

Science

Why teach science to students with significant cognitive disabilities? All students, including those with significant cognitive disabilities, should have the opportunity to gain wonder and understanding of the natural world and their place in it. For this population, it is this outcome of wonder and understanding that will promote quality of life. For example, wonder about the ocean might lead to a lifelong hobby of whale watching or collecting shells. Increased understanding about the human body might lead to choosing to work in healthcare. To gain wonder and understanding, students need to attain the ability to pose questions and share discoveries about the natural world. In science, these abilities are shaped through learning both the process of inquiry and specific science content. In fact, inquiry becomes a tool for learning science content in a way that promotes the desired outcomes of gaining wonder and understanding in ways that are both self-directed (posing questions) and communal (sharing discoveries). Students with significant cognitive disabilities should have the opportunity for science learning in an environment that promotes inquiry and information sharing. At specific grades, certain content will be of greater priority as specified in the general curriculum. In setting priorities for alternate achievement, what is most important is to be sure that while students gain some content knowledge, they also are increasing their skills to pose questions and share discoveries whatever the content of focus.

Sample Middle School Task Analysis

Science Inquiry Lessons

Science Strand: Earth Science - Water Cycle

Manipulatives: Vocabulary word/picture cards, sponge, water, KWLH chart, assistive technology, Concept Statement on sentence strip with picture symbols for key vocabulary.

What the teacher will do	Materials to Present	What the student will do	Examples of Student Responses
1. Introduce Lesson	Ask wonder question (e.g., I wonder why it rains?)	Interact with materials.	ask questions, touch, look at materials
2. Review Target Vocabulary	Word/picture/object (e.g., Precipitation, Rain, picture symbol of cloud/rain, squeeze sponge with water in it)	Read objective statement for lesson.	verbal answer, text point, velcro, stamp circle, eye gaze, AAC
3. Ask "Do you know what this is?"	Present materials	Answers "I know" or "I don't know"	verbal answer, text point, AAC
4. Fill in K "know" on KWLH chart	KWLH Chart (e.g., I know it is wet)	Fill in	verbal answer, touch, velcro, stamp eye gaze, AAC
5. Ask "What do you want to know?"	Present options	Poses question "I want to know _____"	point, touch, eye gaze
6. Fill in the W "Want to know" on the KWHK chart	KWLH chart (e.g., I want to know why clouds drop rain.)	Fill in	verbal answer, touch, velcro, stamp eye gaze, AAC
7. Ask "What do you think will happen in the experiment, What is your prediction?"	Provide options (e.g., Clouds drop rain when they are heavy.)	choose	verbal answer, circle, touch/point, Velcro, stamp
8. Wait for student to initiate response with materials	Materials	Manipulate	Touch, observe
9. Fill in H "How" on KWLH chart	KWLH chart (e.g., fill "cloud" (sponge) with water)	Fill in	verbal answer, touch, velcro, stamp eye gaze, AAC
10. Conduct Experiment	Materials for experiment	Participate	Touch, observe, stir, pour
11. Read Concept Statement	Concept Statement (e.g., Clouds create precipitation when they are heavy.)	Read/text point	Eyegaze, point, switch
12. Fill in L "Learn" on KWLH chart	KWLH chart (e.g., Rain is a form of precipitation, Clouds get heavy and make precipitation)	Fill in	verbal answer, touch, velcro, stamp eye gaze, AAC
13. Review Experiment Results	Experiment results (e.g., When the cloud had only a small amount of water in it, did it create precipitation? - No)	Choose	verbal answer, circle, touch/point, Velcro, stamp
14. Summarize Concept	Concept statement (e.g., Clouds create precipitation when they are _____.)	Fill in	verbal answer, circle, touch/point, Velcro, stamp

Conceptual Model of Science for Students with Significant Disabilities



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Project MASTERY IES Grant # R324A080014

UNC at Charlotte

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Conceptual Model of Science

Q. What is the goal for learning in science?

A. For this population, the outcome of wonder and understanding will promote quality of life.

Q. Why teach science to students with significant cognitive disabilities?

A. All students, including those with significant cognitive disabilities, should have the opportunity to gain wonder and understanding of the natural world and their place in it.

Q. How is science meaningful to students with significant cognitive disabilities?

A. Wonder about the ocean might lead to a lifelong hobby of whale watching or collecting shells. Increased understanding about the human body might lead to choosing to work in healthcare.

Q. How can instruction in science accomplish this?

A. Instruction in science will include learning the process of inquiry as well as specific science content.

Gain wonder and understanding

To gain wonder and understanding, students need to attain the ability to pose questions and share discoveries about the natural world. In science, these abilities are shaped through learning both the process of inquiry and specific science content.

Posing questions and sharing discoveries

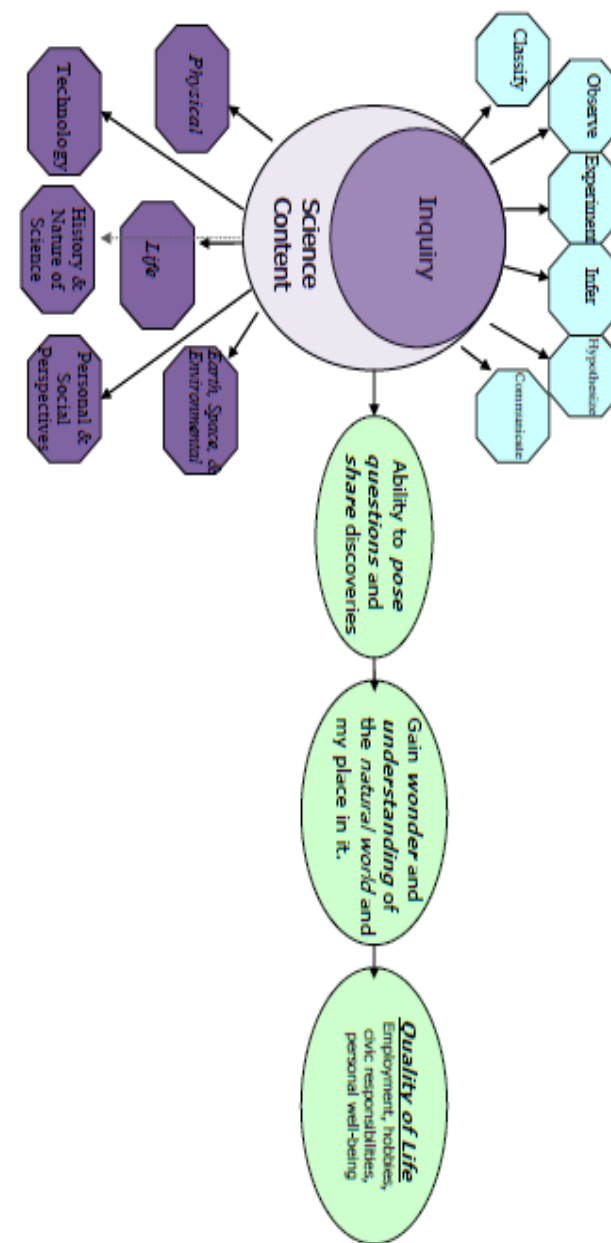
Inquiry becomes a tool for learning science content in a way that promotes the desired outcomes of gaining wonder and understanding in ways that are both self-directed (posing questions) and communal (sharing discoveries).

Inquiry and information sharing

Students with significant cognitive disabilities should have the opportunity for science learning in an environment that promotes inquiry and information sharing.

Science Content

At specific grades, certain content will be of greater priority as specified in the general curriculum. In setting priorities for alternate achievement, what is most important is to be sure that while students gain some content knowledge, they also are increasing their skills to pose questions and share discoveries whatever the content of focus.



For Science, "It's about the question."