Paul Coleman

**SINGLE SUBJECT DAILY LESSON DESIGN FORMAT**

**FOR RESOURCES ON HOW TO COMPLETE THIS FORM, SEE** [**https://sites.google.com/site/lessondesignresources/home**](https://sites.google.com/site/lessondesignresources/home)

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| TITLE OF LESSON  Fission vs. Fusion | CURRICULUM AREA & GRADE LEVEL  8th Grade Science | | DATE OF LESSON  11/13/13 |
| CA CONTENT STANDARD(S) ADDRESSED  4c. Students know how to use astronomical units and light years as measures of distance between the Sun, stars, and Earth. | | CA ELD STANDARD(S) ADDRESSED  12. Selecting language resources (expanding) | |
| BIG IDEA ADDRESSED (Enduring Understanding: WHY this material is important; how it fits in with the unit or theme)  This fits into our look at physical and chemical properties. This will be our last look at our of the properties that students do not yet fully understand. We will look at radioactivity and how that applies to fission and fusion. We will look at those two events and see how they can be applied in our world. We will do all this while discussing the scientist Marie Curie and her work with radioactive particles. | | ESSENTIAL QUESTIONS ADDRESSED  What is radioactivity?  Who is Marie Curie and what did she do?  What is fission and fusion?  How can we use these phenomenon to help our society? | |
| OBJECTIVE(S) OR LEARNING GOAL(S)—*choose type(s) as appropriate*   * After listening to discussions and reading the article, SWBAT increase their academic vocabulary by writing and discussing using these key words such as parallax, angle, light year, and perspective. * After the discussion on parallax, SWBAT understand parallax by using their own examples of the phenomenon and answer questions about it. | | ASSESSMENT(S)—*choose type(s) as appropriate*   * Diagnostic- Assess students’ understanding by the GQ before the lesson begins to gauge where the students are. * Formative- Students will demonstrate understanding by participating in thumb exercise and answering questions. * Formative- Students will answer questions relating to the article. * Summative- Teacher will ask wrap up questions after the video. | |
| PREDICTION OF LIKELY DIFFICULTIES STUDENTS MAY ENCOUNTER WITH THIS MATERIAL *(possible misconceptions or assumptions)*  The problem this lesson has is that students could get off task especially when we do the larger class participation. You will have to center the students before we get to the larger participation.  Conceptually, one difficult piece of questioning is number 3 on the article when it talks about failures to find parallax. If you see that the students are not understanding as you approach this question, then a way you can differentiate is to skip that question and focus more on the distances to stars and using key vocabulary like light year. This is more important than question 3. | | | |
| INSTRUCTIONAL STRATEGIES: *What the teacher does to help students cope with the difficulties in order to succeed*   |  |  |  | | --- | --- | --- | | STEPS (Fill in each box with specific information) | LEARNING STYLE(S) ADDRESSED | REASONS/RATIONALES | | Anticipatory Set (“Into”)  (10 min) Teacher puts on music and projects Guiding Question on projector. “What is fission? What is fusion? Explain and draw a diagram.” Teacher will conduct a class discussion after the class has finished writing the GQ. | Auditory and Visual | Get students excited about starting class. This is a class routine. Gives teacher a diagnostic assessment. | | Instruction (“Through”)  (7 min) Teacher will introduce the notion of parallax and show students the example of holding their thumbs up one foot from their face. Students will close one eye and then the other. Students will note the distance of the apparent move between different perspectives (different eyes). Students will repeat process with arm completely outstretched. Then students will compare angle with different distances object (thumb) is from face. Students will see that the parallax is less when the thumb is farther away. Teacher will use key words like parallax, angle, and perspective.  (5 min) Teacher will work on the whiteboard to show that objects that are farther distances from the observers have a smaller parallax than closer objects (thumb example). Show how we can use parallax to find the distances to objects. Teacher will use key words like parallax, angle, and perspective.  (5 min) Having a better understanding of parallax, teacher will ask the students to come up with their own examples of parallax in their own lives.  (10 min) Teacher will then ask students in middle of the classroom try to record the parallax of a distant object (document cam) using their eyes. This will be difficult because the angle will be so small. They will not be able to record it very effectively. Teacher will ask students what is a more effective way to measure the distance using parallax. Class will discover that it is better to use a distance where the perspectives are farther apart. From this the class will use two people at other corners of the class to measure the parallax of the doc cam. Here parallax will be much greater value making it a better way to measure distant objects. Teacher will use key words like parallax, angle, and perspective.  (5 min) Teacher will ask how this relates to finding the distances to stars. Teacher will use whiteboard to show how scientists use parallax to find the distance to stars by using the distance of the Earth’s orbit as the two points of perspective.  After understanding the basics of parallax, students will be better able to understand the article on parallax. | Auditory, visual, kinesthetic | Introduce the concept of parallax. Prepares students from discussion and demonstrations.  This will illustrate the demonstration on the board and make it clear for the students to see. This is good repetition of key vocabulary.  This will give students a personal look at what parallax is. Background building.  This is a good demonstration that will show that the greater the distance between the points of perspective the large parallax of object at a given distance. This will lead into why we measure from opposite ends of our orbit.  Brings relevance to exercise.  Background building. | | Guided Practice (“Through”)  (10 min) Students will read article on parallax and then answer questions that will be written on their paper. Article is chunked from the larger article “The Parallax View.” Teacher will have to explain that Tycho, Galileo, and Kepler are ancient astronomers. In addition, teacher will explain Earth center universe and heliocentric model in the second paragraph. Class will have a discussion on questions after students have read. Teacher will use key words like parallax, angle, and light year in discussion. | Auditory | Read and use academic language. Formative assessment with question/answer after students read. Vocab building. | | Closure *(summarize; make meaning of the lesson)*  (3 min) Teacher will show video that summaries the key ideas of the lesson. Teacher will use key words like parallax and light year. | Auditory and visual | Wrap up video. Vocab building. | | Transfer (“Beyond”) *(opportunities to apply the learning)*  (5 min) Teacher will then ask the class closing questions about video and about the entire lesson. Teacher will use key words like parallax and light year. | Auditory | One last summative assessment to make sure that everyone understood the lesson. Vocab building. | |  |  |  | | | STUDENT ACTIVITIES: *What the students do*   |  |  |  | | --- | --- | --- | | STEPS (Fill in each box with specific information) | LEARNING STYLE(S) ADDRESSED | REASONS/RATIONALES | | Anticipatory Set (“Into”)  (10 min) Listen to music and write down and answer GQ. Students will then share with their group table and then share with the whole class. | Auditory and Visual | This will guide their minds to be thinking about the exercise ahead and centered for class. | | Instruction (“Through”)  (7 min) Students will listen to explanation on parallax and participate in thumb exercise described. Students will put thumb at two different distances from face and close one eye at a time noting the difference in the angle.  (5 min) Students will follow whiteboard discussion.  (5 min) Students will write out own examples of parallax and then share with class.  (10 min) Students will participate in activity to find the parallax of the document cam from different parts of the room.  (5 min) Students will listen and discuss how this relates to the distance of stars. | Auditory, visual, kinesthetic | This will help the students visualize parallax and get them using their hands.  This will connect what they just saw visually to a diagram on the whiteboard.  This will give a personal view of what parallax is.  This is another visual.  This will relate it to the stars. | | Guided Practice (“Through”)  (10 min) Students will read article and write down answer from article on their paper. | Auditory, visual | This will have the students read something they just discussed and then use academic vocabulary. | | Closure *(summarize; make meaning of the lesson)*  (3 min) Students will watch video. | Auditory, visual | This is a good summarizing video to recap past ideas. | | Transfer (“Beyond”) (opportunities to apply the learning)  (5 min) Students will discuss what they have just learned and how it applies to the rest of astronomy. | Auditory | This will recap the lesson. | |  |  |  | | |
| INFO ABOUT ENGLISH LANGUAGE LEARNERS: *Consider students individually and as a group*   * Sheyla- level 3- Strong speaking skills. Needs help writing. * Vicente- level 3- Very strong student. Help with writing. * Cesar- level 3- Good speaker. Will participate. * Rachael- level 5- Shy but has good responses. Works hard. * Daniela- level 4- Smart student. Works well in groups. * Victor- level 4- Shy. Good writer.   This is a good group but extra help needs to be given for new vocabulary and with writing. Students may require extra help with labs. | | INFO ABOUT STUDENTS W/ SPECIAL NEEDS (include gifted students) : *Consider students individually & collectively*   * Nash- RSP- Very smart student. Will participate frequently. * Sarah- RSP- Nash’s sister. Also very smart. * Bryce- RSP- Very enthusiastic. Loves science and animals. * Sebastian- RSP- Has difficulty writing. One of our lower students. * Alex- RSP- Participates in class. May need extra help. * Jordan- RSP- Has difficulty writing.   Most of our RSP students can be involved with the class and learn at a standard pace. Sebastian and Alex are two students that may need extra assistance. | |
| DIFFERENTIATION FOR ENGLISH LANGUAGE LEARNERS—*choose area(s) as necessary based on information above*   * Process (***how*** *the material is learned*)- Teacher will use extra scaffolding and background building to prepare EL students for the article. Teacher will introduce concept of parallax to students using thumb exercise, asking students to bring in own examples to reinforce idea, then finally connecting this to what scientists do to find the distances to stars. When the students are reading the article, teacher will explain key astronomers and concepts that the students do not know to help with the understanding of the article. Lastly, a recap of the article and answering the four questions about the article as a class will help sure up any misunderstanding. | | DIFFERENTIATION FOR STUDENTS WITH SPECIAL NEEDS— *choose area(s) as necessary based on information above*   * Content (***what*** *material—including key vocabulary—is learned*)- Teacher will repetitively use new vocabulary such as parallax, angle, perspective, and light year to reinforce new concepts. This will be done in discussion, on the whiteboard, in the article, and in the video. | |
| RESOURCES (*Attach materials needed to implement the lesson—e.g., power point presentation, text, graphic organizer)*  Whiteboard, dry erase pens, powerpoint, article on parallax, video on parallax | | REFLECTION (*Questions to consider after the lesson:* What went well? Why? What evidence do I have that shows the extent to which the lesson was effective? What problems do students still have? How will I deal with the students whose understanding of the material is weak? How will I remediate? What changes will I make to enhance learning the next time I teach this lesson? Why?)  This lesson went well because there were exercises imbedded in the lesson that allowed the students to learn visually and kinesthetically. The students liked using their thumbs in that exercise. Students still had difficulty with the finer points on parallax but for the most part there was a good amount of learning in the lesson. For the students that still had problems I would try to emphasize the video. That was a good summation of the lesson. If I were to change the lesson I would try to move quicker through the board work and focus more on the video. There was more learning that took place there I think. I might also put in an assessment that the students would turn in to me. | |

**Single Subject Lesson Design Rubric**

**Name Paul Coleman Lesson Title Parallax Date November 4, 2013**

See Lesson Design Resources Website for more details: <https://sites.google.com/site/lessondesignresources/home>

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| **Design Component**  **& Criteria** | **Approaching** | **Meets**  (includes the criteria for Approaching) | **Exceeds**  (includes the criteria for Approaching & Meets) | **Peer comments or self-assessment** |
| **Title, Curriculum Area, Grade Level & Date** | Provides a title that is related to the lesson activity | & addresses the unit it belongs to and in what curriculum area and grade | & describes where it fits within a unit plan, i.e. Third lesson in a 4-week unit on Colonization. | Title, area, grade, level and date are listed |
| **Rationale: Big Idea & Essential Questions** | Describes the rationale for teaching this lesson (*big ideas, enduring understandings, essential questions*) … | & addresses how the instructional strategies and the student activities are suited to meet the standard and objective of the lesson… | & explains how the assessment is a valid (authentic) and reliable (consistent) way to assess student learning. | Describes how activities and strategies meet standard |
| **Standards, Objectives & Assessment** | Both CA Content and ELD Standards are identified and each is addressed in an objective that contains a condition, verb, and criteria and is assessed | & each objective is labeled by the type (*cognitive, affective, psychomotor or language*) and the number of the standard it addresses and the type of assessment is labeled (*diagnostic, formative or summative*) | & expectations are clearly communicated to students (rubric, model or student work) | Objectives and assessment labeled accordingly |
| **Predication of Likely Difficulties** | Possible misconceptions or assumption are identified | & the misconception or assumptions are identified as being in the content, process or product of the lesson | & the instructional strategies, student activities &/or the differentiation strategies work to avoid these misconceptions or assumptions | Shows how to differentiate for a difficult question. |
| **Instructional Strategies** | Provides an *into*, *through* and a *beyond* activity for lesson… | & describes in detail the steps the teacher will take to implement the lesson and instructional materials (i.e. graphic organizer, ppt, model, rubric)… | & provides a written script for teacher and times for each activity. | Lists a very detailed description of the lesson and includes article read by students |
| **Student Activities** | Describes what the students will do during the *into*, *through* and *beyond* activity of the lesson… | & each activity is student centered with multiple opportunities for the instructor to check for understanding… | & provides times for each activity. | Lists a very detailed plan of activities for students and provides times for the activities |
| **Student Information** | Identify the names of the students that need differentiation (both ELL & Students w/ Sp Ed needs) | & describe each of the students readiness level, learning profile and interests | & includes prior successful differentiation strategies for each student. | Lists all appropriate levels for students. |
| **Differentiation** | Describes the differentiation strategy for the ELL and the students with special education needs … | & labels the strategy (*content, process or product*) and the way it addresses the students identity and developmental needs (*readiness, interest or learning profile*)… | & provides how the strategy will be assessed for effectiveness and altered if needed. | Describes a detailed description of how the differentiation will be throughout the lesson. |
| **Resources** | All instructional materials needed to implement the lesson are listed. | All instructional materials that are needed to implement the lesson listed and described. | & all materials listed for the unit are listed and provided, such as power point, graphic organizer, sample student work, assignment rubric, quiz... | Lists all appropriate resources |
| **Reflection** | Reflection is provided on the strengths, limitations, assessment and differentiation plan. | The reflection addresses all prompts and identifies what would be done next based on this reflection. | Reflection is complete and a new lesson is provided to address the concerns in the reflection. | Appropriate reflection provided |
| **Self-Evaluation**  (10% will be deducted  if not included) | Provides a copy of the rubric with the lesson plan… | & highlights or circles the evaluated criteria for each lesson component… | & provides evidence for each criteria marked. | Evidence provided |