# Adapted Lesson Plan Assignment

## Why are you doing this assignment?

This assignment is designed to support you in teaching a science lesson in your field placement. You will reflect on your teaching in the final course assignment (Adapted Lesson Reflection).

## What will you do in this assignment?

Starting with existing curriculum materials, you will create a lesson plan that:

1. Reflects the ideas about science teaching and learning that we have been developing in this course and
2. Is tailored to the needs of the children in your field placement.

**Your lesson plan must be approved before you teach your lesson in your field placement classroom.**

## How will I complete this assignment?

You will start by talking with your mentor teacher about how you will be able to teach a science lesson in their classroom.

* Are you free to select a topic or does your mentor teacher have a topic that they would like you to teach?
* Does your mentor teacher have curriculum materials that they expect you to use?
* How much time do you have to teach your lesson?
	+ Try to have at least 30 minutes for teaching your lesson. (This can be slightly shorter if you are working with children PK-grade 2.)
* Will you teach your lesson with a small group of children or with the whole class?
	+ Some mentor teachers have a number of MSU students in their classrooms this semester. If you cannot teach a whole class lesson by yourself, ask if you can work with a small group. (This is preferable to trying to teach with another MSU student.) If you must teach with another MSU student, please talk with your instructor about your particular circumstances.

***If your mentor teacher has allowed you to pick your own topic and has not provided curriculum materials for you to use:***

You will identify your topic and select curriculum materials by iteratively:

* Identifying a potential topic by searching the [NGSS performance expectations](https://www.nextgenscience.org/) for the grade of your placement classroom.
* Look for curriculum materials that have been designed to teach the topic you have chosen.
	+ HINT: This assignment will be much easier if you start with high quality curriculum materials. Your instructor can guide you to such materials. *If you find your own lesson on the internet, please consult with your instructor before proceeding.*

***If your mentor teacher has identified a topic for you but has not provided curriculum materials:***

* Look for curriculum materials that have been designed to teach the topic you were assigned.
	+ HINT: This assignment will be much easier if you start with high quality curriculum materials. Your instructor can guide you to such materials. *If you find your own lesson on the internet, please consult with your instructor before proceeding.*

***If your mentor teacher has identified a topic for you and provided curriculum materials for you***: Continue to the steps below.

1. Start by unpacking the performance expectation you have chosen for your lesson. Identify your topic (the part of the performance expectation you will address with your lesson), then describe what science content is important for children to learn, what children may have already learned and what children will be learning in upcoming years, and the ideas and/or experiences children might already have about your topic.
2. Provide some information about the children in your field placement.
* What do you know about the science teaching and learning in your field placement classroom?
* What do you know about the children in your field placement classroom, as learners and as people? (For example: Are there emergent multilingual children or children with special needs in the classroom? What do the children seem excited about or interested in?)
1. Analyze the lesson that you will be adapting, focusing on:
* Whether the lesson is consistent with ideas about science teaching and learning that we have been developing in this course (e.g., will children be engaged in “figuring out”?)
* Whether the lesson seems relevant to and appropriate for the children in your field placement classroom.
1. Adapt the lesson to address any issues you have identified in (3) and create a plan that you can follow during the lesson.

***If you will teach the same lesson as 1-2 colleague(s)***--e.g., you are placed at the same grade level but in different classrooms, you are placed in the same classroom and each will teach the lesson to a different small group of children)--***you may collaborate on parts of this assignment.*** Because you will each be working with a different group of children, your descriptions of the children (2), analysis in terms of relevance to the children (3), and adaptation to the children (4) will be different.

**Please note:** It will be easier to collaborate with colleagues in our section—rather than those in different sections. However, if you would like to work on your lesson plan with someone in a different section, please talk with me to ensure that I can coordinate with the other instructor(s).

## Grading

|  | **Components** |
| --- | --- |
| 5 pts | ***Unpacking the NGSS***The table reflects engagement with both NGSS materials and outside resources (for ideas children commonly have), as well as thoughtful consideration of relevant experiences and family/community knowledge children might have. |
| 6 pts | ***Describing the children you will be engaging with***The descriptions are detailed, asset-based, and reflect engagement with children in the field placement. |
| 6 pts | ***Analyzing the lesson (critiquing curriculum materials)***The analysis considers both strengths and weaknesses of the curriculum materials and reflects engagement with course ideas.  |
| 8 pts | ***Planning the lesson (adapting curriculum materials)***Proposed modifications 1. align with the description of the children and with the analysis of curriculum materials
2. are clearly reflected in the teaching plan.

Materials, norms, and equity strategies are appropriate and clearly described. The teaching plan is detailed and clear enough that another teacher could use it for their own teaching.  |
| 25 pts | ***Total*** |

# Adapted Lesson Plan Assignment Template

To complete this assignment, please fill in the template below. (You can simply save this document to your computer, remove the directions above, and replace the *red italicized* text below with your own text to complete each section. Red text that is not italicized provides additional guidance.)

* Please rename the document “ALP\_YourLastName\_YourFirstName.docx”
* Turn your assignment in to the D2L dropbox.

## Collaborator(s): If your assignment was completed with (a) colleague(s) who will be teaching from the same curriculum materials, please write their name(s) here.

## Unpacking the NGSS

### NGSS Performance Expectation:

| * **4-PS4-1.** **Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.** [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.] [Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.]
* **4-ESS2-2.** ***(Partial)* Analyze and interpret data from maps to describe patterns of Earth’s features.** [Clarification Statement: Maps can include topographic maps of Earth’s land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]
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|  | ***Disciplinary Core Idea*** | ***Science/Engineering Practice*** | ***Crosscutting Concept*** |
| --- | --- | --- | --- |
| ***Topic/Aspect*** | PS4.A: Wave Properties * [Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach. (Note: This grade band endpoint was moved from K–2.)](http://www.nap.edu/openbook.php?record_id=13165&page=131)
* [Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).](http://www.nap.edu/openbook.php?record_id=13165&page=131)

 | Analyzing and Interpreting Data * [Analyze and interpret data to make sense of phenomena using logical reasoning.](http://www.nap.edu/openbook.php?record_id=13165&page=61)
 | * [Patterns can be used as evidence to support an explanation.](http://www.nap.edu/openbook.php?record_id=13165&page=85) (4-ESS2-2)
 |
| ***What is Important for Children to Learn*** | *Waves have patterns of motion, which happen when there is something disturbing the surface. Similar type ways can have different amplitudes and wavelengths. Waves can push objects and make them move.*  | *Read and be able to understand grade-level informational texts and other media to restate/summarize as well as learn scientific and technical details. Be able to describe how these details are supported by evidence in the text.* | *I will be focusing on the patterns aspect of the CCC. For grade 4, that is having students being able to see similarities and differences to sort or classify natural objects and designed products. They can identify patterns related to time, rates of change and cycles, and use patterns to make predictions.*  |
| ***Ideas, experiences, and/or family and community knowledge*** | *Two ideas students may have from outside of school about waves is how the tides change based on the time of day. Another idea they may have is the fact that waves carry things to the shore because of the tides and motions.*  | ***Experiences:****The students in my class go to museums a lot with their families. When they read the information next to each exhibit, they are analyzing and interpreting data to make sense of what they are seeing.* *Children might already know what kinds of data to look for to make sense of a scientific phenomena based on this activity.*  | ***Experiences:****One example of this CCC that children may have experienced outside of school is sorting different kinds of shells on the beach based on similarities and differences.**Another experience they may have is seeing patterns of time pertaining to when the sun sets in the winter versus the summer.* *Children may already know how to sort natural objects by their similarities and differences and identify patterns.*  |

## Describing the children you will be engaging with

## Children who will engage with this lesson:

*I will be teaching this lesson to a small group of children.*

In the sections below:

* The group I will be teaching is a small group, but it is not picked until the day of the lesson. My class has about 20 students. There are students from different cultural backgrounds, including Asian, African American, Hispanic, White, etc. The students are very involved with science and like exploring different phenomena when they go to science class.

## Science teaching and learning experiences:

* *Science is taught every day for about 30 minutes.*
* *The children go across the hall for science class, since the fourth grade classes switch for science and social studies each day.*
* *The style of teaching for science is whole-group with small-group seating arrangements to allow for discussion. The style of learning involves a lot of technology. Each student has their own chromebook to use for science and other subjects provided by the school. Students also complete work in their science notebooks.*

## Children as learners:

* *There are a few emergent multilingual speakers in my classroom. They speak Arabic and English. They participate in class discussions with ease, but sometimes get pulled out of class to work with the ELL teacher/specialist in the school.*
* *There are no children with special needs in the classroom.*
* *The children are especially interested in science and math. They tend to engage more with these subjects when compared to other subjects such as social studies and English language arts. The students have strong computational skills, but have weaknesses in reading and writing.*

## Children as people:

* *The children are very outgoing and personable. They are very friendly with each other and children in other classrooms as well.*
* *The children are very interested in sports, video games, tv shows, and creative outlets such as drawing, painting, etc.*
* *Many children vacation to beaches with their families, which pertains to this lesson.*
* *The identity markers students use for themselves involve their races, such as Asian, African American, White, and Hispanic. They also use gender markers such as boy and girl.*

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## Analyzing and Adapting the Lesson (from Curriculum Materials)

## Citation: <https://docs.google.com/presentation/d/18qrcuXO0zuP1j751jsu1SYk5QRyexIKmdRA2Hy9UgDk/edit>

### Learning goal: Ask questions that arise from careful observation of phenomena to seek additional information about the causes for how a large shipping container ended up on a beach (effect).

|  | ***Curriculum Analysis*** | ***Adaptation Plans*** |
| --- | --- | --- |
| ***Alignment with NGSS***  | *In this section, please identify strengths and weaknesses of the lesson in terms of its alignment with the NGSS and the ways we have been talking about science teaching and learning in class. For example:** *The learning goal is for students to ask questions that arise from careful observation of phenomena to seek additional information about the causes for how a large shipping container ended up on a beach (effect). Students will meet this goal by filling out a t-chart on what they notice and what they wonder. They will also read an article about this issue. The lesson engages them in “figuring it out” by showing visual aids, like pictures. The lesson supports them to do this by showing various pictures of the washed-up shipping container as well as the litter it produced.*
* *This lesson supports the students’ learning of the DCI by showing evidence of the fact that waves can push objects and make them move.*
* *Children will be engaging with the SEP by analyzing and summarizing the article given in the curriculum.*
* *This curriculum does not relate much to the CCC unpacked above.*
 | *I will modify this lesson by adding a wave simulator activity for the students to do. In this simulator, the students are able to change the amplitude and frequency of water waves to see the similarities and differences. Because this lesson does not really relate to the CCC of patterns, this simulator will allow the students to make observations on the similarities and differences of the waves in relation to the amplitude and frequency.*  |
| ***Support for equity and social justice*** | * *The material supports my students’ strengths by having a scientific phenomena focus with the visual cues for them. This material adds to my students' weaknesses by giving them an article to read and annotate. It does not attend to the needs of my emergent multilingual students.*
* *There are no children with special needs in my classroom, so it does not apply here.*
	+ *All the children in the group will be able to participate in the activities.*
	+ *The plans do not include attention from children of marginalized groups.*
	+ *Children will be positioned as knowers with this lesson.*
* *The lesson connects to children’s experiences of visiting beaches with their families on vacation, as well as wondering about how waves bring things up to the shores.*
* *The lesson does not require long periods of sitting, as this is a shorter, 20-minute lesson. The students sit for their whole science hour, so this will not be an issue. Students will be able to engage with this topic as it interests them because of the real-life connections in the curriculum.*
* *This lesson addresses the social justice issue of environmental justice and protection of beaches.*
 | *I will modify this curriculum by reading the article aloud instead of the students reading it independently. This will better serve my ESL students and the other students as well since reading is not a strong suit for my classroom. Because the plans do not address marginalized groups, I will have a discussion with the students after reading the article about how it could potentially be more harmful towards marginalized areas.*  |
| ***Assessment*** | *In this section, please identify opportunities for students to demonstrate what they know and can do. For example,** *The lesson does not include a formative assessment.*
* *The students engage with the DCI based on the article and the t-chart. There is not a lot of opportunity for engagement in the CCC*
* *Students can make their sensemaking visible by writing down their ideas in their science notebooks.*
 | *I will assess students’ completion of the learning goal by having them write a short reflection of the article and answering the discussion questions throughout the lesson. I will have them engage with the simulation to meet the CCC stated above.*  |

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## Preparing to Teach

### Teaching Plan

*Provide a plan for your lesson. You may use the template below or use your own lesson plan format. This can be a marked-up copy of the curriculum materials or a separate step-by-step plan for your lesson. It should be clear and detailed enough that someone else could use it to teach your lesson. In your plan, be sure to explicitly include:*

* ***Materials:*** *Slide deck, 25 student handouts, chrome books, pencil, link to simulation*
* ***Classroom norms and transitions:*** *I will signal children’s attention by using the five four three two one hand signals. I will handle disruptions by setting a voice volume beforehand. I will pass out materials beforehand so we do not have to interrupt the lesson. I will move from one activity to the next by setting timers. I will use wait time talk moves.*
* ***Equitable instructional strategies:*** *I will make sure each child has the opportunity to share if needed as well as use small-group collaboration.*

Science Lesson Plan Template

| **Name: Meghan Hingst** |  **Grade: 4th** | **Date: 4/1/2024** |
| --- | --- | --- |
| **Content Area: Forces and Motion** | **Curriculum/Unit: Waves and Ocean Structures** | **Lesson: 1** |
| **Lesson Focus: Why do things wash up on the beach?** |
| **Preplanning Questions:** What do I want the students to figure out? (DCI)What experiences do students need to figure that out? (Phenomena, CCC)What do they need to do with that experience, what evidence will they need to have? (SEP, CCC)How will students show me what they have figured out? (Assessment) How will I use this to understand what students know? (Assessment - understand student sensemaking) |
|  |
| **3-Dimensional Learning Goal** | Students will ask questions and analyze data to identify the patterns in different wavelengths and amplitudes. |
| **Building Towards Performance Expectation** | NGSS 4-PS4-1 asks students to develop a model of waves to describe the pattern that waves can cause objects to move (we will get into the other pieces of that standard in later lessons |
| **Materials Needed** | Lesson 1 powerpoint slides, 25 student handouts, pencil, paper, chrome books, link to wave simulator |
| **Participation Strategies** | * Think-Share-Pair
* Elbow Partners
* Tables/Pod Discussions
 | * Sharing Out
* Chat Blast
* Whisper + Shout
 |
| **Introduction to Lesson and Driving Question****(5 mins)** | Ask students what they know about wavesAsk students “Why do things wash up on the beach?” |
| **Science and Engineering Practice: Show slide pictures and T-Chart****(10 mins)** | Show students the pictures of the things washed up on the beachAsk them to think about what they notice and what they wonderWrite their answers on the T-Chart in the slides. |
| **Science and Engineering Practice: Read article and do wave simulator****(10 mins)** | Read the article to the students as a whole group.As we read, have the students annotate the article by highlighting, underlining, or circling parts they find interesting that could aid in answering the big question.After reading, have a short discussion on the article.Have the students take a few moments to explore the simulator and have them write down their ideas of similarities and differences when changing the amplitude and wavelength.  |
| **Closing/ Transition Out of Lesson and revisiting the Driving Question****(5 mins)** | Have students use what they learned from the article and simulation to formulate their own answers to the big idea/driving question. |
| **Assessment** (Describe how students’ thinking will be visible and show you what they have figured out) | * Digital
* Oral
* Written
* Drawing
 |  |
| **Assessment Criteria** (What are you looking for in student work to help you know they’ve met your learning goal?) | I am looking for their ideas and possible answers to the big question. I am also looking for a list of similarities and differences when using the simulation to describe the wavelengths and amplitudes as well as what is happening.  |