A Play: Dynamic Relationships in a Tropical Rain Forest

By: Kate Glodoski

Grade/Course:	**Topic:**	**Lesson (number/title) & duration**
7th grade ELA	Dynamic Relationships in a Tropical Rain Forest	A Play: The Exploration of Dynamic Relationships in Tropical Rain Forests 4-6 weeks

Brief Lesson Description:

Students will be instructed through mini lessons and their own investigation questions to come together to produce a play. The play's theme will be about the living and non-living things of the rainforest and how they interact with each other to create a diverse ecosystem. The climax of the play will involve destruction or disturbances in the rainforest to once again be taken over by diversity.

CONTENT

Performance Expectation(s):

Students will understand and create a performance model of living and non-living things and how they operate in an ecosystem.

Essential Question (Phenomena):

How does a system of living and non-living things operate to meet the needs of the organisms in an ecosystem?

Learning Intention(s):	**Success Criteri**a:
• Identify living and non-living organisms in Central American rainforests. • Compose an investigation question(s) in groups to research • Collaborate on findings and areas of interest to create a scene to be part of a bigger play • Read a short play and decipher structure and purpose of the scene to be written • Compose a written scene • Develop props, costumes, and scenic elements to create a realistic presentation of living and non-living species typically found in a rainforest • Study and replicate plant and animal behavior when creating their own character • Work in groups to rehearse and perform scene • Participate in a school wide production to teach younger students about the workings of a rainforest and how human impact effects living and non-living organisms • Reflect on learning intention and the performance and how it could be improved upon in the future	• Students will research a plant, animal, insect, non-living thing in Panama • Compose a written scene with a group using factual information and connecting their topic to other organisms in their ecosystem. • Create costumes, props, and scenery successfully in groups to prepare for our production. • Rehearse scenes and develop and strengthen writing, acting, and production components for the play. • Develop your individual character and group characters. • Perform a play that creates a living model of a dynamic relationships in a tropical rain forest. • Students will complete a final test based on shrt answer questions and a reflection that describes their learning in terms of play writing, dynamic relationships, and theatre.
Academic Vocabulary: • *most is to be explored and posted as student led research is conducted*	

- ecology
- diversity
- dynamic relationships
- living and non-living things
- co-existing
- food chain
- disturbances
- stage directions

Prior Student Knowledge (Learning Progression):
Students have had a unit on tropical ecology in gr. 6. Students understand the diversity of animal and plant species

UNDERSTANDING

Science & Engineering Practices:
(Understanding)

Developing and Using Models
Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.

- Develop and use a model to describe phenomena. (MS-LS1-2)
- Develop a model to describe unobservable mechanisms. (MS-LS1-7)

Planning and Carrying Out Investigations
Planning and carrying out investigations in 6-8 builds on K-5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions.

- Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation. (MS-LS1-1)

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence

Disciplinary Core Ideas:
(Content)

MS-LS1

- Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2

- Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.

CCSS ELA

- Literacy.RI.7.1
  Cite several pieces of

Crosscutting Concepts:
(Understanding)

Cause and Effect

- Cause and effect relationships may be used to predict phenomena in natural systems. (MS-LS1-8)
- Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS1-4),(MS-LS1-5)

Scale, Proportion, and Quantity

- Phenomena that can be observed at one scale may not be observable at another scale. (MS-LS1-1)

Systems and System Models

- Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. (MS-LS1-3)

Energy and Matter

- Matter is conserved because atoms are conserved in physical and chemical processes. (MS-LS1-7)
- Within a natural system, the transfer of energy drives the motion and/or cycling of matter. (MS-LS1-6)

Structure and Function

- Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function

consistent with scientific knowledge, principles, and theories. • Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-5),(MS-LS1-6)	textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. • Literacy.W.7.1.a Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. • Literacy.W.7.3 Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. • Literacy.W.7.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. • Literacy.W.7.5 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. • Literacy.W.7.6 Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources. • Literacy.W.7.7 Conduct short research projects to answer a question, drawing on	depends on the relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function. (MS-LS1-2)

	several sources and generating additional related, focused questions for further research and investigation.	

Possible Preconceptions/Misconceptions

- We in Wisconsin don't have an effect on a tropical rain forest.
- Lack of knowledge of what non-living things are and how they are part of an ecosystem.

LESSON PLAN – 5-E Model

ENGAGE:

- KWL: topic – Rainforests: plants, animals, non-living/living, food chains, human impact on rainforests. Play music while they focus to help them stay on task and be inspired.
- http://www.youtube.com/watch?v=LTiRw7kx97E
- Pose essential question: How does a system of living and non-living things in a rainforest operate to meet the needs of the organisms in an ecosystem? How have humans impacted the operation of living and non-living organisms in a rainforest?
- Set purpose and goal: We will be researching, writing, and performing a play about ecosystems and human impact on rainforests. Students will work in groups, be in charge of writing a scene, creating props, costumes, and scenery as needed for the whole production, and perform their role(s) as required in the performance. Students need to keep in mind that students from all grade levels will be attending and our goal is to teach.

What's the teacher doing?

1. Teacher will present the big project.

3. Teacher will begin by setting the first step: brainstorm ideas about what living and non-living things are in a rainforest

5. Teacher will fill in any areas that would ideally be focused on (sloth, ocelot, arachnids, toucan…)

6. Teacher will distribute *A Day on Barro Colorado Island* to read and discuss. Special attention will be given to the animals on the BCI and human impact on the rainforest.

8. Teacher will discuss thick vs thin questions and how to develop an investigation question.

What are the students doing?

2. In response, students will be given 5 minutes to discuss their ideas and thoughts with their table group.

4. spokesperson from each table group will write on the board as many ideas as their group came up with

7. Students will vote on their interests and a spokesperson will record the findings.

9. Students will design two initial investigation questions to research in the computer lab. They must be ready to report to the class.

10. Students will research their initial investigation questions in the computer lab.

11. Students will report their findings to the class.

EXPLORE:

Students will be in the computer lab to research their investigation questions. Based on information gathered, students will share out loud their info. As others listen, they will begin to form their preference for which scene

they would like to be part of. Each investigation question and info gathered will be on specific pieces of paper and organized for the students that want to be in that group. (for example, one student researched sloths, but has decided they are not interested in taking it further. Their research will be shared/given to the group that wants to do sloths.)
Research will continue in the classroom and library as mandated by access to the library. *A Day on Barro Colorado Island* by Marina Wong and Jorge Ventocilla will be read to give all students a foundation of what lives on BCI. There is a checklist of animals to refer to for help in choosing something to research.

What's the teacher doing?

2. Throughout this process, as a class we will read *A Day on Barro Colorado Island* so that everyone has a general understanding.

3. Teacher will help students determine important information for their research and general understanding of the workings of a rainforest. Highlighting and note taking strategies are taught and discussed.

What are the students doing?

1. Students will have presented their findings to the class. During presentations, students will complete a note taking worksheet to remember pieces of information and topics they are interested in.

4. Students will again be asked to compose an investigation question on their preferred topic – this can be different from anything they have explored, or it can be their continued investigation on a topic they have already begun. Students must be prepared to share out.

5. Students will research for one class period and share their findings at the next.

EXPLAIN:

After the research, students will be shown a variety of videos highlighting some specific plants and animals. They will also be guided to look at photos on the UWM website. There will also be a guest speaker from UWM - Sergio, who studies with Dr. Schnitzer in Panama.

Youtube movie
http://www.youtube.com/watch?v=InT2qpJRpfs
Stefan Schnitzer
https://www.youtube.com/watch?v=hW90Y1doR08
https://www.youtube.com/watch?v=bIJi0VuISWY
Multiple videos
http://www.stri.si.edu/english/kids/symbiosis/index.html
Ocelot quick info
http://www.rainforest-alliance.org/kids/species-profiles/ocelot?gclid=CPatota3_L8CFQUFaQodQrIAbQ
http://a-z-animals.com/animals/ocelot/
Leafcutter Ants
http://www.rainforest-alliance.org/kids/species-profiles/leafcutter-ant?gclid=COutzvK4_L8CFSsSMwodKnoAdw
http://www.nsf.gov/news/special_reports/science_nation/leafcutterants.jsp
Howler Monkeys
https://www.youtube.com/watch?v=Un8XBG1t7go
Sloth
https://www.youtube.com/watch?v=ydxanfGEVKU
Plant growth in fast forward
https://www.youtube.com/watch?v=H9MV5CgPgIQ
figs:
https://www.youtube.com/watch?v=UCUtpmwacoE
The Naso people
https://www.youtube.com/watch?v=TEuIvmsP_sY
UWM Tropical Ecology slideshows
http://www4.uwm.edu/clacs/tropicalecology/

Students need to decide what topic they want to study further for their scene work.

What's the teacher doing?

1. The teacher will begin each class with a mini lesson and video. The teacher will explore the different areas that can be studied. Time will be taken to make sure all students know that they can change their topic at this point – but permanent decisions will be made for your working group soon

What are the students doing?

2. Students will discuss what they found interesting in each video. Questions will be raised and when possible, the answers will be shared. Otherwise, further research will be noted on the board so that all students can share questions or have guidance of where to go.

3. An ongoing list will be generated and edited as needed for groups the students want to work in.

4. Research will continue as needed in the lab or classroom depending on need.

ELABORATE:

Once students have started to narrow down their topic of interest, we will read the play outline that has been written. Teacher and students will discuss how the investigation will evolve into information presented in a scene that will fit into a play. An example from Reader's Theatre will be read aloud and discussed.

Topics to be decided as a class:

- It must be decided if students would prefer to have narrators speak for the characters (while they mime it) or if students want to learn how to project their voices.
- Following the second presentation of information, a list will be generated of ideas. They will be listed on the board and students will either join groups, narrow or expand topics, etc. The total number of scenes to be written will be decided at this time. Ideally with 60 students, there will be 8-10 scenes.
- Several students will have to play the main characters. Their participation during this is to join a group in research and help develop props, costumes, and scenic elements as needed. They must also work as a team to edit and revise the play outline and their own character roles.
-

What's the teacher doing?

1. The overall goal will be discussed further. Reader's Theatre example will be read and discussed. The play's intro and finale will be distributed and read aloud. Question and answer session will follow to help students understand how their investigation will fit into the writing of a scene and performance of a play.

4. The teacher will lead the group in theatre games to help them understand how to move their bodies and use their voices to tell a story.

6. The teacher will teach students about basic stage directions and acting skills.

9. Time will be taken to read the whole script together. Notes will be taken from peer suggestions of strengths and struggles

What are the students doing?

2. In groups students will share their information and discuss how they will present the information, what more they need to research, and who will play which role.

3. Students will follow a basic format to compose their scene.

5. Small group rehearsals will begin.

7. Students will begin to create their props and costumes. Masks may be made and materials must be found

and/or purchased. Students will work with the art teacher to develop their props and costumes.

8. Student composed scenes will be read aloud for peer evaluation.

EVALUATE:

The final step is to put the play together, rehearse, and prepare for the performances. Various techniques will be taught to develop writing, acting, props, costumes, and scenery. As this process comes together, focus will be put on understanding and relating how living and non-living things co-exist. Students will need to understand how scenes need to build on each other just the way scenes do for theatre in general.
A final test and reflection will be given.

What's the teacher doing?

1. The teacher takes the role of director. Classes will begin to be held in the auditorium.

4. A final test and reflection will be administered at the end of the unit. Although the test will be mostly designed, it may need to be altered to cater to what the students had chosen for their scenes.

What are the students doing?

2. Writing, costumes, props, and scenery are finalized and complete. Students will participate in proper rehearsals in the auditorium.

3. Performances will be given to the school and to visiting schools.

Formative Monitoring (Questioning / Discussion):

- scene writing
- costume, props, scenery construction
- rehearsals

Summative Assessment (Quiz / Project / Report):

- Performance
- Final short answer quiz
- Reflection

Elaborate Further / Reflect:

Materials Required for This Lesson/Activity

- Computer lab for research
- Projector to watch videos
- Library books for in class research and reference
- Folder and paper for each groups writing
- Notebooks for gathering research and journaling about their findings
- Colored paper for rainforest construction
- Fabrics and crafts as needed to create costumes
- Images or video compiled to project during the performance
- Final evaluation and reflection
- Word cards for inspiring inquiry
- Tropical Ecology cards for sorting
- Scientific Method form for investigation questions
- Scene Writing guidelines and rubric

Name: _____

Ms. Glo's Amazing Scientific Method Form

Investigation Topic: _____

Investigation Question #1: _____

_____

_____

Hypothesis (what I think the answer is?): _____

_____

_____

_____

Cite my Sources: (you must fill out the **complete web address!**)

1. _____
2. _____
3. _____

Conclusion: What is the answer to my question based on research?

_____

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_____

What is one piece of information or new question you want to explore further? (this should reflect what you are most interested in)

_____

_____

_____

_____

Draw an image to help express your findings.

Name: _____

Ms. Glo's Amazing Scientific Method Form

Investigation Topic: _____

Investigation Question #2: _____

_____

_____

Hypothesis (what I think the answer is?): _____

_____

_____

_____

Cite my Sources: (you must fill out the **complete web address!**)

1. _____
2. _____
3. _____

Conclusion: What is the answer to my question based on research?

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What is one piece of information or new question you want to explore further? (this should reflect what you are most interested in)

_____

_____

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_____

Draw an image to help express your findings.

Scene Writing Guidelines

Character - all character names are center aligned and the only word(s) on that line.

Stage Directions - an instruction in the text of a play, especially one indicating the movement, position, or tone of an actor, or the sound effects and lighting. Stage directions do not need to be written in complete sentences, but must make sense. *(All stage directions are in parenthesis, italics, and left aligned.)*

Dialogue - Correct punctuation must be used! Correct grammar must be used unless it is the dialect of a character to speak incorrectly. Dialogue must be written left aligned.

Scene Designation - When a scene starts or ends, use uppercase letters, italics, and center aligned.

SCENE 2

Anna

(spoken with excitement, Anna crosses stage left to Andrea.)

Wow! I can't believe it's you! Where have you been?

Andrea

(looking scared and shy, does not move towards Anna.)

I don't really want to talk about it. *(Andrea looks down and shuffles her feet.)* I'll tell you, but it has to be later. I need your help right now.

Anna

I'm taking you straight home. Your mom is going to freak out when she sees you after all this time.

Andrea

My mom can't know I'm back home. *(grabs Anna's shoulder)* You can't tell her - promise me you won't say a thing to anyone? The only reason I'm here is because I need your help.

Anna

My help? What's going on?

Andrea

I'll tell you on the way. Come with me.

(Anna and Andrea exit stage right. Lights fade to black.)

END SCENE

Name: _____

Scene Writing Rubric

Category	*Expectation*	*Student Comments*	*Teacher Comments*
Layout	*The scene was written following the format provided on the reverse side of this paper. The scene is at least **3 pages** in length and no more than 5.*		
Collaboration	*It is obvious that your group worked well together to write a scene. Everyone participated.*		
Content	*The content in your scene provides at least 5 pieces of factual information about the chosen plant/animal/or non-living thing.*		

You must grade yourself and the people in your group. Provide a comment for each one on how they can improve or what they did very well.

Name	*Grade and Comment*
	4 3 2 1
	4 3 2 1
	4 3 2 1
	4 3 2 1
	4 3 2 1
	4 3 2 1

Name: _____

Dynamic Relationships Final Evaluation and Reflection

1. How does a system of living and non-living things operate to meet the needs of the organisms in an ecosystem? Give at least one specific example.

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_____
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_____

2. How have humans impacted the operation of living and non-living organisms in a rainforest? Give at least two examples.

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_____

3. How can you cause change to tropical rain forests when you live in Wisconsin?

_____
_____
_____
_____

4. Describe the most **important** piece of information you learned?

_____
_____
_____
_____

5. Describe the most **interesting** piece of information you learned?

_____

_____

_____

6. What is the difference between "house left" and "stage left?"

_____

_____

7. What is the difference between "upstage" and "downstage?"

_____

_____

8. What is being asked of you if you are told to "strike the stage?"

_____

_____

9. If we did this play again for the upcoming 7th graders, what advice would you give?

_____

_____

_____

_____

10. What would you change about this experience or what would you want to make sure stayed the same?

_____

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_____

11. Grade yourself: (circle one and add a comment about why you deserve that grade for your overall success.) 4 3 2 1

_____

_____

_____

_____

Dynamic Relationships

A play about the Tropical Rainforests of Panama

SCENE 1

(At home, Malia is preparing to pack for a trip to the tropical rainforest of Panama. She has a suitcase out with clothes strewn around the room. There is a chair and desk with a laptop and books piled up.)

Malia

Ugh, I can't make up my mind! What should I bring to Panama? Let me look again...it says it will be 92 degrees almost every day with a low of 87. Humf, not much change other than that. Oh, this website has suggestions of what to bring. (pause while she reads.) Really!? Are you kidding me? The canal is infested with crocodiles? I guess I won't need a swimsuit if I go there. Although looking at a map, Panama runs East / West. It is considered an isthmus connecting North America to South America. It only takes a few hours to cross the country by train. That's cool. I could have breakfast on the Caribbean side and lunch on the Pacific side! There could be a lot of beach time in my future! (pause) Alright, time to get this done.

Swimsuit, check. Sunscreen, bug spray, flip flops, toothbrush, check. Umbrella, check. Hmm...Long sleeved shirt - no, not that one. It will be too warm. *(tosses a sweater aside and picks up a light cotton shirt.)* Perfect. *(tosses this into the suitcase.)* Shorts, pants...jeans? No, that will be too heavy. The days are hot and the nights are no better. Best to have as much light weight, quick drying clothing as possible. *(throws a few more items into the suitcase.)*

That should be it. *(smiles to herself)* What time do I have - AHHhhh! I have to go! Bye Wisconsin!

SCENE 2

(curtains opens to reveal a tropical scene. There are huge leaves - that are part of the leaf cutter ants display, huge tree trunks with people holding up branches, and other various animals wandering around upstage. Several people are moving the fabric river to make it ripple and wave.)

Narrator 1

Malia has made the six hour flight to Panama City and immediately took a taxi to a small town called Gamboa. From Gamboa, Malia took a boat called a water taxi across to the Barro Colorado Island. There is a scientist's research station on this island in the middle of the Panama Canal.

Narrator 2

As was expected, the canal was infested with crocodiles! Malia was sure to keep her swimsuit out of eyesight from these gigantic lizards just to make sure they didn't get any big ideas. *(crocodile costumes of people cross the stage as Malia makes her way on a small cut out boat.)* When Malia got closer to shore, she spotted her professor that she was to be the research assistant for the next month. *(She waves excitedly and starts to make the boat sway. The crocodiles turn to look at her and snap their jaws.)*

Malia

Ah, not you crocodiles. Shoo, shoo. *(She waves her hand away at them. Crocodiles exit the stage.)*

Dr. Stefan Schnitzer

Hello!

Malia

Hello! You must be Dr. Schnitzer?

Dr. Stefan Schnitzer

Please, call me Stefan. I'm glad you made it. I hope your plane ride was good?

Malia

No problem at all. I was too excited to notice the amount of time it took. *(Malia climbs out of the boat and takes a look around.)* Wow, this place is amazing! I can't wait to start my research. Tell me, what is it I will be doing here?

Stefan

To start I'm going to have some of my other researchers take you on a hike through the rainforest. You will be working with the Lianas with our lab research group. They are pretty amazing and have caused quite a stir in the growth of rain forests. But I also want you to get acquainted with the local wildlife. You'll need to learn a few things about where you are before you can truly be comfortable in your home for the next month. There may also be times where you will give tours to visitors. So pay close attention to the details of the trail and your surroundings.

Malia

Sounds great! I'll go check in and get settled in my room here at the research station and I'll be ready with my rubber rain boots for an adventure!

(Malia walks offstage with her suitcase with Stefan. After she has exited, the leaves start to break apart slowly into a line of ants carrying sections of a leaf. Eventually they all fall into line creating something similar to a conga line. Malia and two other research assistants enter stage left.)

Tony

Whoa! Step back. Be careful, and just watch them for a minute.

(They all pause and watch as the ants slowly continue to weave around stage and slowly begin their scene.)

Student written scene inserted here…

Clara

I just love watching them all form a perfect line like that. You'll see plenty of leaf cutter ants while you are here, but every time we like to take a moment and just watch.

Tony

There is no need to move fast in this forest, that's for sure. Between the heat and the humidity, the beauty of it all can't be rushed. *(takes a deep breath of air and smiles.)*

Malia

So before, you said your name is Tony? How long have you been here?

Tony

I've been working for Stefan for about two years now. I spend the fall semester back in Milwaukee taking classes, but then the rest of the year I study Lianas.

Malia

Lianas? Can you explain them to me again?

Tony

Only the coolest woody vine ever! We'll show you. You will learn to love them as well...especially since you'll be studying how and why they grow and how they affect what grows in the forest on a small scale, as well as the role they play in carbon sequestration on a global scale..

Malia

Sounds intriguing and complicated. *(turning to Clara)* And what was your name?

Clara

I'm Clara. I've only been here for one year, but I also move back and forth from Milwaukee. I'm working on my PhD too. And to become a scientist, you have to be in school a long time. What brings you here, Malia?

Malia

I heard about this amazing research opportunity through my high school. Ever since I had Mrs. Feider in middle school, I've wanted to become a scientist. Plus I hate being cold. I thought, why not spend a month where it is always warm?!

Clara

Have you ever been to the tropics before?

Malia

No, actually I haven't. I've always wanted to though. Wisconsin is so cold for so long that I sometimes dream about what it would be like to always be hot.

Clara

(laughing)

You'll have no shortage of that around here. Get ready to dream about the cold Wisconsin winters!

Malia

Ha! Not a chance!

Tony

Just a few words of advice as we continue: Always keep you socks pulled up and over your pants. There are lots and lots of insects here. Many are harmless, but many are not. The best bet is to try and stay clear of any bug, insect, invertebrate, or frog that is brightly colored. It is a safe bet that these creatures have bright colors to actually warn predators that they are harmful. They might not bother you, but even that caterpillar there has barbs on its furry back that will make you want to itch your skin right off! Always stay back and since we always have the time, watch and learn what it does.

Malia

What!? Really? Ok, ok. I'll refrain from petting the wildlife.

Tony

Yes, good plan. And also try not to touch the plants. Many leaves and stems have evolved to have special adaptations to protect them from herbivores as well. They have spines, itchy little hairs, and even toxic compounds that can numb your mouth if you chew on them.

Student written scene about poisonous/irritating insects and animals inserted here… bullet ants, Azteca ants, bufos...

Malia

That truly creeps me out.

Clara

But aren't they beautiful?

Malia

I'm beginning to agree, but I have to get over my fear first.

Tony

There is nothing to fear. Sure some bugs are gross, but the part they all play in a tropical ecosystem is truly amazing. Once you realize that, a whole world will be open to you.

Clara

I used to scream every time I saw a spider. Now I have no problems with picking them off me and setting them back on the ground some place safe. *(a spider crawls over her shoulder and she places it on the ground.)*

Malia

AHHhhh! Ok, ok. *(taking a deep breath)* I'll get used to that, right?

Tony

Eventually you'll get tired of screaming. There are a lot of spiders here. *(Tony smiles when he sees Malia wince like it's painful.)* Hey look ahead. We just got to our site where we are monitoring the growth rate of our trees and Lianas.

Insert student written scene about Lianas…

Malia

So there are pros and cons to LIanas? But it seems like they are taking over the rainforest. Isn't that just bad news all around?

Clara

It is and it isn't. There is still plenty to be studied. We don't yet know why these disturbances happen. They could be from humans, a rise in temperature, or even the lack of rain. I know Stefan is trying to find more money and research assistants to continue his study.

Malia

Really? That sounds fascinating. Maybe he'll still be conducting this research by the time I'm done with high school! I could live here too!!

Tony

(smiling)

I'm glad you are becoming addicted to this place. There are so many hidden treasures in a rainforest. Scientists haven't even begun to uncover everything it has to offer.

Malia

Like what? I mean sure, looking at woody vines all day can be fun, but what is the bigger picture? Why should I care? In fact, why should anyone care? If you haven't been here, how do you convince people around the world that here, matters?

Clara

That is a great question. Let's watch and see if the forest can explain.

student scenes inserted here… topics could include the impact of the Panama Canal on the world, medicines found in rainforests, indigenous people living in rainforests, the production of oxygen and intake of carbon dioxide - relate this to the lianas…

Malia

So what you are telling me is that even people in Wisconsin affect the climate and culture of a remote area in Panama?

Clara

Basically, yeah. Many fast food restaurants purchase some of their beef from cows grazing in Panama and other rain forested areas. The rainforest only exists on 7% of the earth's surface, but contains more species than all other biomes combined! The destruction to these lands can be connected right to the cheeseburger you ordered last week.

Malia

What!?? Really? I guess I need to start to pay attention to what I eat and where it comes from.

Tony

And right now, we can pick these mangoes and eat them for lunch! *(Tony reaches up on a tree and picks a couple of mangoes for them to eat.)*

Malia

I love mangoes! My mom would freak out if she could just walk outside and pick a mango. The tropics are always full of surprises.

Tony

Speaking of surprises…

insert student written scenes…ocelots?

Tony

And that is what I call fascinating.

Malia

I want one!

Clara

Too bad, they are on the endangered list.

Tony

Hey, there is Stefan. He's probably wondering where we've been for so long.

(They all wave to each other and meet center stage.)

Stefan

Well Malia, how was your first hike in the rainforest?

Malia

Everything I could hope for with lots of surprises.

Stefan

Fantastic. I'm glad I ran into you all. I just got word from Gamboa, they are sending a boat of tourists to the island. I need all of you to be guides for the afternoon. Malia, you stick with either Tony or Clara. I need you to learn the ropes and become familiar with the trails. The last thing I need is to have someone getting lost out here. Although we are on an island, you can get turned around pretty quickly. Make sure you have a map and a compass. Your cell phone isn't going to work out on the trails. Let's make sure you know how to navigate.

Now, the most important thing to tell our visitors, they have to respect where they are. That means they have to stay on the trail and they shouldn't touch anything. They also can't remove anything from the island, even if it is just a leaf. Every scientist needs special permission to alter or remove anything on the island. The island is protected land. Everything people do has a chain reaction in the environment. Even if a person steps in sloth poop, they may be disturbing the chance of a tree to grow and decrease the carbon dioxide intake from the planet.

Clara

Don’t get so dramatic Stefan. *(smiling)*

Stefan

I know I get worked up about it. But you all know how important it is for us to have as little impact as possible. Disturbances in the forest are what causes great change. Just look at the impact of the Liana. We crush that seed in sloth poop’s chance to grow, and a Liana may take its place and over time, kill another tree.

Tony

We understand completely. This land is for us to study, not conquer and destroy.

Stefan

Spoken like a true scientist!

Clara

Alright guys, we got it. Come on Malia, let’s go meet the tourists.

END PLAY