



Using Backwards Design to Develop, Align and Document Curriculum

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- Integrate CCSS literacy standards for science
- Align curriculum to state standards and vertically across the grades
- Create common assessments as we approach the integration of District Determined Measures
 - **Moving from a department of six teachers to three presented a good opportunity to align and standardize our curriculum and assessments**

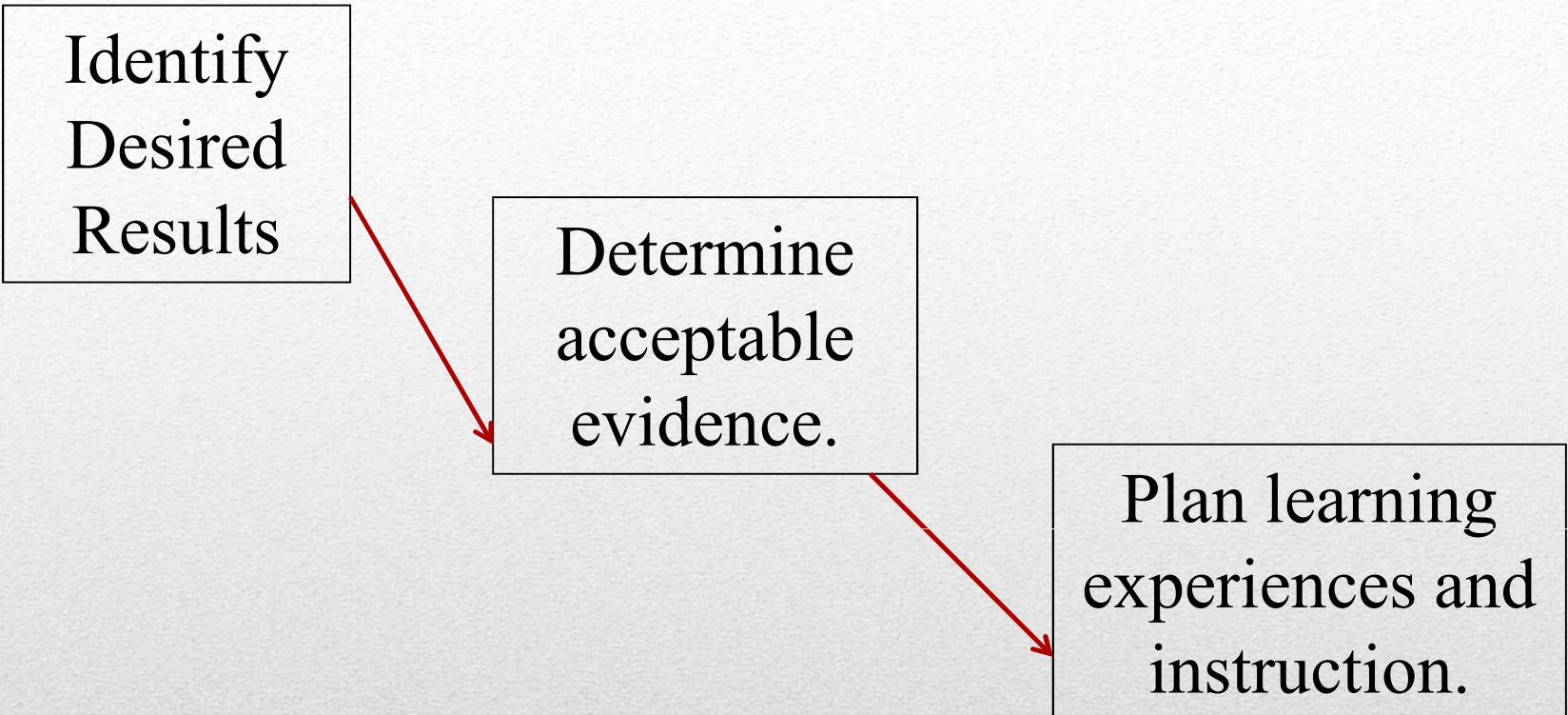
The Needs

- By the end of the 2013-2014 school year, the 6th grade science team will have used backward design to align our curriculum to the standards and to create common assessments for all 9 major units. We will use data from these common assessments to improve instruction in at least 5 of these 9 units by the end of the year.

The Goal

- 1.) Using the backwards design model, develop common assessments that address the standards, then align our curriculum to those assessments.
- 2.) Administer the common assessments across the grade then meet as a team to analyze data and identify any common weaknesses.
- 3.) Plan interventions/reteaching opportunities to address weak areas in the curriculum.
- 4.) Adjust our curriculum for next year to better address the weak areas in each unit.

Key Actions



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graph TD; A[Identify Desired Results] --> B[Determine acceptable evidence.]; B --> C[Plan learning experiences and instruction.];
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Identify
Desired
Results

Determine
acceptable
evidence.

Plan learning
experiences and
instruction.

Principles of Backward Design

Identify Desired Results

- Standards (State and CCSS)
 - Translate the standards into student friendly, language.
 - Identify the “big ideas” and essential questions for the unit.
 - Write “I Can” objectives

Determine acceptable evidence.

- Design assessments that fit the objectives
 - Quizzes
 - Projects
 - Performance tasks

Plan learning experiences and instruction.

- Plan activities and lessons that help achieve the learning objectives and align to the rigor of the assessment
 - Labs
 - Readings
 - Activities
 - Writing Assessments

Implications for us

- Identified standards we covered over the past few years
- Identified CCSS literacy standards that were applicable to either past learning activities, or that could be applicable to future learning activities
- Aligned our standards with the rest of the 6-8 team
- Wrote big ideas and essential questions for the unit
- Wrote “I can” objectives for each of the standards to make sure we had an objective for each of the standards/parts of the standard

Identify Desired Results

- Wrote ONE common test that addressed the standards identified in step one
 - We'd had multiple different summative unit assessments in the past due to having six teachers and turnover over the past two years.
 - With the implementation of DDMs, having ONE common assessment for the unit is essential.
- Increased the rigor of assessments
 - Common Core is focused more on reading and writing
 - Students need to be more analytical readers and more effective writers

Determine Acceptable Evidence

Date _____

Name _____



Stars & Galaxies Quiz



Write the letter of the correct choice on the blank line at the right.

(5 pts each)

- Which of these is closest to the Earth?
A. Betelgeuse
B. the sun
C. the Whirlpool Galaxy
D. the Orion nebula
1. _____
- Which of these is farthest from Earth?
A. Betelgeuse
B. the sun
C. the Whirlpool Galaxy
D. the Orion nebula
2. _____
- An astronomer observes four stars of slightly different colors in the night sky. Which color is the hottest star?
A. Red
B. Orange
C. Yellow
D. Blue-white
3. _____
- Another astronomer happens to observe the same four stars. Which color is the coolest star?
A. Red
B. Orange
C. Yellow
D. Blue-white
4. _____
- When you look at a star at night, its brightness does NOT depend on its ...
A. Temperature
B. Distance from Earth
C. Size
D. Spectrum
5. _____
- About how many stars are in our galaxy?
A. one hundred
B. one thousand
C. one million
D. one hundred billion
6. _____
- Distances to nearby stars can be measured using ...
A. Sunspots
B. Constellations
C. Electromagnetic spectra
D. Parallax
7. _____
- Stars (and the universe) are mostly made of which element?
A. Helium
B. Carbon
C. Hydrogen
D. Oxygen
8. _____
- What is the primary factor in determining how long a star shines?
A. Distance from earth
B. Electromagnetic spectrum
C. Mass of the star
D. Parallax
9. _____
- What process releases the energy that makes stars shine?
A. Absorption spectrum
B. Nuclear fusion
C. Energizer batteries
D. Gravity
10. _____
- How long is a light-year?
A. 365 days
B. It depends on the revolution of the star
C. The distance light travels in a year
D. 93 million miles
11. _____

For questions 13 and 14, use these objects:

(10 pts each)

sun, Jupiter, moon, Betelgeuse, Andromeda galaxy

- Which object is smallest? _____ Which is largest? _____
- Which object is nearest? _____ Which is farthest? _____
- The picture below shows the Earth and two stars that have the same size and temperature. Explain which star would look brighter from Earth and why:
(5 pts)

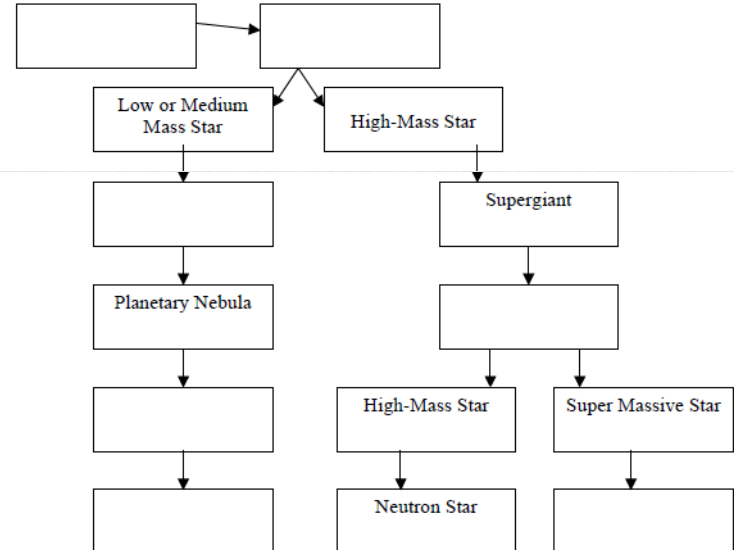
star B
☆ star A
☆



(20 pts)

15. Complete the diagram on lives of stars using these terms:

black dwarf supernova protostar red giant
white dwarf nebula black hole



Determine Acceptable Evidence

Date _____

Name _____

STARS AND GALAXIES QUIZ

⊕ Answer the questions below. (4 pts each)

1. Which is closer to Earth, the sun or the star Betelgeuse? How do you know?
2. Is Betelgeuse or the Andromeda galaxy farther from Earth? How do you know?
3. An astronomer observes four stars of slightly different colors in the night sky. Three of them are blue and one is red. What can the astronomer assume about the temperature of the red star?
4. a.) In the picture below, star B appears to be brighter. Is it possible that star A is actually brighter? If you think "yes," explain how? (2 pts)



- b.) What information would you need to determine which star is actually brighter? (2 pts)
5. About how many stars are in the Milky Way galaxy?

⊕ What element makes up stars and most of the universe?

7. Look at the graph below. What is the relationship between a star's mass and its lifespan? Include data from the graph to support your answer.

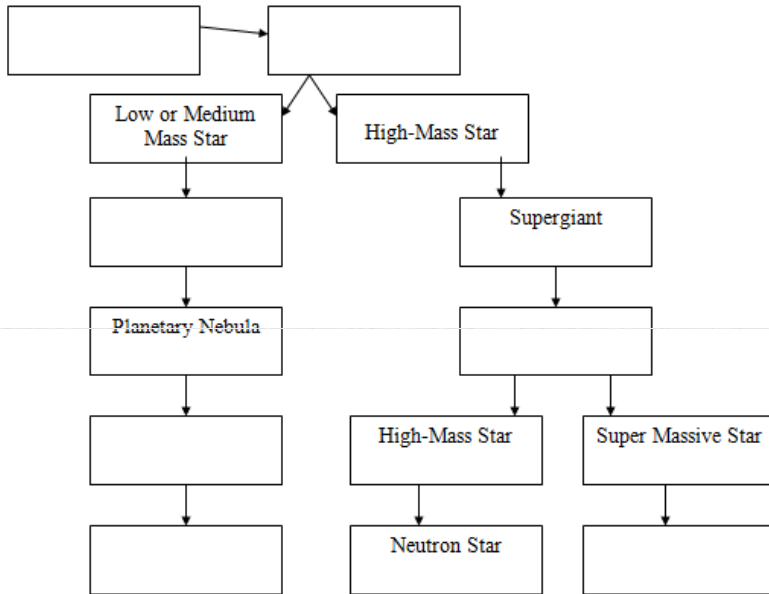


8. An astronomer observes two stars. One appears to be half the mass of the sun. The other appears to be twice the mass of the sun. Which star will burn out first? How do you know?
9. What is the process through which stars get the energy that make them shine?

Determine Acceptable Evidence

10.) Order the objects below from smallest to largest. (2 pts)
Sun, Jupiter, Earth's moon, Betelgeuse, Andromeda galaxy

11.) Complete the diagram on lives of stars using these terms: (1 pt each)
black dwarf, supernova, protostar, red giant, white dwarf, nebula, black hole



12.) Three students are arguing about some of the characteristics of the sun. Part of their conversation is copied below. (5 pts)

Margo: The sun will eventually supernova and become a neutron star because it is so massive.

Jin Young: The sun will eventually burn through all of its fuel and will become a white dwarf when its core cools down.


Xi: The sun won't ever burn out.

Who is correct? How do you know?

Determine Acceptable Evidence

- Selected learning experiences that aligned to the standards
- Selected learning experiences that aligned to the rigor of the exam
- Planned formal formative assessments throughout the unit
- Placed emphasis on students explaining their reasoning and using evidence
- Incorporated reading and writing assignments into the unit
 - Curriculum Document

Plan Learning Experiences

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- Students have more opportunities for reading and writing non-fiction
 - Clear connection between learning experiences and assessed skills
 - Opportunities for higher order thinking
 - Common learning experiences throughout the grade

The Benefits



Questions?
