



Lesson Plan for Implementing NETS•S—Template I (More Directed Learning Activities)

Template with guiding questions

Teacher(s)

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Position

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Grade Level(s)

4th

Content Area

Science

Time line

four-five weeks

Standards (What do you want students to know and be able to do? What knowledge, skills, and strategies do you expect students to gain? Are there connections to other curriculum areas and subject area benchmarks?) Please put a summary of the standards you will be addressing rather than abbreviations and numbers that indicate which standards were addressed.

S4E1 Students will compare and contrast the physical attributes of stars, star patterns, and planets.

a. Recognize the physical attributes of stars in the night sky such as number, size, color, and patterns.

b. Compare the similarities and differences of planets to the stars in appearance, position, and number in the night sky.

c. Explain why the pattern of stars in a constellation stays the same, but a planet can be seen in different locations at different times.

d. Identify how technology is used to observe distant objects in the sky.

S4E2 Students will model the position and motion of the earth in the solar system and will explain the role of relative position and motion in determining sequence of the phases of the moon.

a. Explain the day/night cycle of the earth using a model.

b. Explain the sequence of the phases of the moon.

c. Demonstrate the revolution of the earth around the sun and the earth's tilt to explain the seasonal changes.

d. Demonstrate the relative size and order from the sun of the planets in the solar system.

Content
Standards

NETS*S Standards:	<ol style="list-style-type: none"> 1. Creativity and innovation- B. Create original works as a means of personal or group expression 2. Communication and collaboration- B. Communicate information and ideas effectively to multiple audiences using a variety of media and formats 3. Research and Information fluency- B. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media 4. Critical thinking, problem solving, decision making- B. Plan and manage activities to develop a solution or complete a project 5. Digital Citizenship A. Advocate and practice safe, legal, and responsible use of information and technology 6. Technology operations and concepts- A. Understand and use technology systems B. Select and use applications effectively and productively
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Overview (a short summary of the lesson or unit including assignment or expected or possible products)

The purpose of this unit was to teach students how to safely research information about the solar system, to apply their findings, and to produce a product that was presented to their peers. Students were taught how to use [Edmodo](#) for reference to standards, rubrics, approved websites, and essential questions throughout the unit; students were taught how to use [Brainpop](#) for animated research, review, and interactive practice; and students were taught how to use [Kidrex](#) as a safe student web browser for research of information and images. Gifted students used a choice board menu that is called planetary baseball where they select products based on points. Regular Education students used a choice board and Special education students produced a power point. Students were given the opportunity to select their product and content for their product. The choice boards were used for differentiation. Students chose to produce a poster, brochure, PowerPoint, or model with report or mobile with report. Students worked with a partner or in small groups to plan, research, and apply findings. Each student produced his or her own product and presented to the class. (We are working to get access to e-mail addresses so we can do Prezi's and share projects collaboratively with others.) Projects are being posted for sharing by each block in a Weebly. <http://hickssolarsystem.weebly.com>

Essential Questions (What **essential question** or learning are you addressing? What would students care or want to know about the topic? What are some questions to get students thinking about the topic or generate interest about the topic? Additionally, what questions can you ask students to help them focus on important aspects of the topic? (Guiding questions) What background or prior knowledge will you expect students to bring to this topic and build on?) Remember, essential questions are meant to guide the lesson by provoking inquiry. They should not be answered with a simple “yes” or “no” and should have many acceptable answers.

1. What is a star? 2. How are stars alike and different from each other? 3. How does the sun compare to other stars in the night sky? 4. How are constellations alike and different? 5. Why are some constellations observed during some seasons, but not during other seasons? 6. How are planets and stars alike and different in relation to appearance, position, and number in the night sky? 7. Why are planets seen in different locations in the night sky throughout the year? 8. How can technology be used to observe distant objects in the sky? 10. Why are different phases of the moon observed throughout the month? What is the sequence of those phases? 12. What are the relative sizes of the planets in our solar system? 13. What is the relative order of the planets from the sun in our solar system?

Assessment (What will students do or produce to illustrate their learning? What can students do to generate new knowledge? How will you assess how students are progressing (*formative assessment*)? How will you assess what they produce or do? How will you differentiate products?) You must attach copies of your assessment and/or rubrics. Include these in your presentation as well.

Students were assessed by using their daily response to the essential question in Edmodo, taking a posttest, and by presenting their choice of product (PowerPoint, brochure, mobile, model, poster). There is a rubric for this unit that was developed by the students and teacher.

Resources (How does technology support student learning? What digital tools, and resources—online student tools, research sites, student handouts, tools, tutorials, templates, assessment rubrics, etc—help elucidate or explain the content or allow students to interact with the content? What previous technology skills should students have to complete this project?)

Technology supports student learning by providing them a connection to real time three- dimensional information and images. It also allows for various interactions that aren't "flat". Students need to have a working knowledge of Word PowerPoint, and accessing the internet to complete unit. Sites and resources that were used during this unit include:

www.kidrex.org

<http://www.galileo.usg.edu/welcome/>

<http://www.edmodo.com>

<http://www.brainpop.com>

Songs:

<http://www.flocabulary.com/moon-phases/>

<http://www.schooltube.com/video/de499ebb9d6449cc9dcc/Moon%20Phases%20Song>

<http://www.schooltube.com/video/bf0e5ada3fb0e...>

[http://www.schooltube.com/video/5dd216a7bbe1a97b3b8c/Phases%20of%20The%20Moon%20\(Rock%20Version\)](http://www.schooltube.com/video/5dd216a7bbe1a97b3b8c/Phases%20of%20The%20Moon%20(Rock%20Version))

<https://learni.st/boards/32530/learnings/246280-8-phases-and-i-know-em-lmfao-parody->

Websites:

<http://www.nasa.gov/topics/solarsystem/index.html>

<http://mrnussbaum.com/space/solarsystem/>

<http://www.sciencekids.co.nz/sciencefacts/space/>

<http://www.kidsastronomy.com/>

<http://www.fun-facts.org.uk/planets/stars.htm>

<http://www.ngkids.co.uk/did-you-know/Star-facts>

<http://www.ducksters.com/science/star.php>

<http://www.kidskonnnect.com/subjectindex/15-educational/science/102-star-a-constellations.html>

<http://resources.woodlands-junior.kent.sch.uk/time/moon/interactive.html>

http://www.moonphases.info/moon_phases.html

<http://www.kidport.com/reflib/science/space/MoonPhases.htm>

<http://www.solarsystemscope.com>

<http://www.brainpop.com/games/buildasolarsystem/>

<http://www.brainpop.com/games/flytomars/>

<http://interactivesites.weebly.com/solar-system.html>

<http://www.factmonster.com/ipka/A0921899.html>

<http://www.tcoe.org/scicon/instructionalguide/constellations.pdf>

<http://ictgames.com/dayNight/index.html>

<http://www.childrensuniversity.manchester.ac.uk/interactives/science/earthandbeyond/dayandnight/>

<http://resources.woodlands-junior.kent.sch.uk/time/>

<http://schoolmediainteractive.com/view/object/clip/326733DB339B2A1880A2C6C330EC95BA/05>

<http://studyjams.scholastic.com/studyjams/jams/science/solar-system/day-on-earth.htm>

http://highered.mheducation.com/sites/007299181x/student_view0/chapter2/seasons_interactive.html

<http://scienceofeverydaylife.discoveryeducation.com/teachers/videos.cfm?grade=grades35>

<http://www.pbslearningmedia.org/resource/ess05.sci.ess.eiu.seasonsgame/earth-in-motion-seasons/>

http://www.giantworlds.org/interactives/extreme_seasons.php

<http://www.neok12.com/Seasons.htm>

Instructional Plan Preparation (What student **needs, interests, and prior learning** provide a foundation for this lesson? How can you find out if students have this foundation? What difficulties might students have?)

A pre-test was administered to students to check for prior knowledge. The pre-test showed there was some prior knowledge of the phases of the moon. They knew the number of phases but were unsure of vocabulary. This let me know that we needed to spend additional time and strategies to learn the vocabulary.

Management Describe the classroom management strategies will you use to manage your students and the use of digital tools and resources. How and where will your students work? (Small groups, whole group, individuals, classroom, lab, etc.) What strategies will you use to achieve equitable access to the Internet while completing this lesson? Describe what technical issues might arise during the Internet lesson and explain how you will resolve or **trouble-shoot** them? Please note: Trouble-shooting should occur prior to implementing the lesson as well as throughout the process. Be sure to indicate how you prepared for problems and work through the issues that occurred as you implemented and even after the lesson was completed.

Students worked in small groups and as partners researching in a regular classroom setting. They normally work in groups at tables but are allowed to work anywhere in the room. Students have computers at a ratio of 1:1. I used the promethean board to show students the steps to follow. While students were instructed how to set up their Brainpop account there was a little confusion because there were so many steps to follow. I should have had written instructions to follow. I walked around the room as students were working to help those who were struggling. Students have been taught that if they are having issues to bring me their computer so I can fixed the problem.

Instructional Strategies and Learning Activities – Describe the research-based instructional strategies you will use with this lesson. How will your learning environment support these activities? What is your role? What are the students' roles in the lesson? How can you ensure **higher order thinking at the analysis, evaluation, or creativity levels of Bloom's Taxonomy**? How can the technology support your teaching? What authentic, relevant, and meaningful learning activities and tasks will your students complete? How will they build knowledge and skills? How will students use digital tools and resources to **communicate and collaborate** with each other and others? How will you facilitate the collaboration?

This lesson is weak in collaboration. Students are limited by not having e-mail addresses for setting up accounts. This is something that the instructional technologist and I are working to fix. During this unit I was facilitator, resource provider, encourager, and technology problem solver. Students designed, and produced PowerPoint's, brochures, mobiles, models, or posters. They used the internet for research and images. Students used a choice board. This allowed for choice of content and product.

Differentiation (How will you differentiate **content and process** to accommodate various learning styles and abilities? How will you help students learn independently and with others? How will you provide extensions and opportunities for enrichment? What assistive technologies will you need to provide?)

Students worked with partners or in small groups to research and then produce a product individually. They were allowed to help each other as needed. Gifted students used a choice board menu that is called planetary baseball where they select products based on points. Regular Education students used a choice board and Special Education students produced a power point. Currently there is one student uses a computer that is furnished by the Special Education department because of his need for a larger screen.

Reflection (Will there be a closing event? Will students be asked to reflect upon their work? Will students be asked to provide feedback on the assignment itself? What will be *your process* for answering the following questions?

- Did students find the lesson meaningful and worth completing?
- In what ways was this lesson effective?
- What went well and why?
- What did not go well and why?
- How would you teach this lesson differently?)

Students were engaged and interested in the solar system unit. They asked meaningful questions and extended their learning by researching answers to questions that were not answered in class. This unit was successful because students showed growth from pre to post test and they could present correct information to their peers. I initially tried using safe search for kids for images and students were frustrated with ads that would pop up so we change our web browser to Kidrex. When I teach this unit again I will allow students to produce additional products and collaborate outside of the classroom. Students were able to choose their content and products after there was a base of information learned. Student products showed depth thought and planning.

Closure: Anything else you would like to reflect upon regarding lessons learned and/or your experience with implementing this lesson. What advice would you give others if they were to implement the lesson? Please provide a quality reflection on your experience with this lesson and its implementation.

This lesson allowed me to let students take responsibility for their learning. They would ask questions and I would give answers, "You tell me." "Prove the answer to me." "Where did you find your answer?" I would tell others to allow students to dig as deep as they would like and to not be afraid to let them have the flexibility to choose their own products. As I look back over this lesson I realize that I am learning that 4th grade students understand technology to a greater extent than I thought. Now that I am confident my students are ready my next lesson will include more web 2.0 tools like [tagxedo](#), [squworl](#), a blog with [Kidblog](#) or [Edublog](#), and [flipgrid](#) (set up by media specialist). I am more confident as a technology teacher so we will all step outside of the learning box together.