

Olmsted Falls Schools: Unit Design Framework

The purpose of the lesson planning framework is to act as a guide for Olmsted Falls Educators as they collaboratively plan units of instruction. The framework attempts to incorporate best practices from the research and couple these with the professional development concepts that Olmsted Falls Educators have taken part in.

Academic content standards and the learning targets that comprise the standards come to life for teachers and students when they are incorporated into a unit of instruction. Teachers work in teams to ensure the learning intentions are the same in corresponding grade levels and subject areas. Teaching the same targets creates the opportunity to collaboratively design common formative assessments that can be collaboratively discussed throughout the instructional unit with fellow teachers. In addition, it allows teachers to design reliable and valid summative assessments that can be used to measure learning at the end of the instructional unit and use the results for future planning.

Ultimately the unit design framework should be used by teachers for the purpose of instructional alignment. The learning targets should be clear to students before and during instruction and they should be aligned with the assessments students will experience. The last step in the alignment process occurs when the learning targets and assessments are consciously aligned with the instruction and classroom activities.

Unit Planning Graphic Linking Prof. Dev. Concepts in Olmsted Falls City Schools



Graphic created by Jim Lloyd and used by Olmsted Falls City Schools' Teachers

Subject: Science

Unit: Land, Water, and Air Resource chapter 4 (Environmental Book)

Part I: Clarity of Learning Targets

What are the grade level indicators that go with this unit? Place a star next to the grade level indicators that are Power Indicators. Are the indicators in student friendly language? Place the level of Bloom's Taxonomy next to each Power Indicator.

Grade Six Physical Science

8. Describe how renewable and nonrenewable energy resources can be managed (e.g., fossil fuels, trees and water). (Understand)

Student Friendly: I can describe how renewable resources can be managed and protected (water, air and land).

Grade Seven Earth and Space Sciences:

2. Explain that Earth's capacity to absorb and recycle materials naturally (e.g., smoke, smog and sewage) can change the environmental quality depending on the length of time involved (e.g. global warming). (Understand)

Student Friendly: I can explain that the Earth can only recycle a certain amount of pollutants (smoke, smog and sewage) naturally.

Student Friendly: I can explain that pollutants can temporarily or permanently change the quality of the environment (depending on the time it takes to break down and how long they are used). ex. global warming

4. Analyze data on the availability of fresh water that is essential for life and for most industrial and agricultural processes. Describe how rivers, lakes and groundwater can be depleted or polluted becoming less hospitable to life and even becoming unavailable or unsuitable for life. (Analyze, Understand)

Student Friendly: I can describe how rivers, lakes, and groundwater can be depleted or polluted to the point where they cannot support living things.

Student Friendly: I can analyze data on the amount of fresh water available and understand the importance of fresh water for life, industry, and agriculture.

Grade Seven Science and Technology

2. Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other. (Understand)
3. Recognize that science can only answer some questions and technology can only solve some human problems. (Remember)

Student Friendly: I can describe how technology can cause conflicts between the environment and the economy (costs and benefits).

Grade Seven: Scientific Inquiry

2. Identify simple independent and dependent variables. (Remember)
7. Use graphs, tables and charts to study physical phenomena and infer mathematical relationships between variables (e.g., speed and density). (Analyze)

Student Friendly: I can use graphs, tables, and charts to study the relationships between variables (ex. time and distance).

What are the Big Ideas that go with this unit?

- There is a limit to the amount of pollution that the Earth can recycle naturally before there is environmental change.
- Good scientists realize that advances in science and technology cause competition between environment and economics.

What are the Essential Questions that go with this unit?

- Why is it important to reduce the amount of pollution created by humans?
- How do advances in technology create competition between the environment and business?

What strategies will we use in order to make learning targets clearer for all students, before, during and after instruction? How will you communicate the learning indicators to students?

- Student handout – “I Can” statements linked to classroom activities
- Essential questions are communicated to students and discussed
- Daily learning targets communicated to students (Smart Board)

Part II: Feedback and Assessments (Formative and Summative)**How will we provide students with feedback throughout the unit?**

What formative assessments will we use? (Non-graded assignments that check for understanding and provide feedback to the students) Incorporate the 7 Strategies of Assessment for Learning here.

Section 1: Important points: How we abuse the land and soil management. The students will complete a “cloze passage” for section one. The teacher will give the students a word bank (Smart Board). The students will work with a partner to complete the cloze passage (using the word bank - pencil). The students will then be given a second attempt to complete the cloze passage using the book - blue marker. The teacher will go over the correct answers, and the students will be given an opportunity to correct their answers – red marker.

Section 2: Before reading section two, the students will complete the “Frayer Model” in groups of four with the key word “Pollution” in the center. The teacher collects the “Frayer Model”. After section four in the book, the students will get into the same group and will be given a new/blank “Frayer Model” graphic organizer. The students will complete the “Frayer Model” for the word “Pollution” a second time. The teacher will pass out the “before” “Frayer Model”, and the students will compare their “before” and “after” graphic organizers to see how much they have learned about pollution.

Section 3: The teacher will ask the students two questions (SmartBoard) to check for understanding at the end of the period (different colored post-it notes for different periods). The students will divide a post-it note in half and will answer both questions on the post-it note. The students will put their post-it notes on the cabinets in classroom. The next day the students will enter the room and take one post-it note off the cabinet. The teacher will go over the correct answers, and the students will check their answers. The students will then rate the answer with a symbol, “I get it”, “Almost got it”, and “I have questions” and will place the post-it note back on the cabinet under the corresponding symbol/rating.

Question 1: If most of the Earth is covered with water, why is fresh water a scarce resource?

Question 2: List four types of pollution. Name four types of human activities that can be sources of water pollution.

Section 4: The students will be given a “Frayer Model” graphic organizer with the key word “pollution”. The students will work in their groups of four to complete the “Frayer Model” – second time. The students will compare the “Frayer Model” with the “before” “Frayer Model” from section one.

Section 5: The teacher will provide oral feedback on the groups lab reports. The feedback will tell the students what they did well and what they need to improve upon. The students will have an opportunity to correct their answer on the lab report based on this feedback.

How will students be involved with keeping track of their own learning progress (note—this is different than tracking points for a grade)?

The students will use their “I can” handout to “rate themselves” (start, during, after) on each of the learning targets. The students will rate themselves throughout the unit using the scale on the “I can” handout.

The students will use their formative assessments to track their learning progress throughout the unit (“Frayer Model” – before and after, post – it note formative assessment, and making corrections to the lab report)

What summative assessments will we use? (Graded, evaluative assessments)

Chapter 4 Test
Greenhouse Lab report

How Can I Close the Gap?

What will we do AFTER the students have completed the formative assessment to differentiate instruction (re-group students, differentiate, review sessions)?

What interventions will we provide for students who do not do well on the formative assessment?

The students who need additional practice will work on a “review and reinforce” practice.

What will we do for the students who excel? What extension activities will we provide?

The students who excel will be given the “enrich” practice.

Olmsted Falls Schools: Unit Design Framework
Part III: Instruction and Student Activities

What instructional and student activities will we use for this unit? These activities should directly align with the indicators and assessments.

Section 1:

- Read the section/practice worksheets
- BrainPop – Natural Resources
- BrainPop – Soil
- Soil layers model
- Window books

Section 2:

- Read the section/practice worksheets
- Brainpop – Waste Disposal
- Burn, bury, or return video
- “Just A Dream” Story
- Bill Nye – Garbage
- Banana peel lab

Section 3:

- Read the section/practice worksheets
- Pollution Video
- BrainPop – Water Pollution
- Video filed trip on Beluga Whales
- Pollution and plants lab

Section 4:

- Read the section/practice worksheets
- BrainPop – Air Pollution
- BrainPop – Ozone
- Lab Zone – pg. 140 “How Acid is your Rain”

Section 5:

- Read the section/practice worksheets
- “The Discover” activity with UV beads
- Brainpop – Global Warming
- Brainpop – Greenhouse Effect
- Braionpop – Ozone
- Bill Nye – Global climate change
- Study Guide – Reviews for Test