Destination 2017: Education for Sustainability Lesson Plan

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Week 1

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1. Course Prefix and Name (select a course you wish to incorporate sustainability, ex: *ENC 1101*):
   BSC 1020

2. Needs Assessment

   a. What is the CIM course outcome that you plan on teaching during your sustainability-focused lesson?
      Students will describe and address the biological basis of health.

   b. What is a particular lesson, activity, or unit you already use that you wish to incorporate sustainability? Or, if you will be creating a new lesson, which concepts might align with sustainability?
      Respiratory and Immune system

   c. What sustainability topic might it cover?
      The sustainability topic that would be covered in the lesson plan is the air pollution and effect of this topic in human health and disease

   For more resources see,
   - Sample Valencia lesson plans (English, New Student Experience, Mathematics),
   - Tips on integrating sustainability into existing courses
   - Arizona State University's archive of sustainability lesson plans

Week 2

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3. Student Learning Outcomes

   What is your end learning goal with the lesson? What should the students be able to do/understand/care about?

   a. Student will be able to describe the causes of air pollution especially from human activities

b. Student will be able to analyze the impact of air pollution on the respiratory system

Week 3

4. Lesson Title: ***Air pollution and Asthma***

5. Lesson Summary:
    Air pollution has local and global effects, destroying plant and animal life, causing global warming, destruction of the Ozone layer and natural habitats. Medical research has proven air pollution can cause varieties of diseases in humans such as common respiratory disease such as asthma, chronic bronchitis, lung cancer, emphysema, and cardiovascular complication.
    In lesson my goal is to improve student knowledge of the effect of air pollution on one of the respiratory disorders, by assigning students to do research project.

6. Lesson Overview/Background:

    a. How will your lesson connect to the 3 pillars of sustainability: environmental, social, and economic issues?
        The pillars that are connect to this lesson are:
        Environmental: Students will address some of the causes of air pollution
        Social: As member of our society, students will informed of the effect of air pollution
        Economic: Students will find out the economic cost of treating a disease caused by/worsen by air
        pollution

    b. How will your lesson address at least one of the 5 key concepts?
        The lesson will address the long term development and system dynamic
        The key vocabulary in this lesson are:
    1. *Air pollution: the condition in which air contains foreign substances in a form of solid, liquid or gas that can harm living organism.*
    2. *Asthma: is a chronic, inflammatory disease of respiratory system*
    3. *Emphysema: is a chronic respiratory disease with over-inflation of lungs*
    4. *Chronic bronchitis: is a chronic obstructive, and debilitating diseases of respiratory system*
    5. *Hazard: any substance that cause harm to human or animal*
7. Assessment

    a. Identify the type(s) of assessment (*experiential, inquiry-based, project-based, place-based*) strategies you will use to assess content mastery (summative) and write out the instructions that will be given to students.

        Project Based Learning

        Formative assessment:
- *A short quiz on medical term used in the following research.*
- *Students will present their finding in the class.*

- *A class discussion to allow students share their perspectives.*
  - ***Summative assessment:***
- *A class test on the effect of air pollution on asthma*
- *I assign students to do a research project on the effects of the air pollution on asthma.*

    b.   Identify the strategy or strategies you will use to assess student learning and provide ongoing feedback ([formative](#)) and write out the instructions that will be given to students.

    The strategy that will be used is summative assessment by having students to answer the open-end question: what is the impact of air pollution in respiratory and immune system. Each group has to do research and investigate the air quality in their local community and find pollutants and their effects on the respiratory system and asthma (including exacerbation of asthma) and infectious diseases of lung and do the presentation and discuss their finding information and possible ways that community can do to reduce the air pollution and their effect and long-term effect of these changes by community that can improve the health and well-being

    of the residents of the community.

- Provide a short lecture on the effects of air pollution on human health
- Encourage students to answer questions or ask questions throughout the lecture
- Assign students to take a short survey to measure their familiarity with online research
- Assign students to take a short quiz (formative assessment) on the medical terms used for the research project
- Discuss the correct answers of questions in the class, and clarify the meaning of terms
- Assign students in group of two to three to do a research project on the effects of air pollution on asthma (groups are determined based on student familiarity with online research)
- Demonstrate the use of proper/reliable resources by guiding students through some online resources such as the college library online resource
- Assign the due date for student presentation
- A class discussion after student presentation to allow students express their perspectives on the presented topics
- A post survey to measure the effectiveness of the research project in expanding student viewpoint/understanding of the effects of air pollution on asthma (formative assessment)

8. Lesson Activities

    a.   What will students need to know or do prior to the lesson activity or activities (readings, items to be prepared, prior knowledge)?

- Students study the key terms (vocabularies)
- Students study about COPD, asthma, and pathophysiology of the respiratory diseases
- Students participate in question and answer during the short lecture about the topic

b. Describe the activity or activities students will be doing.

   i.   Write out the instructions that will be given to students.

- The pre-test that includes
- 1. Define the air pollution and causes of air pollution(focus on human activities causes air pollution by searching online)
- 2. Define the medical term related to respiratory system: COPD, asthma, infectious disease of respiratory system, lung cancer(you can refer to your textbook)
- Do you know which website can you use to find the accurate answers?
- Your group has to write a research project on the effect of air pollution in asthma/exacerbation and some suggestion/solution to reduce air pollution and improve the health and well-being of the residents of your community.
- Your group has to present the research in 2 weeks. Presentation has to be interactive such as talk about your experience and tell story and use kahoot and contains Q/A activities. The length of presentation is 20 minutes.
- Please complete the post test.
- At the end of class presentation, you will complete the post survey.

   ii.   How will you keep students engaged throughout this activity.
- The students will be engage by asking questions and searching online.

9. Materials and Resources

For the questions below, include links to resources you plan to use with a summary of how you plan to use the resource.

a. What content do you already have?
- The powerpoint and textbook

b. What new materials will you need to create?
www.mayoclinic.org
www3.epa.gov

Week 4

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10. Reflection
   a. Explain how your outcome(s), learning activities, and assessments are aligned and connected.
      This lesson plan connect the outcome of the lesson to learning activities and assessment by having students to do research and give them the sense of ownership in the learning process and enhance the active learning to understand the importance of sustainability in human health.

   b. How will you evaluate the effectiveness of your lesson?
      By using pretest and posttest comparison, I can evaluate the effectiveness of my lesson and reviewing student feedback