Capstone Scoring Criteria Sheet

Name of Concordia Student Teacher: **Katelyn Butts**

Subject area: **Physical Science** Grade level: **10**

Theme or title of unit: **Biofuels/Energy Conservation**

Unique composition of class: **I was told that there are several students who have special needs and would need adaptations, but that they have paras who will make those accommodations for them. My mentor teacher didn't tell me what type of special needs they have or how many students there are so I'm just trusting that the paras will take care of any adaptations they need.**

Name and email of mentor teacher: **Steve Pinkall**

Steve.Pinkall@connectseward.org

_____/25 Stage 1

_____/25 Stage 2, all boxes

_____/25 Rubric

_____/50 Hook

_____/300 3 complete long form lesson plans that include:

- Standard
- Goal
- Objective
- Materials
- Modifications
- Procedure with time allotments
- Assessment (what, tool, what to write in grade book)

_____/35 Evidence of student engagement

_____/50 Comprehension strategy

What was your specific strategy? Relate here.

I will be giving a graphic organizer to the students for the lectures on Days 1 and another type of note-taking guide on Day 2 which will help them to follow along and enhance their comprehension.

_____/50 Vocabulary strategy

What was your specific strategy? Relate here.

I will be using the word map vocabulary strategy for the several vocabulary words that I want them to be familiar with.

_____/15 List of resources

Stage 1 – Identify Desired Results

Established Goals:

Energy

12.2.3 Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter.

Scientific Communication
12.1.1.j Share information, procedures, results, conclusions, and defend findings to a scientific community

Energy Sources
12.4.3.c Compare and contrast benefits of renewable and nonrenewable energy sources

http://www.education.ne.gov/Science/Documents/2010AdoptedScienceStandards.pdf

Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

b. Create original works as a means of personal or group expression

http://www.iste.org/Libraries/PDFs/NETS-S_Standards.sflb.ashx

What understandings are desired?

Students will understand. . .

Over-Arching:

That physical science affects real people.

Topical:

The differences between several biofuels.

The value and importance of conserving energy.

The perspective of those people around the world facing energy resource shortages.

What essential questions will be considered?

How does physical science affect our own lives?

What are the pros/cons of several biofuels?

- Why would/wouldn't we want to use them?
- Are they cost effective or realistic?

Why would we want to conserve energy?

- What is in it for us?

How is life different for a person living in a third world country where energy resources are limited?

What key knowledge and skills will students acquire as a result of this unit?

Students will know. . .

-key vocabulary (renewable, nonrenewable, biofuel…)

-various unique forms of biofuels and the pros/cons associated

-the value of conserving energy

-the perspective of people that struggle to have enough energy

-the amount of energy they are using/wasting at home

Students will be able to. . . S

-use the computer to calculate their ecological footprint

-design a brochure that could be given to a family member or friend that would convince them to conserve energy

-describe the hardships associated with a lack of energy resources

-identify ways to conserve in their own lives

-compare and contrast the benefits of the biofuels presented in class

-measure the amount of energy their family consumes at home

Stage 2 – Determine Acceptable Evidence

What evidence will show that students understand?

Performance Tasks (summary in GRASPS form):* **T**

G=Goal

Your goal is to design a brochure that will convince your parents/family/friends of the importance of conserving energy and give them ideas of easy ways to conserve.

R=Role

Your role is that of a student learning about energy conservation and through the use of the brochure you will be able to teach others.

A=Audience

Your target audience is your parents, other family members, or friends.

S=Situation

You will have time in class to design a brochure that helps you to convince your family and friends that conserving energy is important and that persuades them to start/continue conserving energy in their life.

P=Performance

You will create a brochure that will influence your family and friends that conserving energy is important and which gives them ideas of ways they can conserve energy in their own lives. This could include perspectives of people who have a lack of resources or have them imagine life without a car, water, electricity, etc. Use the most convincing language possible because we want them to truly understand that our resources are not unlimited and the way we all live our lives affects the Earth.

S=Standards

(expressed in a rubric below)

RUBRIC:

Conserving Energy Brochure Student Name: _____

CATEGORY	4	3	2	1
Content - Accuracy	All information in the brochure is accurate.	99-90% of the information in the brochure is accurate.	89-80% of the information in the brochure is accurate.	Fewer than 80% of the information in the brochure is accurate.
Writing - Mechanics	Capitalization, punctuation and spelling are correct throughout the brochure.	There are 1-2 errors in capitalization, punctuation and/or spelling throughout the brochure.	There are 3-4 capitalization, punctuation and/or spelling errors in the brochure.	There are 5 or more capitalization, punctuation and/or spelling errors in the brochure.
Attractiveness & Organization	The brochure's appearance is pleasing and well-organized including relevant graphics.	The brochure's appearance is pleasing, but organization is lacking. Graphics are fairly relevant.	The brochure's appearance and organization are untidy. Graphics are fairly relevant.	The brochure's appearance and organization of material is confusing to the reader. Graphics aren't relevant.
Persuasiveness	The brochure is very persuasive and would influence the reader to conserve energy.	The brochure is reasonably persuasive and probably would persuade the reader to conserve energy.	The brochure is somewhat persuasive and might convince the reader to conserve energy.	The brochure is not persuasive and would not convince the reader to conserve energy.

Other Evidence (quizzes, tests, prompts, observations, dialogues, work samples):

OE

Jigsaw Handout/Worksheet

Informal Assessment of participation in footprint calculation

Home Energy Measurement

Student Self-Assessment and Reflection:

SA

What major insights have you acquired from this unit of study?

Which part of this unit was most challenging and why?

Which part of this unit did you most enjoy and why?

Is there anything that you think Miss Butts should have done differently in this unit that would have helped you understand or enjoy the material better?

Lesson Plan (May 9, 2012)

Student Teacher's Name _____**Katelyn Butts**_____Grade Level____**10**_____

State Standard_____**12.4.3c**_____

Subject__**Physical Science**___

Name of Lesson_____**Biofuels in our world**_____

Period/Time__**1 (8:10-9:40), 2 (9:44-11:12), 4 (1:16-2:44)**_____

I. Goal:

Energy Sources

12.4.3.c Compare and contrast benefits of renewable and nonrenewable energy sources.

(Nebraska State Science Standards)

II. Objectives:

TSWBAT describe what biofuels are and where they come from.

TSWBAT compare and contrast the benefits of the biofuels presented in class.

III. Adaptations for Diverse Learners

I will informally assess the progress of each student and provide support as needed. There are several students that need accommodations that will be provided by their paraeducators.

IV. Materials:

Laptop	Graphic Organizer
Projector-(hook-up)	4 parts to "Green Dreams" article
Vocab strategy	Handout for things to ask at home for energy footprint

V. Procedure:

A. Set / Hook

"How many of you have ever noticed that regular gas is more expensive than the midgrade gas here in Nebraska? Does anybody know why that is? I'm from Montana and back home regular gas is the cheapest gas. When I came here for college, I didn't really notice, at first, the difference in gas prices because I didn't have vehicle to drive. But, one day, a friend and I were in Lincoln and she stopped for gas. She was really concerned about what type of gas to get and I just told her to get the cheapest one. But, she responded by saying that it was not regular gas and she didn't know if she should put the midgrade in her car. That's the moment when I actually looked at the pump and realized that she was right. The midgrade was 10cents cheaper. That sparked my curiosity and I told almost everyone I knew about this weird Nebraska thing of having the midgrade (better) gas be cheaper, but I also wanted to know why. What I found out was that the midgrade gasoline actually starts out as regular

gas, but has ethanol added to it. Ethanol raises the octane rating by 2 points to turn it into midgrade gas. Since ethanol is cheaper per gallon than gasoline, the midgrade is cheaper than the regular."

B. Transition

"So what does this have to do with what we're learning today? Well, today we are going to talk about biofuels: what they are, where they come from and their benefits and downsides."

C. Main lesson

3 min. Whole Class Vocabulary

- Introduce vocabulary strategy – using four square approach

40 min. Whole Class Direct Instruction

- Teach the information on biofuels using the Prezi I made.
- Ask for questions periodically and at end.

35 min. Individual Jigsaw

Group

Whole Class

- Explain the activity
- Hand out articles and allow 20 min. to read and reflect
- Get in Jigsaw group and discuss their article and pick a side (pro-biofuels or not)
    - Do they see themselves using biofuels in their lives?
- Bring together for whole class discussion to close activity

3-5 min Whole Class Introduce Home Energy Measurement

- Students will time their shower and bring in their time on Friday to discuss.
- Time is related to how much water is used

D. Transition

"Today we learned a little more about biofuels and what they can be used for, where they come from and hopefully, now, you all can make a more informed opinion about the use of biofuels now and in the future."

E. Conclusion

"Tomorrow we are going to be talking about conserving energy and we'll be calculating our ecological footprint so I need everyone to make sure you know a couple of things about your house and how you live. I have a small handout detailing some questions you may need to ask your parents about or you may know them already, but if you bring these back filled out tomorrow the footprint calculator will give you a more accurate number than if you have to guess on these things.

Make sure to hand in your jigsaw article and the handout you filled out with your thoughts."

VI. Assessment:

Look over jigsaw handouts and give a completion score
(+ if they did the assignment and turned it in, - if they didn't)

VII. **Assignment:** Find out information from home for the ecological footprint calculator

Lesson Plan (May 10, 2012)

Student Teacher's Name _____**Katelyn Butts**_____Grade Level____**10**_____

State Standard____**12.2.3** ____**12.1.1.j** _____

Subject__**Physical Science**___

Name of Lesson_____**Conserving Energy**_____

Period/Time__**1 (8:10-9:40), 2 (9:44-11:12), 4 (1:16-2:44)**_____

I. Goal:

Energy

12.2.3 Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter.

Scientific Communication

12.1.1.j Share information, procedures, results, conclusions, and defend findings to a scientific community

(Nebraska State Science Standards)

Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

b. Create original works as a means of personal or group expression

(ISTE)

II. Objectives:

TSWBAT calculate their ecological footprint using the computer.

TSWBAT describe why it is important to conserve energy.

TSWBAT identify ways to conserve in their own lives.

III. Adaptations for Diverse Learners

I will informally assess the progress of each student and provide support as needed. There are several students that need accommodations that will be provided by their paraeducators.

IV. Materials:

Laptop	Energy Hog Jeopardy Board
Projector-(hook-up)	Note-taking handout
Mobile Laptop Cart	Vocab Strategy handout

V. Procedure:

A. Set / Hook

"Imagine how much energy you use every day. You wake up to an electric alarm clock. You take a shower with water warmed by a hot water heater using electricity or natural gas. You listen to music on your Ipod or stereo as you dress. You eat breakfast cooked on the stove or microwave, or toasted in the toaster or kept cool in the fridge. Then you either catch the bus to school or drive. This is only the first part of a typical American's day, but think about how much of our lives revolve around energy in the form of heat/cold, electricity, and fuel.

Now imagine that you live in a place where there is a lack of energy. Every morning you wake up to the sun shining through the window or door of your house. It's cold because the fire from last night died so you dress quickly and start a new fire from wood and cow dung. You grab the water buckets and walk a mile to the river to get water for the morning. When you get back to the house you begin cooking breakfast over the fire. Finally, after breakfast you're off to school: walking the ¾ mile to the schoolhouse where you help the teacher build a fire to warm the building. This is quite the contrast to the way most of us live our lives. We go from day to day never really thinking about how much energy we are using or wasting. Besides turning lights off when we leave a room, most of us don't think about conserving energy at all."

B. Transition

"Today, we are going to be talking about conserving energy and the importance of conserving energy. Some of you may not be convinced that saving energy is going to help anyone, but hopefully I can convince you otherwise."

C. Main lesson

30 min.	Whole Class	Direct instruction

- Teach the information from conserving energy notes
- They will have a handout for taking notes

30 min.	Individual	Footprint Calculation
	Small Group	
	Whole Class	

- Give instructions for the activity
- Get out the laptops and direct them through how to get to the website
- Give about 15-20 min to complete it
- 10-15 min to discuss in small groups and find average Earths
- As a class calculate the average and discuss

5 min.	Partners	Brainstorm Conservation Ideas
	Whole Class	

- Have students brainstorm with partners several ideas about how to conserve energy at home/school
- One partner comes to board and gives an answer

- Discuss realistic goals/things they can actually be responsible for

15-20 min. Whole Class Energy Hog Jeopardy

- Divide class into teams
- Explain rules/game

D. Transition

"Ok so today we learned more about conserving energy and why it is important to keep our Earth healthy."

E. Conclusion

"Tomorrow we are going to spend most of the period working on a brochure that contains information about conserving energy and the importance of conserving energy. The goal is that you can print your brochure and then use it to persuade your family or friends to conserve energy."

5 min. Whole Class Introduce PT

- Introduce the performance task
  - Requirements
  - Prep for tomorrow/think about how they can convince a person to conserve
- Show rubric on projector

"Remember if you haven't already done it to measure the time it takes to shower so that we can discuss our findings tomorrow."

VI. Assessment:

Informal assessment that they completed the footprint calculation (+ if did it, - if didn't)

VII. Assignment:

Think about what they are going to include in their brochure. How can they convince people to conserve?

Remind the students about home energy measurement assignment.

Lesson Plan (May 11, 2012)

Student Teacher's Name _____**Katelyn Butts**_____Grade Level____**10**_____

State Standard____**12.2.3** _____**12.1.1.j** _____

Subject__**Physical Science**___

Name of Lesson_____**Conserving Energy 2**_____

Period/Time__**1 (8:10-9:40), 2 (9:44-11:12), 4 (1:16-2:44)**_____

I. Goal:

Energy

12.2.3 Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter.

Scientific Communication

12.1.1.j Share information, procedures, results, conclusions, and defend findings to a scientific community

(Nebraska State Science Standards)

Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

b. Create original works as a means of personal or group expression

(ISTE)

II. Objectives:

TSWBAT create a brochure that includes information on conserving energy and its importance. This brochure should persuade the reader to start conserving energy.

III. Adaptations for Diverse Learners

I will informally assess the progress of each student and provide support as needed. There are several students that need accommodations that will be provided by their paraeducators.

IV. Materials:

Laptop	Student assessment
Mobile laptop cart	Printer

V. Procedure:

A. Set / Hook

"Yesterday we talked about conserving energy and why it's important. Here's a reminder of ways we waste energy throughout our day and ideas of how we can conserve."

- Show youtube video http://www.youtube.com/watch?v=1-g73ty9v04

B. Transition

"Alright, so at the end of class yesterday I introduced what is called a performance task which for this unit is creating a brochure that you can give to your family or friends that will convince them to conserve and not waste energy in their own lives."

C. Main lesson

60-70 min.	Individual	Performance Task
	Partner	

- Show the students how to use Publisher and how they can get graphics/text boxes
- Give time to work, circle through room answering questions, helping
- Once they think they are done have them find a partner and critique each other's brochure using the rubric given
- The student will then go through and finalize any needed corrections and print

10-15 min.	Partners	Discuss Home Energy Measurement

- Have students pair up and discus how much water they used and whether they were surprised or not
- How much water would they use on average in 1 year?

5 min.	Individual	Student Assessment

- Hand out student assessment and have them turn in when finished

D. Transition

"Please hand in your student assessment when you're finished."

E. Conclusion

"Thank you so much for your participation as I've been here. I've learned a lot and am so excited to go into student teaching next year. You all have a good weekend!"

VI. Assessment:

Brochure (points according to the rubric)

Home Energy Measurement (completion grade, + if they bring in a measurement, - if they don't)

VII. Assignment:

None

RESOURCES:

http://www.epa.gov/otaq/fuels/renewablefuels/documents/420f11044.pdf

http://www.backyardbiofuels.org/about.html

http://www.afdc.energy.gov/afdc/fuels/emerging_biogas.html

"Powering the Future: A Scientist's Guide to Energy Independence"

"US National Debate Topic 2008-2009: Alternative Energy"

http://ngm.nationalgeographic.com/2007/10/biofuels/biofuels-text

http://www.need.org/needpdf/Secondary%20Energy%20Infobook.pdf

http://www.eia.gov/emeu/efficiency/

http://energyquest.ca.gov/saving_energy/index.html