Vocabulary flash cards on 3 x 5 index cards
- Picture symbol cards for each vocabulary word that included three pictures symbols for each vocabulary word (e.g., kinetic energy: rollercoaster, runner, motorcycle).
- A response board with Velcro to help with peer mediated instruction
- Concept statements with an empty space with a velcro strip to allow students to place the vocabulary word that completes the statement (e.g., _____ energy is the energy of motion).

Content Taught

Teach the skills needed to (a) understand 6th grade science concepts across three units on the following topics technology and energy, kinetic and potential energy, and continents and tectonic plates, (b) participate in an inclusive classroom, and (c) complete a KWHL chart.

Prior to teaching: General Education peers need training on providing embedded instruction to students with disabilities

1. Select students
2. Train peers to embed a minimum of three learning trials per each science response (two science words, two science pictures, two word/picture matches, two concept statements) using constant time delay.
3. Train peers to embed trials to self-monitor science behaviors using a KWHL chart.
4. The training can be delivered using a PowerPoint presentation with slides embedded to allow questions, answers, examples, and guided practice.
5. Students can practice the constant time-delay procedure using sample materials and a checklist to self-monitor trials.
6. Ensure students fidelity during training to ensure they are at 85% accuracy or better.

Teaching Procedures

1. Introduce the lesson for the day by asking the students “What do you know about the topic?” and use the KWHL chart and point to the K part of the chart.
2. Let the student respond verbally, then prompt them to generate more ideas
3. Ask students “What would you like to know about the topic?” using the KWHL chart and point to the W part of the chart.
4. Let the students respond verbally and then prompt them to generate more ideas.
5. Ask the students “How could you find out more information?” using the KWHL chart and point to the H portion of the chart.
6. Let the students respond verbally and then prompt them to generate more ideas.
7. Assign students to cooperative learning groups of 4 or 5 students in each group and one student with moderate intellectual disability and at least one trained peer.
8. Using a zero-second delay, have peers who have been trained point to the section of the chart when you give the direction to the full class (e.g., What do you know about the topic? Find the K column)
9. After two days of following this procedure have peers delay the prompt to 5 seconds, if the students did not go to the portion of the chart after 5 seconds have the peer model by pointing to the appropriate section and remind the student to ask for help if they do not know what to do.
10. Then have peers do three trials within their groups to study science vocabulary and complete concept statements about vocabulary words (e.g., What word completes this concept statement: _____ is the energy of motion? Kinetic energy is the energy of motion.) at a zero second delay.

11. Have the peers use zero delay for two days, then 4-second delay for all days after the first two days.
12. Have trained peers monitor the trials by using the checklist

Evaluation

1. Assessment includes student responses to two science words, two science pictures, two science word/picture matches (i.e., technology, energy, kinetic energy, potential energy, continents, tectonic plates), and two concept statements per unit.
2. Assess student responses on the KWHL chart daily to evaluate student progress.

Lesson Plan Based on:

Jimenez, B. A., Browder, D. M., Spooner, F., & Dibiase, W. (2012). Inclusive inquiry science using peer-mediated embedded instruction for students with moderate intellectual disability. *Exceptional Children*, 78, 301-317.

Common Core Standards:

English Language Arts Standard for Literacy for Science and Technical Subjects (Grade 9-10)

- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics CCSS.ELA-LITERACY.RST.9-10.4
- Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words CCSS.ELA-LITERACY.RST.9-10.7

This Lesson Plan Starter was developed by The National Technical Assistance Center on Transition (NTACT), Charlotte, NC, funded by Cooperative Agreement Number H326E140004 with the U.S. Department of Education, Office of Special Education and Rehabilitative Services (OSERS). This document has been reviewed and approved by the OSERS. Opinions expressed herein do not necessarily reflect the position or policy of the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Department of Education. OSEP Project Officer: Dr. Selete Avoke. RSA Project Officer: Kristen Rhinehart-Fernandez. This product is public domain. Authorization to reproduce it in whole or in part is granted. While permission to reprint this publication is not necessary, the citation should be: National Technical Assistance Center on Transition (2016). *Using peer-mediated embedded instruction to teach inquiry science in an inclusive setting*

