

Getting Kids Invested with Stories: The Car of the Future

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Overview

Introduction

Stories in Science Class

Why?

How?

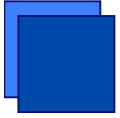
Practical Example

The Car of the Future

Wrap-Up

Car System	Function
Fuel	·Engine, Air Condition
Electrical	·Lights, Locks, stereo, Windows, ect.
Braking	Stopping, slowing down
Cooling	cool engine
Steering / suspension	controls car's movement
exhaust	removes fumes from passengers
Power train	transfers energy

[Extend Page](#)



Stories in Science Class

Why use stories? Story telling ...

- provides a framework we can relate to and remember.
- conveys facts in a traditional way.
- links physics and chemistry to applications.
- rehumanizes science.

 **We live, learn, and relate to others through stories.**
E. O. Wilson



Wiggins' *Understanding by Design*

Main Points

Define the content students should know based on AAAS and NSES standards.

Organize content into three levels of knowledge—enduring understanding, important to know and do, and worth being familiar with.

List evidences of understanding of the content, including performances.

Enduring understanding is best assessed by performance tasks and projects.

Content that is important to know and do assessed by performance tasks and by quizzes and tests.

Content that is worth being familiar with is best assessed by quizzes and tests.

Establish essential questions for students to answer. These questions should provoke and sustain student interest, and when answered, they should uncover the content established in step 1.

Plan and sequence activities to address the evidences of understanding and essential questions.

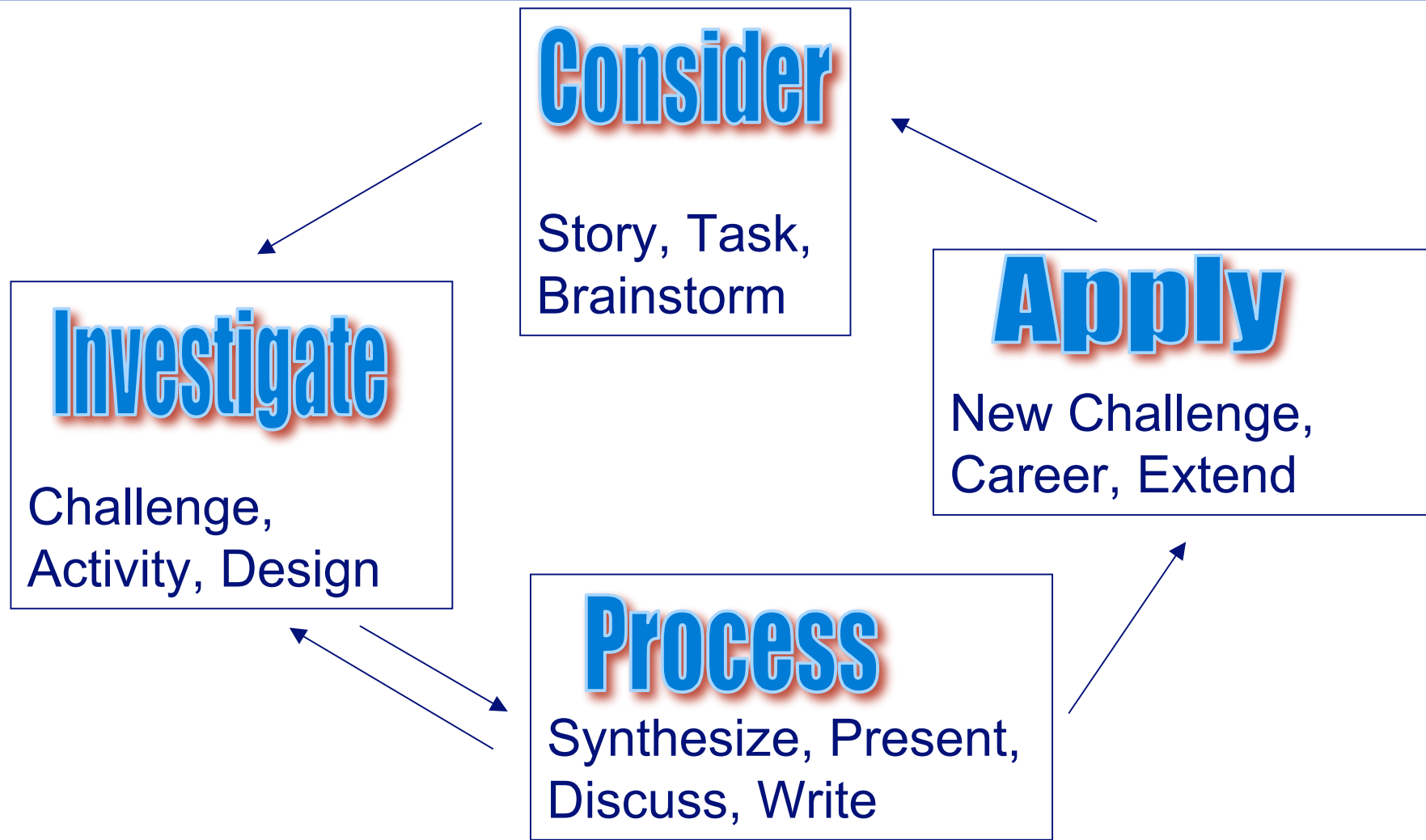


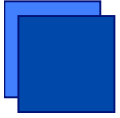
Selection of a Story

- **Is grounded in science.**
- **Addresses appropriate learning objectives aligned with the standards.**
- **Connects known with the unknown.**
- **Piques students' interests (poses a challenge/problem).**
- **Makes it enjoyable without oversimplifying.**
- ☞ **Can be fictional or nonfictional.**
- ☞ **Can have human or science concept as protagonist.**



Foundation Science Learning Cycle





Using the Power of Story Throughout the Learning Experience

Consider

Students get engaged in the story.

Investigate

Students take ownership of the story.

Process

Students tell their story.

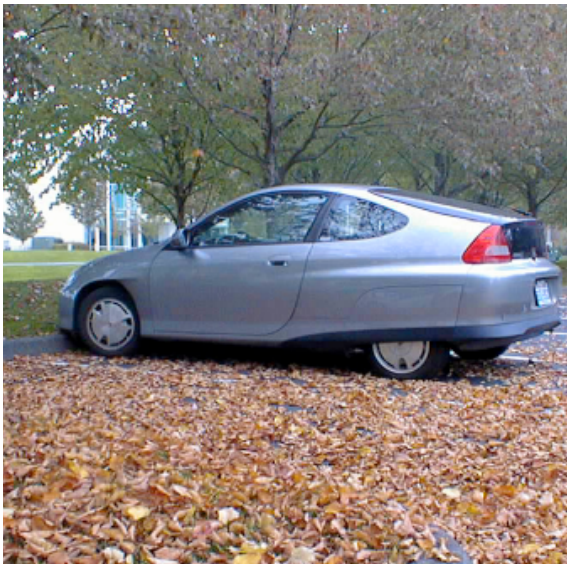
Extend

Students apply new understanding to new situations.

👉 Story is NOT a product; story is a process!



Practical Example: The Car of the Future



Consider: Story

Investigate: Build a Car-Moving Device

Process: Share and Discuss

Extend: Back to the Story



Addressed AAAS/NSES Standards

Goals for Student Understanding

- **Students know that energy appears in different forms.**
- **Students know that energy can be converted from one form to another.**
- **Students understand that energy can be transferred.**
- **Students know that energy cannot be created or destroyed.**

Student Assessment Outcomes

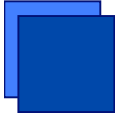
- **Students can write word equations for energy conversions.**
- **Students can apply the law of conservation of energy to a new situation or system.**



Story: A Process, not a Product

Stories

- **Structure students' learning experiences.**
- **Challenge students' assumptions and conclusions.**
- **Involve interpretation and reinterpretation.**
- **Result in the transformation of “knowing” into “telling”**



Further Readings

Bill Bryson: **A Short History of Nearly Everything*, Broadway Books, 2003.

Joy Hakim: *The Story of Science*, Smithsonian, 2004.

William Least Heat-Moon: *Blue Highways*, Little Brown and Company, 1982.

Valerie Strauss: “A Radical Formula for Teaching Science” *Washington Post*, March 18, 2003 (p. A 08).

Susan Y. Wanner: *On with the Story—Adolescents Learning Through Narrative*, Boyton/Cook, 1994.

Grant Wiggins and Jay McTighe: *Understanding by Design*, Association for Supervision and Curriculum Development, 1998.

Daniel T. Willingham: “The Privileged Status of Story” *American Educator*, Summer 2004.

E. O. Wilson (Ed.): *The Best American Science and Nature Writing*, Houghton Mifflin, 2001.