Project Bright IDEA 2: Interest Development Early Abilities

A Jacob Javits Gifted Education Program
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Concept: Change

Topic: What motivates people to change?

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Grade Level: 4

Big Ideas Manifested

Topic – What motivates people to change?
Text – *Now and Ben*
Author – Gene Barretta
Publisher/Date

Concepts	Themes
Progress Change	Change is inevitable Inventions Technology Necessity
Issues or Debates	**Problems or Challenges**
Why do we change? Change: positive or negative? Preservation vs. Growth	Courage to change Risk taking Cost effectiveness Acceptance of change
Processes	**Theories**
Decision Making Problem Solving Research Making Connections Analysis	Change is necessary for growth Change generates additional change Changes can be political, economic, or social
Paradoxes	**Assumptions or Perspectives**
All inventions have already been invented. We have all that we need. Change is the only constant.	"When you're finished changing, you're finished." Ben Franklin Change takes time. Change can be intentional and unintentional.

Concept: Change
Topic: What motivates people to change?

Suggested Text Selection(s): *Now and Ben* by Gene Barretta

Look, Listen and Identify:

Intelligent Behaviors

   Story Focus: Persisting; thinking flexibly; striving for accuracy and precision; questioning and problem posing; applying past knowledge to new situations; gather data through all senses; creating, imagining and innovating; responding with wonderment and awe; taking responsible risks; remaining open to continuous learning.

Student Activities: Persisting; listening with understanding and empathy; thinking flexibly; thinking about your thinking; striving for accuracy and precision; questioning and problem posing; applying past knowledge to new situations; thinking and communicating with clarity and precision; gather data through all senses; creating, imagining and innovating; taking responsible risks; thinking interdependently; remaining open to continuous learning.

NC Standards:
Social Studies:
7.02 Analyze the effects of technology on N.C. citizens, past and present.
7.04 Analyze the effects of technology on N.C. citizens today.
7.05 Identify the advantages and disadvantages of technology in the lives of N. C.
Language Arts
3.05   Analyze and integrate information from one or more sources to expand understanding of text including graphs, charts, and/or maps.
3.06   Conduct research for assigned projects or self-selected projects (with assistance) from a variety of sources through the use of technological and informal tools.
4.02 Use oral and written language to present information and ideas in a clear, concise manner, discuss, interview, solve problems, make decisions.
4.03 Make oral and written presentations using visual aids with an awareness of purpose and audience.
4.05 Use planning strategies to generate topics and organize ideas.
4.06 Compose a draft that conveys major ideas and maintains focus on the topic with specific, relevant, supporting details by using preliminary plans.
4.07 Compose fiction, nonfiction, poetry, and drama using self-selected and assigned topics and forms.
4.09 Produce work that follows the conventions of particular genres.
4.10 Use technology as a tool to gather, organize, and present information
Science
3.02 Describe and demonstrate how magnetism can be used to generate electricity.
3.03 Design and test an electric circuit as a closed pathway including an energy source, energy conductor, and an energy receiver.
3.04 Explain how magnetism is related to electricity.
3.09 Recognize lightning as an electrical discharge and show proper safety behavior when lightning occurs.
Math
3.02 Solve problems involving perimeter of plane figures and areas of rectangles.

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4.01 Collect, organize, analyze, and display data (including line graphs and bar graphs) to solve
        problems
5.01 Identify, describe, and generalize relationships in which: quantities change proportionally
and change in one quantity relates to change in a second quantity.

Local Pacing Guide Timeline:

Thinking Skills Focus:

Topic Focus:
What motivates people to change?

Concept Focus:
Change

Overarching Generalizations:
Need drives change.
Change is necessary for growth.

More Complex Generalizations (Two or more concepts):
Change can be motivated by a variety of factors.
Change can be intentional or unintentional.

Directions for Teachers:

Display sentence strips with the generalizations. Discuss topics and vocabulary words needed to
gain a deeper understanding of the conceptual lessons.

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Suggested Topics for Discussion:
- Technology – past and present
- Life in North Carolina
- Ben Franklin
- Inventors and inventions

Suggested Vocabulary Words for Discussion:
- Change
- Invention
- Necessities
- Inspiration
- Motivation
- Flexibility
- Creativity
- Community
- Technological Advances
- History
- Perspective
- Time Capsules
- Environmentalist
- Textile
- Timber

A Six-Step Process for Teaching Academic Vocabulary Terms:

1. Provide a description, explanation or example of the new vocabulary term.
2. Ask students to restate the description, explanation or example in their own words using complete sentences.
3. Ask students to construct a picture, symbol or graphic representing the term or phrase.
4. Engage the students periodically in activities that help them add to their knowledge of the terms in a booklet that they have created (Keep it simple.)
5. Periodically ask students to discuss the terms with one another (**Think** of your favorite vocabulary words from the unit; **pair** with a vocabulary buddy, **share** by discussing the vocabulary terms with your vocabulary buddy.) Teacher should model process each time before students do the Think, Pair, Share with Vocabulary Buddy.
6. Construct games to periodically involve students and allow them to play with the terms.

Robert Marzano

Vocabulary Extension:
- Spider Strategy

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- Vocabulary Whirl
- Three Way Tie
- Group Think
- Metaphoric Thinking

Select a generalization(s) and essential questions. Introduce one or more of the following topics:

Six Facets of Understanding

Facet 1 – EXPLANATION
What is change?   Using picture cards of inventions/technologies, show the progression, relationships, and diversity from an original invention.
Facet 2 – INTERPRETATION
Why does change matter?   Predict what human life would be like without electricity.
Facet 3 – APPLICATION
How might motivation help us to change?   Think of in invention or technology. Why do you think that invention was created?
Facet 4 – PERSPECTIVE
What are the possible reactions to change?   Research inventions and/or technologies used in NC and debate which one has had the biggest influence, intentional or unintentional, on NC.
Facet 5 – EMPATHY
How do changes in technology affect people's livelihoods?   Students role play as if they are the employees of a technology company. The company needs to convince the Governor of N.C. to allow them to build a new facility here which will create positive changes, including political, economic and social changes for NC citizens. Students should predict possible concerns by the Governor of N.C., the teacher, in order to address them with confidence.
Facet 6 – SELF-KNOWLEDGE
What changes can I expect in my life?

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Predict how changes in technology will affect you. What are the positives and negatives of these changes? Create a product that expresses your perception of change.

Language Arts: Task Rotation Learning Activities
4ᵗʰ Grade
All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

Mastery Learner (A) **Sensing- Thinking**	**Interpersonal Learner (B)** **Sensing-Thinking**
Create a display that shows the inter-relationships between 5 of the inventions Ben Franklin created. **V__L* S*_M__B__P__I__N__**	Identify the personality characteristics of Ben Franklin. What do you think motivated Ben Franklin to invent? What do you admire most about him? Which characteristics do you think made him a great inventor? Write a letter to Ben Franklin complimenting his accomplishments. **V_*_L__S__M__B__P__I_*N__**
Understanding Learner (C) **Intuitive-Thinking**	**Self-Expressive Learner (D)** **Intuitive-Feeling**
Research changes that occurred as a result of Ben Franklin's inventions. Based on what you learned, identify the most important invention Ben Franklin invented. Defend your choice in a debate, a pamphlet, editorial or commercial. **V_*_L__S__M__B_*_P_*_I_ *N__**	Predict what the world would be like without electricity. OR If you could change one of Ben Franklin's inventions, which one would it be and how would you change it? What the effects be of your decision? Create an illustration. **V__L_*_S_*_M__B *__P__I__N__**

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Real World Connections With Products:
Analyze, evaluate, identify, examine, decision-making, researching, predicting, classifying, synthesizing, interpretation,

Real World Applications:
Inventor, scientist, historian, anthropologist, electrician

Real World Terms:
Graphic Organizer, letter, illustration, editorial, debate, commercial, pamphlet

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Change

Overarching Generalizations:

- Need drives change.
- Change is necessary for growth.

More Complex Generalizations (Two or more concepts):

- Change can be motivated by a variety of factors.
- Change can be intentional or unintentional.

Essential Question

What intelligent behaviors do inventors need to change the world around them?

Materials Needed for Task Rotation and/or Task Rotation Menu

- Chart Paper

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- Markers, pencils, colored pencils, and crayons
- *Now and Ben*
- Drawing and typing paper
- Scissors
- Glue

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspectives:

Student/Teacher Reflections

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Social Studies Task Rotation Learning Activities
4ᵗʰ Grade
All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

Mastery Learner (A) **Sensing- Thinking** Create a product that shows a collection of inventions/technology that are used in NC. Identify which ones are now used in a way that is different from their inventor's intention. **V_*_L_*_S__M__B__P__I__N__**	**Interpersonal Learner (B)** **Sensing-Thinking** With a partner, discuss how inventions/technology have affected your life. Videotape your discussion and analyze it for your partner's key points. **V_*_L__S__M__B__P_*_I_*_N__**
Understanding Learner (C) **Intuitive-Thinking** Research inventions and/or technologies used in NC and debate which one has had the biggest influence, intentional or unintentional, on NC. **V_*_L_*_S__M__B__P_*_I__N__**	**Self-Expressive Learner (D)** **Intuitive-Feeling** Predict how changes in technology will affect you. What are the positives and negatives of these changes? Create a product that expresses your perception of change. **V__L_*_S__M__B__P__I_*_N__**

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Real World Connections With Products:
Analyze, evaluate, identify, examine, problem-solving, decision-making, researching and predicting

Real World Applications:
Inventor, computer analyst, chemist, researcher, biologist

Real World Terms:
Video, debate

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Change

Overarching Generalizations:
- Need drives change.
- Change is necessary for growth.

More Complex Generalizations (Two or more concepts):
- Change can be motivated by a variety of factors.
- Change can be intentional or unintentional.

Essential Question(s):

You are a city planner. What intelligent behaviors would help you to best determine the changes that would need to take place to encourage technology advances in NC?

Materials Needed for Task Rotation and/or Task Rotation Menu

- Chart Paper
- Markers, pencils, colored pencils, and crayons
- Drawing and typing paper
- Scissors
- Glue
- Computers and video camera
- Tape

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MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections

Math Task Rotation Learning Activities

4th Grade
All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

Mastery Learner (A)	Interpersonal Learner (B)
Sensing- Thinking	**Sensing-Thinking**
	In pairs, create equations for your partner to solve. Include the use of parentheses and explain how this can change the solutions.
Predict how many inventions you can use in a day. Then keep a tally of your use of inventions and list them. Classify the inventions into 4/5 groups and calculate the percentage of each group compares to your total use of inventions.	
	V_*_L_*_S__M__B_*_P__I_*_N__
V*_L*_S__M__B__P__I__N__	

Understanding Learner (C)	Self-Expressive Learner (D)
Intuitive-Thinking	**Intuitive-Feeling**
Discuss how changing one side of an equation affects the other side. Demonstrate examples of this.	Use a piece of paper to demonstrate how various polygons can be formed by folding the paper in various ways. Identify and define each polygon. Find the area and perimeter of each.
V_*_L_*_S__M__B__P__I__N__	
	V_*_L_*_S__M__B__P__I__N__

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Real World Connections With Products:
Evaluating, identifying, problem solving, predicting, examining, classifying, explaining, discussing, demonstrating, examining, identifying, defining, creating

Real World Applications:
Inventor, mathematician, consumer Marketing specialist, architect, researcher, teacher, graphic designer, artist

Real World Terms:

Graph, talley, problems, equations, polygons

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus:
- Change

Overarching Generalizations:
- Change is inevitable
- Change is necessary for growth

More Complex Generalizations (Two or more concepts):
- Change can be positive or negative.
- Change generates additional change.

Essential Question

What intelligent behaviors do inventors need to change the world around them?

Materials Needed for Task Rotation and/or Task Rotation Menu

Access to different areas of the school, graphing materials, paper, pencil, computer access, paper for folding

MetaCognitive Discussion (Essential Questions):

(Whole Group)

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Conceptual Perspectives:

Intelligent Behaviors:

1. What intelligent behaviors are required in graphing?
2. Which intelligent behaviors help you decide which graphing strategies to use?
3. What intelligent behaviors are characteristic of mathematicians?
4. When you are collecting data, which intelligent behaviors do you think you use the most?
5. How can metacognition help you when you are designing a data collection experiment?

Literary Perspectives:

Student/Teacher Reflections

Concept:

Topic:

Generalization(s):

Essential Question(s):

Task Rotation Menu

Level	Mastery	Understanding	Self-Expressive	Interpersonal
1				
2				

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3				

Real World Connections With Products:

Real World Applications:

Real World Terms:

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Change

Overarching Generalizations:
- Need drives change.
- Change is necessary for growth.

More Complex Generalizations (Two or more concepts):
- Change can be motivated by a variety of factors.
- Change can be intentional or unintentional.

Essential Question:

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(Include concept and intelligent behavior that leads to deeper understanding of the concept through exploration of the generalization)

Materials Needed for Task Rotation and/or Task Rotation Menu

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections:

Social Studies Student Reflections and Assessments
Task Rotation Learning Experience
4ᵗʰ Grade
All conceptual activities must include discussing and/or relating to the selected
generalization(s) through essential questions.

Mastery Learner (A) Sensing- Thinking	Interpersonal Learner (B) Sensing-Thinking
Create a product that documents the changes that 5 technological advances have created in N.C. The product must address the advantages and disadvantages of each change.	Pretend you are immortal and live in N.C. Write a journal documenting the effects, positive and negative, that technological advances have had on your life throughout the last 100 years.
V_*_L_*_S__M__B__P__I__N__	**V_*_L*__S__M__B__P_*_I_*_N__**
Understanding Learner (C) Intuitive-Thinking	**Self-Expressive Learner (D) Intuitive-Feeling**
You own a timber farm. A salesman comes to you with a new technological advance allowing you to double the amount of trees you cut. Analyze the positive and negatives implications of using this new technology.	Create a time capsule for people showing (through pictures, objects, newspapers articles, etc.) the technological changes in the textile industry in North Carolina. The capsule won't be opened for 100 years.

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Summarize your findings on a plus/delta chart. What decision would you make on purchasing this new technology?	Include the positive and negative changes to life in N.C. Predict what effects there will be in the next 100 years. Imagine how the people in the future will react to your predictions. Generate a list of tips for these people in order to prepare for future technological advances and the changes they create.
V_*_L_*_S__M__B__P__I*__N_*_	**V_*_L_*_S_*_M__B_*_P__I_*_N_*_**

Real World Connections With Products:
creating, organizing, predicting, drawing conclusions, decision making, identifying, observing, applying, analyzing, comparing and contrasting.

Real World Applications:
computer analyst, journalist, lumberjack, farmer, salesman, banker, environmentalist, historian, textile worker

Real World Terms:
journaling, charting, labeling, create

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Change

Overarching Generalizations:
- Need drives change.
- Change is necessary for growth.

More Complex Generalizations (Two or more concepts):
- Change can be motivated by a variety of factors.
- Change can be intentional or unintentional.

Essential Question:

By using information you already know about technological advances, past and present, what would you ask a visiting historian about how life in NC has changed?

Materials Needed for Task Rotation and/or Task Rotation Menu
- Chart Paper
- Markers, pencils, colored pencils, and crayons
- Drawing and typing paper
- Scissors
- Glue and tape
- Computers
- Various product materials (i.e. Pringles can for the time capsule)

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MetaCognitive Discussion (Essential Questions):

(Whole Group):

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections

Science Task Rotation Learning Activities
Task Rotation Learning Experience
4th Grade Science
All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

Mastery Learner (A) **Sensing- Thinking** Choose and build one type of circuit. Draw a set of diagrammed directions explaining how to build your circuit. Include directions for how to change your type of circuit to another type. How can this be done using the fewest number of steps? **V_*_L_*_S_*_M__B_*_P__I__N__**	**Interpersonal Learner (B)** **Sensing-Thinking** Role play with a friend the appropriate safety precautions to follow in the event of lightening in various situations. Document what changes in behavior are needed for each circumstance. **V_*_L__S__M__B_*_P_*_I__N_*_**
Understanding Learner (C) **Intuitive-Thinking** Using what you know about how electric circuits operate, test and classify various materials to determine whether they are a conductor, non-conductor, a receiver or an energy source. Document the changes you observe and come to a conclusion about which materials would be the most efficient circuit materials and explain your reasoning. **V_*_L_*_S__M__B_*_P__I__N__**	**Self-Expressive Learner (D)** **Intuitive-Feeling** Imagine you are in a deserted area with magnetic materials. Create a plan and demonstrate how you could use these materials to generate electricity. How would having electricity change your situation. **V__L__S__M__B_*_P__I_*_N_*_**

Real World Connections With Products:
creating, organizing, drawing conclusions, decision making, observing, applying, analyzing, building, explaining, drawing, problem-solving, evaluating, classifying

Real World Applications:
Electrical engineer, scientist, electrician, meteorologist

Real World Terms:
Illustrate, classify, display, explain, discuss, role-play, demonstrate, problem-solve

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Change

Overarching Generalizations:
- Need drives change.
- Change is necessary for growth.

More Complex Generalizations (Two or more concepts):
- Change can be motivated by a variety of factors.
- Change can be intentional or unintentional.

Essential Question:

If you are an electrical engineer helping the state upgrade its electrical system, what intelligent behaviors would you need to advise them?

Materials Needed for Task Rotation and/or Task Rotation Menu

- Science kit materials
- Paper/pencil/
- Art materials
- Chart paper
- Research materials including computers

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections:

Additional Support Materials:

Favorite Read-Alouds:

Finger Plays, Nursery Rhymes and Songs:

Video Clips:

Paintings & Prints:

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Science Student Reflections and Assessments
4th Grade
All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

***Note: Students need to choose one activity from each horizontal row.

Mastery Learner (A)
Sensing- Thinking

Write a set of directions for another student that would allow them to create a circuit based on magnetism. Include a supply list and the step-by-step process.

V_*_L_*_S__M__B__P__I__N__

Interpersonal Learner (B)
Sensing-Thinking

Develop and present a guide about electricity for 3rd graders. Include the "dos and don'ts" of magnetism and lightning safety. Explain how magnetism and electricity are related.

V_*_L__S__M__B__P_*_I__N__

Understanding Learner (C)
Intuitive-Thinking

Create an electric circuit as part of an improvement to an existing object. You must include magnetism as part of your process. Explain how the improvement changes the invention. What effects will these changes cause?

V_*_L__S_*_M__B__P__I__N__

Self-Expressive Learner (D)
Intuitive-Feeling

Create a presentation that shows:
- how magnetism is related to electricity.
- the relationship between lightning and electricity
- lightning safety

Be creative! Can you include dancing or singing?

V_*_L_S__M_*_B*_P__I_*_N__

Real World Connections With Products:
Creating, presenting, explaining, building

Real World Applications:
Electrical engineer, scientist, electrician, meteorologist, teacher

Real World Terms:
Directions, guide invention, performance

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Change

Overarching Generalizations:
- Need drives change.
- Change is necessary for growth.

More Complex Generalizations (Two or more concepts):
- Change can be motivated by a variety of factors.
- Change can be intentional or unintentional.

Essential Question:

If you were an electrical engineer, what intellectual behaviors would you need to change an existing electrical invention?

Materials Needed for Task Rotation and/or Task Rotation Menu

- Science kit materials
- Paper/pencil/
- Art materials
- Chart paper
- Research materials including computers

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Teacher Reflections

Literary Selection

Date   **School**   **Grade**

1. What were the strengths of the task rotations and/or other activities?

2. How did the task rotations and/or activities reveal students' Intelligent Behaviors? Please discuss how each Intelligent Behavior manifested it self.

3. What would you change or add the next time you taught this lesson?

4. What opportunities for growth does the resource unit have?

5. What were "ah ha's?" for the students?   For teachers?

APPENDIX A

Additional Instructional Concept-Based Activities

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