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**Lesson Plan Template (Revised 2020)**

**Elementary Years**

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| **Name:** | **Daniel Mulhall** |

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| **Grade** | 4 | **Topic** | Science 4 – Moon and Tides |  |
| **Date** | March 9, 2021 | **Allotted Time** | 55 minutes |  |
| **STAGE 1: Desired Results**  **Cite sources used to develop this plan:** | | | |
| <https://curriculum.gov.bc.ca/curriculum/science/4/core>  <https://firstpeoplesprinciplesoflearning.wordpress.com/>  Hold up the sky / Jane Louise Curry  <https://www.youtube.com/watch?v=EFmPZv7LIdo&ab_channel=WhatIf>  <https://www.youtube.com/watch?v=3RdkXs8BibE&ab_channel=AtomicSchool>  <https://www.youtube.com/watch?v=yQnpWyXMyL8&ab_channel=OnTheCoastPhotography>  <https://www.youtube.com/watch?v=EnDJ6_XpGfo&ab_channel=KevinSnair>  <https://www.livescience.com/29621-what-causes-the-tides.html> | | | |

**Rationale**: *How is this lesson relevant at this time with these students? Why is it important?*

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| Over the last 4 weeks, students have been exploring the relationship between the earth, moon, and sun in a Science unit. This unit was started by the creation of a “wonder wall” where each student asked a question on a post it note; the unit has been very inquiry based with an encouraging of questions and “what ifs”. Each lesson has been highly discussion based and allowed students to ask questions to direct where the learning goers next. Due to this inquiry approach, we have explored mar, the mars rover, the size of the universe, moons of other planets, and much more. This lesson will pick up in the natural progression of this unit. We have explored eclipses, phases of the moon, how they all orbit each other and the seasons. This lesson will explore the connection and affects the moon has on the tides.  The previous lesson was a summative assessment piece, which had the students produce a poster demonstrating their learning. This lesson will pick up right where the last lesson left off.  At the end of the last lesson, a student asked, “what would happen if the moon vanished?” At the end of the lesson, I will play a video that explains what would happen if the moon vanished. This style of inquiry-based learning allows students to confidently ask questions they would like answers to, which allows them to be more invested in the unit.  This lesson will connect previous learning from the unit and introduce a new topic: tides. Scanning and formative assessment will be required, as I explore what the students currently know bout the earths tides and adapt my teaching for their level. |

**Core Competencies:** <https://curriculum.gov.bc.ca/competencies> (refer to “profiles” for some ideas)

*Which sub-core competencies will be the focus of this lesson? Briefly describe how and why:*

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| **Communication**   * Communicating * Collaborating | **Thinking**   * Creative Thinking * Critical & Reflective Thinking | **Personal and Social**   * Personal Awareness & Responsibility * Positive Personal & Cultural Identity * Social Awareness & Responsibility |
|  | **Students will continue to think about the larger context of the moon and its relationship with the earth. Students will think critically about how forces such as motion and gravity work together to provide the living conditions on earth.  Students will critically think about how the moon affects the tides.  Students will need to think about the world around them. Students will deepen their understanding of the world they live in and think creatively about the demonstrations they see (bucket swinging and model).**  **Students need to practice their critical thinking skills as they consider new concept.** |  |

**First Peoples Principles of Learning (FPPL):**

*How will Indigenous perspectives, knowledge & ways of knowing be acknowledged, honoured or integrated into this learning experience?* (Jo Chrona’s Blog: <https://firstpeoplesprinciplesoflearning.wordpress.com/>)

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| **FPPL to be included in this lesson:** | **How will the FPPL be embedded in lesson:** |
| **Learning recognizes the role of Indigenous knowledge**  *“recognizes that Indigenous knowledge contributes to the non-Indigenous understandings in the world.”*  *“Recognizing that all learners benefit from learning about Indigenous knowledge and perspectives”*  **Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place)** | **“Recognizing that all learners benefit from learning about Indigenous knowledge and perspectives”**  By utilizing the resources in the DLC kit “Aboriginal Astronomy” the teacher can bring traditional indigenous knowledge into the lesson. This lesson will begin with a reading of Hold up the sky / Jane Louise Curry. This will help bring an Indigenous perspective into our learning. This classroom has a few students who are Metis or have status but following the FPPL we can see that all students will benefit from this addition to the learning.  **“Learning is reflexive. It builds upon itself, exponentially increasing as learners develop new knowledge and deeper understandings of how everything is ultimately connected.”**  This lesson comes in the natural sequence of this learning. Students will see as their understanding of the moon and earth is expanded upon. Theories and ideas addressed in previous lessons will be called upon this lesson, showing students that learning builds upon itself. Students will develop new understanding of how everything is connected as they see how the moon affects the tides which affects all life on earth. The exploration of “what if the moon disappeared” will demonstrate how intimately everything is connected in our world. |

**Curriculum Connections:** <https://curriculum.gov.bc.ca/> (Curriculum)

*What Big Ideas (Understand),Curricular Competencies (Do), Content (Know) does this lesson develop?*

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| ***Understand***  Big Idea(s):  The motions of Earth and the moon cause observable patterns that affect living and non-living systems.  *Essential or Guiding Question(s):*  What are tides? How do tides work?  How does the moon influence the tides?  How does the moon affect the earth?  What affects does the tides have on life on earth?  How does the position of the moon affect the earth?  How does centrifugal force work?  How can we begin to understand gravity? |
| ***Do***  Curricular Competencies (Learning Standards):  **Questioning and predicting**  Demonstrate curiosity about the natural world  **Processing and analyzing data and information**  Identify First Peoples perspectives and knowledge as sources of information  **Evaluating**  Make simple inferences based on their results and prior knowledge |
| ***Know***  Content (Learning Standards):  **the effects of the relative positions of the sun, moon, and Earth**   * phases of the moon, tides, etc. * tides affect living organisms   **local changes caused by Earth’s axis, rotation, and orbit** |

**STAGE 2: Assessment Plan**

FORMATIVE ASSESSMENT: (Assessment as Learning; Assessment for Learning)

This unit has been largely inquiry based, and formative assessment has driven the learning. Students will continue to demonstrate their understanding through participation in discussion and sharing ideas. This formative assessment will help direct the next lesson as this unit continues. Teacher will formatively assess students through discussion and circulating the room (Checking in with students).

SUMMATIVE ASSESSMENT: (Assessment of Learning)

The previous lesson saw students complete a large summative assessment (poster showing the relationship of the earth, sun, and moon. This lesson will not have a summative assessment piece because of its placement in the students learning.

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| **The Learning Intention:**  *What will students learn in this lesson? (i.e. Learning Standards)* | Students will continue to understand the moon’s role in life on earth.  Students will learn how the moon affects the tides.  Students will begin to learn about gravity and centrifugal forces.  Students will learn about the moon and its purpose for life on earth.  Students will learn how everything is connected.  Students will learn First Nations perspective on these topics. |
| **Evidence of Learning:**  *How will students demonstrate their learning? What does it look like?* | Students will demonstrate their learning through active participation in the class discussions.  Students will demonstrate their knowledge through partner talk and the sharing of ideas.  Students will demonstrate their learning through the competition of the exit slip.  Students will demonstrate their learning through observation of the demonstrations.  Students will demonstrate their learning through continued inquiry mindset (asking questions and being curious) |
| Criteria: *What do students need to do to meet or achieve the learning intention?* | Students need to observe and consider the demonstrations.  Students need to participate in partner discussion.  Students need to participate in larger class discussions.  Students need to watch and think about the videos shown.  Students need to consider. |

**Planning for Diversity:**

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| **Learning Target:** *In what ways does the lesson meet the needs of diverse learners?*  *How will you plan for students who have learning/behaviour difficulties or require enrichment?* | | |
| Students need to/must do  Students need to watch the videos and teacher demonstrations.  Students need to listen to the class discussions and partner talks.  Students need to fill in the exit slip.  Access/All | Students can do  Students can watch the videos and teacher demonstrations and try to understand what it means and what it is teaching them.  Students can participate in class discussions and partner talks.  Students can fill in the exit slip to the best of their ability, sharing their learning and takeaways.  Most | Students could do/try to  Students could try to connect the videos and teacher demonstrations to their previous learning. Students could understand what they mean and make connections.  Students could try to actively participate in class discussions and partner talks, by sharing relevant and extending level thinking with the class.  Students could try to demonstrate an advanced understanding through their completion of the exit slip. Students could try to assist others with their exit slips.  Few/Challenge |

**STAGE 3: Learning Plan**

**Resources, Material and Preparation:** *What resources, materials and preparation are required?*

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| DLC Kit “Aboriginal Astronomy” - Hold up the sky / Jane Louise Curry  Laptop charged and connected to projector (for videos)  Bucket, water, string (consider weather – consider if it is better to do demonstration outside in case the bucket flies off the string?)  Globe  Consider transitions between demonstrations and discussions. Ensure students can transitions without losing learning. |

**Organizational/Management Strategies:** *(anything special to consider?)*

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| Consider all student needs (conference with EA’s to ensure all students will be supported in this lesson. Listen to advice for adaptions needed for students.  Consider all student needs (conference with EA’s before lesson, to ensure all students will be supported in this lesson. Listen to advice for adaptions needed for specific students.  Wearing of microphone to support Aiden’s IEP (this also supports other students as well).  Consider pacing of lesson. There is a lot of content to cover, watch clock and decide if this may require 2 lessons instead of 1. This cannot be determined ahead of time since my Science lessons are guided by student inquiry. So consider the pacing while allowing students to ask lots of questions.  Consider transitions between demonstrations, videos, and discussion. How can transitions be used to support all learners. |

**Lesson Development:**

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| **Connect:**  *How will you introduce this lesson in a manner that engages students and activates their thinking? Activate or build background knowledge, capture interest, share learning intention.* | | Pacing |
| **Teacher will**  Provide an announcement of 2 minutes remaining in planner’s time.  When the 2 minutes is up, ask students to put their books away and clear their desks. Begin the transition into Science.  Ask the class what we have been covering in our Science lessons. Allow 4-5 students to share.  Advise that I would like to begin this lesson with a quick story: Hold up the sky / Jane Louise Curry  Read Hold up the sky / Jane Louise Curry. (This will help bring an Indigenous perspective into our learning).  After the book is finished, ask a few students to share their thinking of what we will be discussion next (book is connected to tides).  Draw everyone’s attention to the wonder wall. Explain that there are still a few questions left to be explored and today we will be talking about something new: tides.  Ask if anyone knows what tides are? Allow a few students to share their thoughts.  Advise that we will be watching 2 quick videos to explain what tides are (the visuals in the video are needed to fully explain the concept of tides).  Teacher will be formatively assessing student understanding to see how far the concept needs to be broken down.  Videos:  These videos introduce students to the concept of rising and falling tides:  <https://www.youtube.com/watch?v=yQnpWyXMyL8&ab_channel=OnTheCoastPhotography>  <https://www.youtube.com/watch?v=EnDJ6_XpGfo&ab_channel=KevinSnair>  When the video is over, ask students what they just watched (the tides going in and out) and ask students if they have any connections (if they have ever seen this before on a vacation). Allow a few students to share.  Ask open ended questions about this: “where did all the water go? Do we think the ocean shrinks every day? How does it change like this?”  Ask students to turn to a partner and discuss for 30 seconds. Ask students to discuss what they think happens during the tides. (Quickly use this time to check in with students and see where their thinking is).  At the end of the 30 seconds, ask a few students to share their thinking.  If students reach the conclusion that it is something to do with the moon, move on. If students do not reach that conclusion, help guide the discussion to that conclusion.  Explain to the students that the moon has a unique relationship with the earth and its oceans.  Explain that this is what we are going to learn about today. | **Students will**  Listen to announcement and begin to transition from planner time to Science.  Put book away and clear desk.  Consider what has been covered in the last few Science lessons. Offer to share with class.  Listen as the book is read to the class. Consider what the book is teaching us and the perspective it is explaining.  Share thinking.  Reflect upon the wonder wall and all the questions we have explored and answered so far in this unit.  Watch the 2 videos and observe the visuals of the ocean tides rising and lowering.  Consider the videos.  Share connections if any. Listen to others as they share their connections and thinking (consider if it is the same).  Consider the teacher questions.  Turn to partner and discuss what they think happens with the tides.  Check in with teacher.  Share thinking. Listen if not sharing.  Consider that the moon has a role to play in the tides of the oceans.  Listen as the learning intentions for this lesson are clearly explained. | 15 mins |

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| **Process:**  *What steps and activities are you going to use to help students interact with new ideas, build understanding, acquire and practice knowledge, skillsand/or attitudes? In what ways have you built in guided practice?* | | Pacing |
| **Teacher will**  Explain that to explore the moon and tides, we must understand how gravity works.  Last week, Brooklyn asked a question “if the earth is spinning so fast, why doesn’t everything fly off?”  Advise that I will be answering that question today so we can begin to understand the tides.  Bring out my globe and show it the students, start to spin the globe. Ask students to consider why we are not all flying off the planet. Ask a few students to share their ideas (some will say gravity but ask them to consider what gravity is).  Explain:  We don’t feel the earth spinning because we are moving with it (compare to driving fast in a car or being on a plane – something they have experienced before.  Explain that earth has its own gravity, which is why every time we jump, we fall straight back down.  Demo this by tossing something up into the air (“why do we know it ids going to fall? Why doesn’t it just hover in the air?”  Explain that the spinning and the gravity of earth, keeps everything on earth INCLUDING THE OCEANS!  Announce that I will be doing a quick demonstration to show how gravity and the rotation of the earth work together.  Ask students to quickly line up by the door so we can go outside for the demo (this demo could be done in the class but there is a small risk of damage/injury if something went wrong).  (Students will be very excited about this transition so I will have to work hard to ensure it goes smoothly).  Invite students just outside the classroom for the demonstration.  Bring out a home depot bucket with lots of water in it.  Ask students what would happen if I held the bucket over my head. They will say I will get wet.  Now ask the students what will happen if I swing the bucket over my head. Have them consider for a few moments before starting.  Demonstrate (swing the bucket over my head).  Ask students to consider why the water did not come out of the bucket (“If gravity pulls everything down towards the ground, why didn’t the water pour out?”) Allow students to discuss before taking an answer.  Explain that the water in the bucket is experiencing its own force (centrifugal) which is keeping it in the bucket. Explain that the earth’s oceans are similar = even though we are spinning the waters stay in place because of the spin/force but are pulled by the moons gravitational pull.  Ask students to go back into the classroom and take their seat. | **Students will**  Listen as the learning intentions for the lesson are covered.  Watch as the globe is shown to the class. Consider why we are not flying off the planet.  Share thinking with class or listen to others as they share their thinking.  Listen as gravity is explained.  Connect idea to previous experience in a car.  Watch demonstration.  Line up quickly and quietly by the door for the outside demo.  Stand outside the door, allowing space for everyone to see.  Consider what would happen if the bucket were held over the teacher’s head.  Consider what will happen if the bucket is swung in a circle.  Watch the demonstration and reflect if their predictions were correct.  Discuss with partner about what happened.  Listen to explanation.  Return to the classroom and take seats. | 15 mins |

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| **Transform:**  *How will students apply or practice their learning? Can they show or represent their learning in personalized ways? What are the choices for student task?* | | Pacing |
| **Teacher will**  Play the video:  <https://www.youtube.com/watch?v=3RdkXs8BibE&ab_channel=AtomicSchool>  This video really breaks the concept down into an easy-to-understand format and is best suited for grade 4 students.  Ask students to turn to their partner and discuss the video for 1 minute (check in with students and formative assess during this time).  Ask students to share their thinking and allow the discussion to develop naturally (allow students to ask any questions – this is a key theme of my Science lessons).  Ask 4 students to come to the front for a demo (pull popsicle sticks)  Have the 4 students stand in a row earth  Water  Earth  Water  Have the student (Earth) spin in a circle to resemble the earth’s rotations. Have the moon remain stationary, and the 2 waters spread out. As the earth turns, they will face the water at 2 times of the day, symbolizing the 2 high tides.  This will hopefully allow students to visualize this concept in an easy way.  Demonstrate with the students how the rotation of the earth brings it past the high tides and how the moons pull affects this.  Really explain and break down this demo so students understand and can visualize it.  (If needed: this video also has great visuals explaining the moon’s relationship to the tides: <https://www.youtube.com/watch?v=M3hAhNsyf7k&ab_channel=MooMooMathandScience>). | **Students will**  Watch as the video is played.  Turn to partner and discuss the video for 1 minute. Check in with teacher as required during this time.  Offer to share/listen to others.  Ask questions and remain curious.  Go to front of class if name is pulled nby popsicle stick.  Participate in demo if named was pulled. Watch demo if not.  Consider what the demo is teaching us, what do they notice? What do they think? Ask questions as needed (by raising hands).  Listen as the teacher explains the concept of tides being affected by the moon. | 15 mins |

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| **Closure:**  *How will you solidify the learning that has taken place and deepen the learning process?*  *Refer back to the learning intention, connect to next learning.* | | Pacing |
| **Teacher will**  Explain that last week we had a great student questions “what would happen if the moon vanished one day?”  Have students to turn to their partner and discuss what they think would happen if the moon disappeared (have them discuss this using their new understanding of how the moon affects the tides. How would its disappearance affect the oceans?).  Allow students to discuss with partners (circulate room and check in on students).  Regather the focus of the class, have a few students share their thinking. Help direct the discussion.  Explain that I found a great video that explores what would happen if the moon vanished and I would like to share it.  Play: <https://www.youtube.com/watch?v=EFmPZv7LIdo&ab_channel=WhatIf>  When the video is over, ask students if anyone considered the things addressed. (this will help students reflect on their own application  thinking of new knowledge).  Thank students for another great inquiry question and remind them to always come to me with new inquiry questions so we can learn new things as we explore the moon and space. (Inquiry is a large component of this unit so it must be encouraged!).  Ask who the hander outters are today (student jobs). Have them hand out an exit slip to each student.  Advise students I would like them to write down one thing they learned today AND one question they have.  These questions will help guide my next lesson and see how well students understand the concept of tides and the moon.  Allow students 2 minutes to fill in their exit slips (use this time to check in with Luca, Nicholas, and Carter: these students struggle with writing, so I typically check in with them so they can orally explain their thinking to me).  Collect the exit slips and thank everyone for a great lesson.  Advise students that reading groups will be beginning soon, so to clear of their desks and get ready for reading groups. | **Students will**  Turn to partner and discuss what would happen if the moon disappeared. Consider new understanding of the moon’s affect on the tides and what would happen without it. Share and brainstorm with partner.  Check in with teacher as they circulate the room.  Share thinking or follow along with class discussion.  Watch the video. Consider and reflect how their thinking measures up to the explanation of what would happen in the moon disappeared.  Consider if they thought of the same things as the video.  Remember to always ask new questions as we explore this unit on the moon and space.  Take an exit slip from the hander outters.  Listen as the expectations for the exit slip are explained (1 thing learned and 1 question).  Fill in exit slips and hand in when complete.  Prepare for transitions into reading groups. | 10 mins |

**Reflection***What was successful in this lesson? If taught again, what would you change to make this lesson even more successful and inclusive for diverse and exceptional students?*

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Lesson Planning Guide (adapted from Thompson Rivers University)

*The lesson plan template is designed as a guide for students to use when planning lessons. The plan may be adapted to specific subject areas and modified as students gain experience or to suit their presentation style. The template is a basic outline that can be used directly as printed or expanded from the electronic version. It is important that the lesson plan be sufficiently clear and detailed so that another teacher could use the plan to teach the lesson.*

***Rationale****: Why are you teaching this particular lesson at this time? One consideration is the context for the lesson (e.g. this introductory lesson determines what students know and want to know about the topic, this lesson relates to previous and future learning by . . .) Another consideration is student motivation (e.g. what are some reasons the learner might care about the content/concepts/ skills for future learning, careers, or interests?).*

***Curricular Connections:***

The curriculum asks you to plan what the students will DO, what they will KNOW, and then what they will UNDERSTAND. ***Big ideas*** *capture the “big picture” or general area of learning (e.g. interdependence of living things with the environment, stories are a source of creativity and joy) and will be what students come to UNDERSTAND.* ***Curricular competencies*** *are what students will DO in their learning activities (e.g. using comprehension strategies, sorting and classifying data, making ethical judgments) that are related to each discipline. The* ***learning standards for content or concepts*** *are a more specific consideration of what students will come to KNOW. Many of the standards are written in broad, general terms to allow flexibility. You can, using the intention of the standard, make it clearer and more specific (e.g. learners will be able to describe the main idea in a paragraph or story, learners will be able to classify leaves based on properties they identify). The lesson should make a connection to both types of learning standards – curricular competencies as well as content. A reminder that the direction of new curriculum has identified core competencies of thinking, communication, and personal / social development as a foundation for all curricula.*

***Learning Intentions:*** *How can you make clear and share with your learners what they are going to learn or have learned or accomplished? Statements like: “I can add two fractions” help frame their learning in positive student language.*

***Prerequisite Concepts and Skills:*** *What concepts and skills are needed for students to be successful? This communication helps connect lessons together in a logical sequence by building/scaffolding new knowledge onto previous learning. For example, if students are going to be engaged in debate did you build or scaffold group work strategies, communication skills, expected etiquette, criteria beforehand?*

***Materials and Resources /References*** *List all materials and resources that you and the students will need. What things do you need to do before the lesson begins? (e.g. prepare a word chart.) What things do the students need to do? (e.g.read a chapter in the novel.) Have you honoured the sources of ideas or resources? Disorganized materials can ruin a great lesson.*

***Differentiated Instruction (DI): (accommodations):****How will you accommodate for diverse learners in your class? How will you allow for some variety in expression of learning? How can you modify the learning activities for success? How can you provide engaging extra challenges for those that are ready? How might you alter the learning environment if needed? Have you considered Aboriginal and cultural influences? IEP’s?*

***Assessment and Evaluation:*** *Did the students learn what you taught them? What tools might you use for assessment (e.g. check list, rubric, anecdotal record). How will you provide formative feedback to students about their learning? The results of the assessment should be directly connected to what your students were able to write say or do related to the learning intentions and or curriculum. Strive for accuracy and build assessment into teaching and learning and not as an “add on” at the end.*

***Organizational/Management Strategies:****Have you thought-out organizational management strategies to facilitate a proactive positive classroom environment? Some examples are: organizing for movement, distributing and collecting materials, grouping strategies, blended grade classroom logistics.*

***Aboriginal Connections / First Peoples Principles of Learning:*** *Are there any connections to Aboriginal or other cultural knowledge, worldviews, or principles of learning?*

###### Lesson Activities/Structure:

***Connect****: How will you get students interested/motivated/ hooked into learning? How will you connect this lesson to past and future lessons? How can you share the learning intentions in student friendly language? How will you provide a lesson overview?*

***Process****: What sequence of activities will the student’s experience? What will you do? What will they do? Estimate how much time will each activity take (pacing)? What are grouping/materials strategies? There are many ways to describe the body (step by step, two columns dividing student and teacher activities, visual flow chart of activities and connections, others?)*

***Transform****: How will students apply and personalize the learning? What will they do or create to show you that they have learned?*

***Closure:*** *How will the lesson end? (e.g. connecting back to learning intentions, summarizing learning, sharing of accomplishments, connecting to next lessons). Google “40 ways to close a lesson.”*

***Reflections****: Complete the reflections section as soon as possible after teaching the lesson. What went well? What revisions would you make to the lesson? Anything else***?**