It’s Raining, It’s Pouring, It’s Flooding! in Maricopa County

Dear Teachers:

Attached to this letter is a set of lesson plans intended for third thru fifth grade STEM classes. You can also customize the lessons. A customizable PowerPoint is provided for each lesson. This is done so that you may meet the needs of all of your learners. Point values are not assigned to any of the assignments to allow you to determine the weight of each assignment. The lessons are meant to be fun, challenging, and engaging for students while lessening the workload for the teacher. There are a lot of images for visual learners and hands-on experiments are included as well. Differentiation can take place by choosing which assignments work for each individual student. There are opportunities for students to use language, math, science, and engineering skills, as well as their imagination and creativity.

The unit includes a culminating project – students will work in groups to present about the Monsoons in order to practice presentation skills and participate in cooperative learning. Students can also analyze data to design a structure to help mitigate flooding.

We know that your work is challenging yet rewarding. Your efforts will help each of your students succeed, and we are hoping this set of instructional materials can help you in your quest.

We want to hear from you. The package includes a feedback form for you to share your feedback on these lessons. Also, let us know how you have customized these lessons to meet the needs of your students.

Thank you for all that you do.

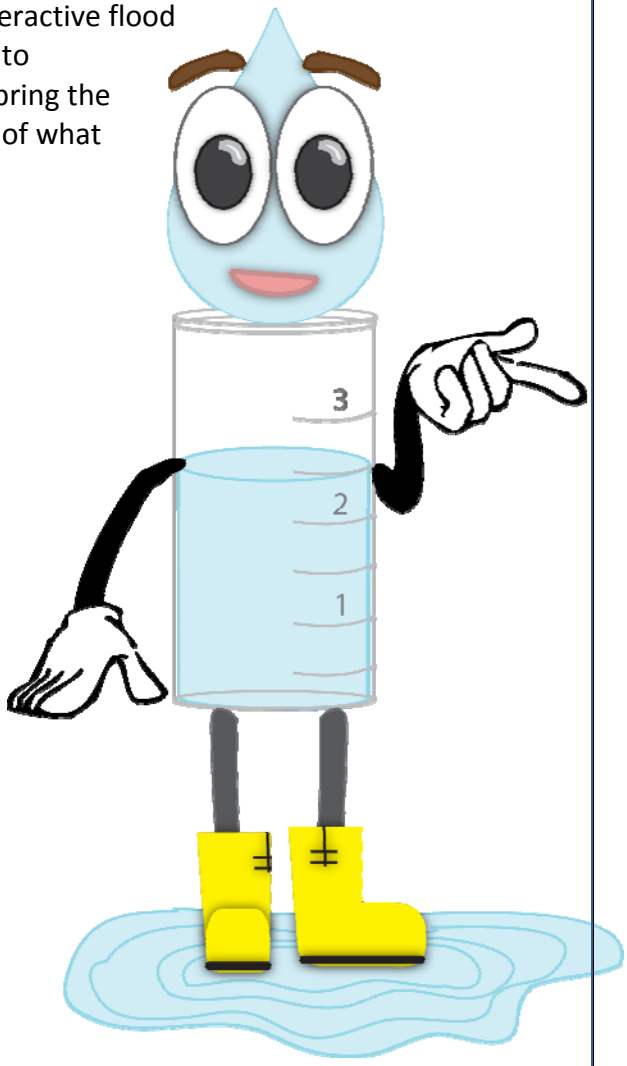
The Flood Control District of Maricopa County

Third – Fifth Grade Unit Overview

This unit can work as a supplemental resource to lessons about Earth’s water, weather, and planning for disasters. The culminating activity will be for students to present information about monsoon storms.

- By the end of the unit students will:
  - Understand the water cycle
  - Understand the function of different flood control structures
  - Design a flood control structure
  - Explain the risks and hazards of flooding
  - Present information about monsoon storms

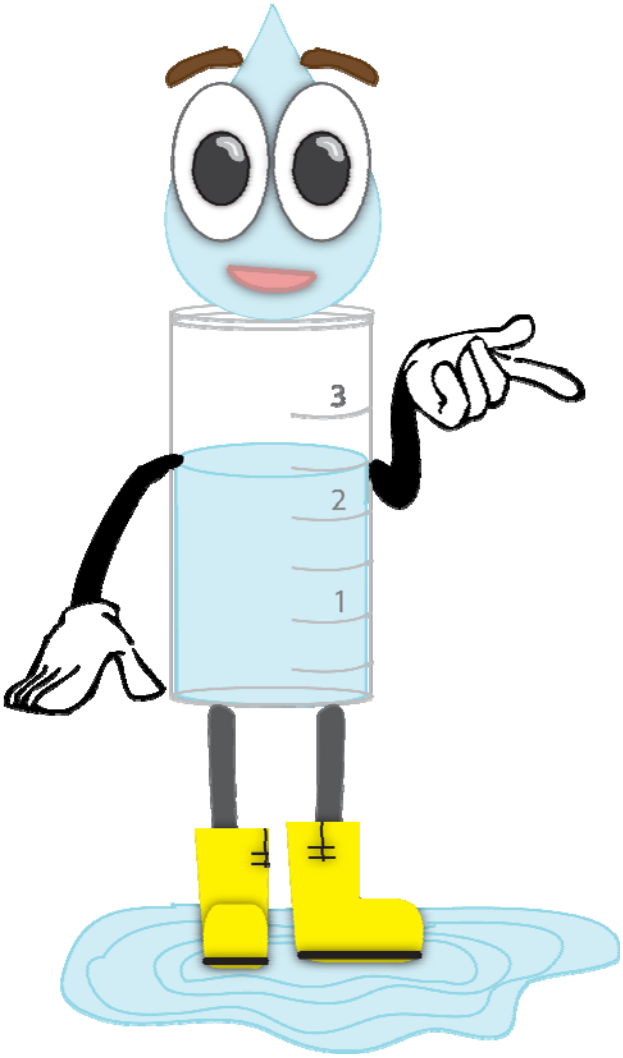
The Flood Control District of Maricopa County has an interactive flood simulator. You may contact the District at 602-506-8773 to schedule a time for the Community Outreach Liaison to bring the simulator to your classroom to provide a demonstration of what occurs during a flood.



It’s Raining, It’s Pouring, It’s Flooding! in Maricopa County

It’s Raining, It’s Pouring, It’s Flooding! in Maricopa County is a STEM unit that provides supplemental material that can be added to instruction about Earth’s water, weather, and planning for disasters. Students will understand the causes and effects of flooding in both urban and rural communities in Maricopa County. Students will use this information to create an ad that warns others of the dangers of flooding, a presentation about monsoon storms and their effect on the city, and design a structure to help mitigate flooding.

This unit provides links for teachers to assist with the final project, as well as background information on monsoons and flooding in Maricopa County.



It's Raining, It's Pouring, It's Flooding! in Maricopa County
3rd – 5th Grade Standards

Arizona Science Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
3.E1U1.4: Construct an explanation describing how the Sun is the primary source of energy impacting Earth systems.	X				
4.E1U1.6: Plan and carry out an investigation to explore and explain the interactions between Earth's major systems and the impact on Earth's surface materials and processes.	X				
4.E1U1.7: Develop and/or revise a model using various rock types, fossils location, and landforms to show evidence that Earth's surface has changed over time.			X		
4.E1U1.8: Collect, analyze, and interpret data to explain weather and climate patterns.					X
4.E1U2.10: Define problem(s) and design solution(s) to minimize the effects of natural hazards.				X	X
5.E2U1.7: Develop, revise, and use models based on evidence to construct explanations about the movement of the Earth and Moon within our solar system.	X				
5.L4U3.11: Obtain, evaluate, and communicate evidence about how natural and human-caused changes to habitats or climate can impact populations.		X	X		

Arizona Social Studies Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
3.SP3.7: Present summaries of arguments and explanations using print, oral, and digital technologies.		X			
3.SP4.1: Explain probable causes and effects of events.		X			X
3.C3.1: Describe the origins, functions, and structure of the Arizona Constitution, local governments, and tribal governments – key concepts for local governments include but are not limited to distinguishing between state and local governments, knowing services local governments provide, etc.					X
3.E2.1: Explain how availability of resources affects decision making in Arizona with respect to water and other natural resources.			X		X
3.G1.1: Use and construct maps and graphs to represent changes in Arizona over time.					X

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3rd – 5th Grade Standards

4.SP3.6: Present summaries of arguments and explanations using print, oral and digital technologies.		X			
4.SP4.1: Explain probable causes and effects of events and developments.		X			X
4.G2.1: Compare the diverse ways people or groups of people have impacted, modified, or adapted to the environment of the Americas (farming, housing, climate, etc.)			X		
5.G2.1: Describe how natural and human-caused changes to habitats or climate can impact our world.					

Arizona ELA Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
3.RI.3: Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.					X
3.RI.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.		X			
3.RI.9: Compare and contrast the most important points and key details presented in two texts on the same topic.		X			
3.RI.10: By the end of the year, proficiently and independently read and comprehend informational texts, including history/social studies, science, and technical texts, in a text complexity range determined by qualitative and quantitative measures appropriate to grade 3.		X			
3.W.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.					X
3.W.4: With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.					X
3.W.5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.					X
3.W.6: With guidance and support from adults, use technology to produce and publish writing					X

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It's Raining, It's Pouring, It's Flooding! in Maricopa County
3rd – 5th Grade Standards

(using keyboarding skills) as well as to interact and collaborate with others.					
3.W.7: Conduct short research projects that build knowledge about a topic.				X	X
3.W.8: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and short evidence into provided categories.		X		X	
3WF.3: Know and apply spelling conventions and patterns.				X	X
3.SL.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas, and expressing their own clearly.	X	X	X	X	X
3.SL.2: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.		X			
3.SL.3: Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.					
3.SL.4: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant descriptive details, speaking clearly at an understandable pace.				X	
3.SL.6: Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.				X	X
3.L.1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.				X	X
3.L.2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.					X
3.L.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening.					X
4.SL.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on other's ideas and expressing their own clearly.	X	X	X	X	X
4.L.1 Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.					

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It's Raining, It's Pouring, It's Flooding! in Maricopa County
3rd – 5th Grade Standards

4.L.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening.				X	X
4.W.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.					X
4.W.4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.					X
4.W.5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.					X
4.W.6: With some guidance and support from adults, use technology, including the internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to complete a writing task.					X
5.RI.3: Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text, based on specific information in the text.		X			
5.RI.6: Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.		X			
5.RI.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.		X			X
5.RI.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.		X			
5.RI.10: By the end of the year, proficiently and independently read and comprehend informational text, including history/social studies, science, and technological texts, in a text complexity range determined by qualitative and quantitative measures appropriate to grade 5.		X			
5.W.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.					X
5.W.4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.					X
5.W.5: With some guidance and support from adults, use technology, including the internet, to					X

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It's Raining, It's Pouring, It's Flooding! in Maricopa County
3rd – 5th Grade Standards

produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills in order to complete a writing task.					
5.W.6: With some guidance and support from adults, use technology, including the internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills in order to complete a writing task.					X
5.W.7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic and to answer a specific question.				X	X
5.W.8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.		X		X	X
5.SL.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.	X	X	X	X	X
5.SL.2: Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	X	X		X	X
5.SL.4: Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.				X	X
5.SL.5: Include multimedia components (e.g. graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.				X	
5.SL.6: Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.				X	X
5.L.1: Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.				X	X
5.L.2: Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.					X

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It's Raining, It's Pouring, It's Flooding! in Maricopa County
3rd – 5th Grade Standards

5.L.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening.	X	X		X	X

Arizona Math Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
3.MD.A.2 Solve problems involving measurement – Measure and estimate liquid volumes and masses of objects using metric units.					X
4.MD.A.2: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit – Use the four operations to solve word problems and problems in real-world context…					X
5.MD.C.3: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.					X

Standards for Mathematical Practice	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
6.MP.1: Make sense of problems and persevere in solving them					X
6.MP.4: Model with mathematics					X
6.MP.6: Attend to precision					X

Arizona Technology Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
S1C1PO1: Analyze information to generate new ideas and products				X	X
S2C2PO1: Communicate and collaborate for the purpose of producing original works or solving problems	X		X	X	X
S3C2PO4: Use appropriate digital tools to synthesize research information to develop new ideas and/or create new understanding					X
S3C2PO5: Follow copyright laws when using text, images, videos and/or other sources and obtain permission to use the work of others and cite resources appropriately				X	X

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3rd – 5th Grade Standards

S4C2PO1: Plan and manage research using credible digital resources to develop solutions to answer a question					X

Arizona ELP Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Listening and Speaking – Comprehension of Oral Communications; S1L1-4: Summarizing the main ideas and key points/details of presentation	X	X	X	X	
Listening and Speaking – Comprehension of Oral Communications; S1L1-8: Responding to questions and statements in an academic discussion by using key vocabulary in complete sentences	X	X	X	X	X
Listening and Speaking – Comprehension of Oral Communications; S1L1-9: Summarizing main ideas and supporting details from content area presentations and discussions	X			X	
Reading – Comprehending Text; S4L1-8: Summarizing the main idea and supporting details from text using academic vocabulary		X			

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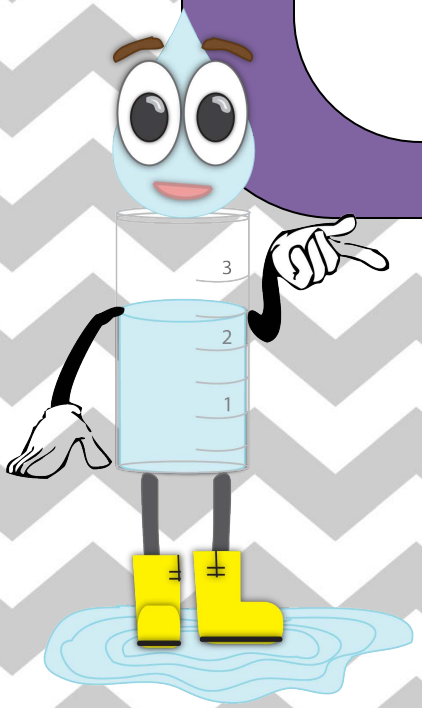
3rd - 5th Grade Scoot



How to Play:

This is a fun class activity that you can do at the end of the unit to review the concepts taught in all 5 lessons. Students will travel in a rotation to different desks in order to answer the questions.

1. Each student will receive a copy of the Scoot Recording Sheet.
2. Set one card on each student's desk.
3. Explain to the students that they will be moving around the room to answer a question.
4. They will begin with the card on their desk. They record their answer by looking at the number on the card and matching it to the number on their Scoot Recording Sheet. (If a student has card #5 on their desk, they will record their answer in box #5.)
5. After enough time has passed to allow students to answer the question, say "scoot".
6. Students rotate to the next desk to answer the next question. You will want to model and practice the rotation, so students know where to go.

Scoot Recording Sheet

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

Name_____

Answer Sheet for It's Raining, It's Pouring, It's Flooding! In Maricopa County Scoot

1 C - Evaporation	2 B- Condensation	3 D- Precipitation	4 A - Monsoon	5 C - Hazard	6 B - Floodplain
7 C - Flash Flood	8 A - Weather	9 B - Floodway	10 A- Runoff	11 B - Haboob	12 D - Collection
13 A- Climate	14 B - Mold	15 C - Rising	16 D - All of the above	17 A - Hydrology	18 A - True
19 A - Disaster	20 B - Meteorologist	21 B - Impervious	22 C - The hydrologic cycle	23 C - Engineer	24 B- Climatologist
25 A - Basin	26 C - Levee	27 D - Culvert	28 A - True	29 D - Dam	30 D - All of the above

Card 1

The sun heats up water and turns it to vapor

A. Transpiration
B. Condensation
C. Evaporation
D. Precipitation

Card 2

When water vapor gets cold and returns to a liquid, forming clouds

A. Transpiration
B. Condensation
C. Evaporation
D. Precipitation

Card 3

Water that falls back to the Earth as rain, snow, sleet, or hail

A. Tranpsiration
B. Condensation
C. Evaporation
D. Precipitation

Card 4

A change in weather pattern that brings moisture from the Gulf of California. The moisture combined with the heat fuels storms known as

A. Monsoon
B. Haboobs
C. Hurricanes
D. Tornadoes

Card 5

Something that can cause harm

A. Sediment
B. Transpiration
C. Hazard
D. Levee

Card 6

Low lying ground by a river and likely to flood

A. Floodway
B. Floodplain
C. Basin
D. Farm

Card 7

Sudden, fast water with little or no warning is a

A. Coastal Flood
B. Fluvial Flood
C. Flash Flood
D. Overbank Flooding

Card 8

Conditions of the atmosphere over short periods of time is

A. Weather
B. Climate
C. Air Mass
D. Monsoon

Card 9

The channel of a river and the parts of the floodplain by it

A. Levee
B. Floodway
C. Floodplain
D. River

Card 10

The draining away of water from the surface of an area of land

A. Runoff
B. Condensation
C. Collection
D. Precipitation

Card 11

Violent summer winds that create walls of dust

A. Weather
B. Haboob
C. Lightning
D. Thunder

Card 12

When precipitation collects in the oceans, rivers, lakes, and streams

A. Puddle
B. Runoff
C. Condensation
D. Collection

Card 13

How the atmosphere behaves over a long period of time

A. Climate
B. Weather
C. Atmosphere
D. Hot

Card 14

A fungus that forms on wet surfaces is

A. Mushrooms
B. Mold
C. Silt
D. Sediment

Card 15

A surge of water means the water is

A. Getting lower
B. Getting colder
C. Rising
D. Getting warmer

Card 16

What are some hazards of flooding?

A. Power Failure
B. Dehydration
C. Food goes bad
D. All of the above

Card 17

The study of water is

A. Hydrology
B. Biology
C. Chemistry
D. Science

Card 18

The water on Earth now is the same water that was on Earth when Dinosaurs existed

A. True
B. False

Card 19

An event that results in a large amount of loss is a

A. Disaster
B. Storm
C. Hazard
D. Flash Flood

Card 20

An expert in the study of weather

A. Climatologist
B. Meteorologist
C. Hydrologist
D. Environmental Scientist

Card 21

A surface that does not allow fluid to pass through is

A. Pervious
B. Impervious
C. Solid
D. Hard

Card 22

Another name for the water cycle is

A. The water circle
B. The ocean cycle
C. The hydrologic cycle
D. The life of water

Card 23

A person who designs, builds, or maintains engines, machines, or public works

A. Hydrologist
B. Climatologist
C. Engineer
D. Meteorologist

Card 24

A scientist who studies weather patterns and trends over a long period of time

A. Hydrologist
B. Climatologist
C. Engineer
D. Meteorologist

Card 25

This is an area of land where rain collects and drains to a larger body of water

A. Basin
B. River
C. Lake
D. Levee

Card 26

This is an area of land that is built up to prevent a river from overflowing

A. Dam
B. Reservoir
C. Levee
D. Basin

Card 27

A tunnel carrying a stream or open drain under a road or railroad is a

A. Levee
B. Retention Basin
C. Channel
D. Culvert

Card 28

You can check the Flood Control District website to see if you live in a floodplain

A. True
B. False

Card 29

A structure that is built to hold back water

A. Levee
B. Culvert
C. Channel
D. Dam

Card 30

Why is it not safe to play in flood waters, even after the rain stops?

A. Could be bacteria in the water
B. Could be sharp objects in the water
C. Could be deeper than it looks
D. All of the above

It's Raining, It's Pouring, It's Flooding! in Maricopa County
Teacher Feedback

School: _____ Grade Taught: _____

Month/Year unit was taught: _____

Thank you for your participation in this short survey.

Please circle the appropriate number
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Lesson plans were well organized
1 2 3 4 5

Lessons were able to be easily modified for a variety of students
1 2 3 4 5

Lessons were comprehensive
1 2 3 4 5

Lesson prep was easy
1 2 3 4 5

Lessons were engaging for students
1 3 4 4 5

Lessons provided opportunity for student discussion
1 2 3 4 5

What were the best aspects of the lessons?

Were there any parts of the unit that should be changed?

Any comments or suggestions to improve the unit?

What was your class average for the pre and post assessment?