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Assessing with  
Learning  
Progressions in  
Science

## FOSS ENVIRONMENTS

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**Northwest Educational  
Service District 189**

*Together We Can*

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## Instructional Tools

In this packet you will find a set of instructional supports for science materials. These documents represent the work-in-progress of teachers in the Assessing with Learning Progressions in Science Project, a Math Science Partnership through the Northwest Educational Service District in Washington State. While we encourage others to use the materials, please know the power of these tools lies in the collaborative discussion and analysis that occurs during their creation. We strongly suggest that anyone utilizing these tools make them your own, adjusting them to fit your teaching context and district priorities. Professional development tools to aid you in this process are available on the ALPS project web page [www.nwesi.org/nwalps](http://www.nwesi.org/nwalps). For access to editable versions of these documents please contact Nancy Menard [nmenard@nwesi.org](mailto:nmenard@nwesi.org).

## Overview of the Tools (not every unit tool-set will include all of these tools)

### Unit Overview

The unit overview grid lays out learning targets or important scientific ideas from Washington State Standards for each investigation in the module and clarifies the success criteria for each learning target. It also details the formative assessments that have been designed to assess each target in the investigation.

### Learning Progressions

A learning progression is a graphical representation of the path students take toward mastery of a science “big idea”. The ALPS *Learning Progression* documents include a description of an important big idea from the *Washington State Science Learning Standards* and the progression of building-block learning targets that students master on their way toward an understanding of that big idea. For each building-block learning target the student success criteria is identified and one or more formative assessment tasks to elicit evidence of student understanding are suggested.

### Formative Assessment Tasks

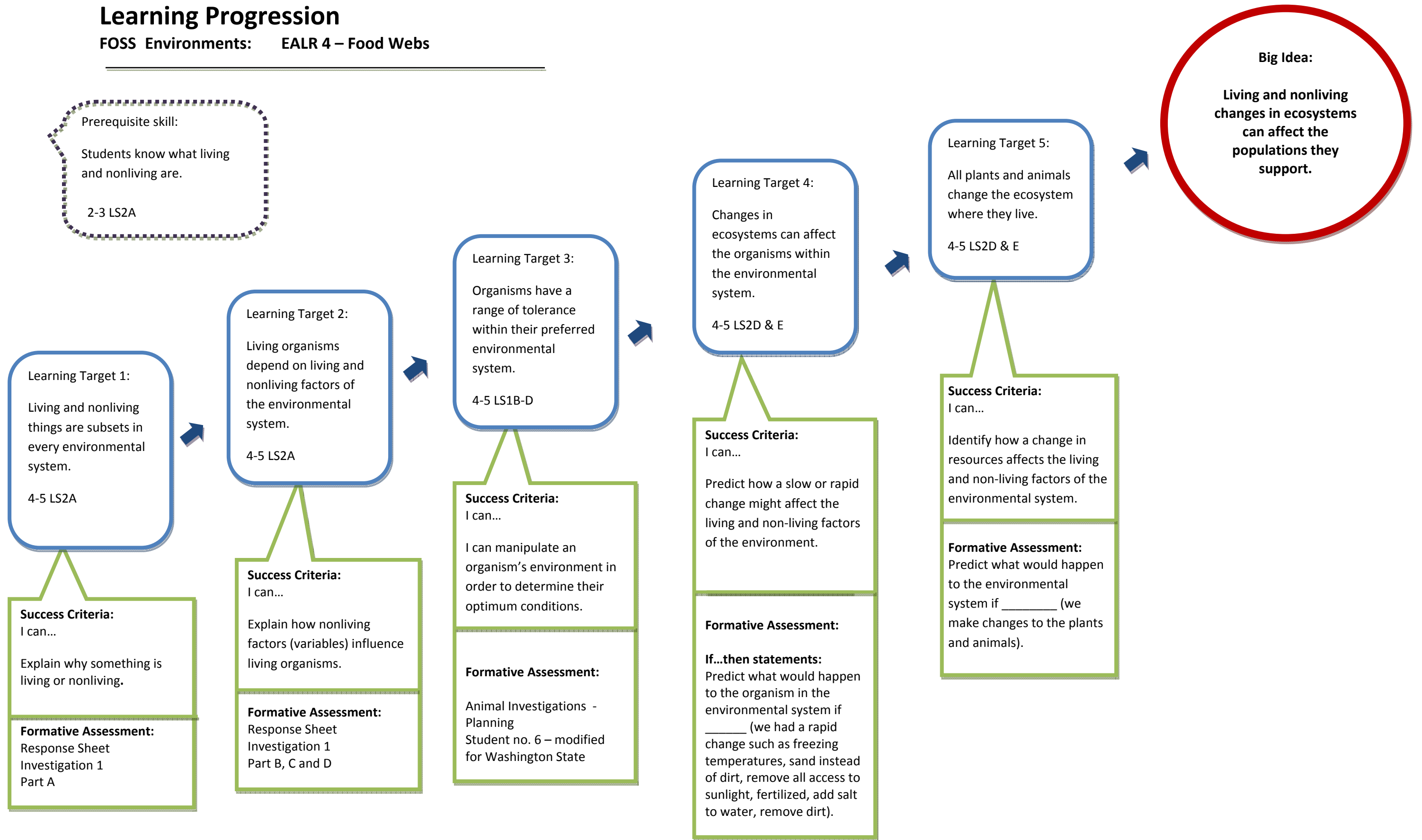
The suggested formative assessment tasks are examples of tools used by the teachers in the ALPS project to gather evidence of student understanding. The *Assessment Task Cover Sheet* details each assessment and gives administration tips and suggestions for instructional adjustments based on some of the common student struggles they encountered.

### Student Work Samples

Selected student work samples from students in ALPS classrooms give a picture of the range of student responses gathered from sample formative assessments. The *Student Work Sample Cover Sheet* describes the student work samples and the teacher’s interpretation of student understanding.

# Learning Progression

FOSS Environments: EALR 4 – Food Webs



## ENVIRONMENTS

Big Idea: Living and nonliving changes in ecosystems can affect the populations they support.

### Formative Assessment Task Cover Sheet

#### Learning Target #1, Assessment Task Letter

Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Students label living and non-living parts of a terrestrial environment.</p>	<p><b>Suggestions for Instructional Adjustments:</b> Simultaneously discuss the variables that exist within your terrariums in the classroom. Address the idea that this is not a controlled experiment but meant to be observations and continually asking questions and adjusting terrarium.</p>
<p><b>Learning Target 1:</b> Living and nonliving things are subsets in every environmental system. - 4-5 LS2A</p>	
<p><b>Success Criteria:</b> Explain why something is living or nonliving.</p>	
<p>Student Task Sheet Included: yes Student Work Samples Included: yes</p>	

#### Learning Target #2, Assessment Task Letter

Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Parts B, C and D of response sheet 1 from investigation 1</p>	
<p><b>Learning Target 2:</b> Living organisms depend on living and nonliving factors of the environmental system. - 4-5 LS2A</p>	
<p><b>Success Criteria:</b> Explain how nonliving factors (variables) influence living organisms.</p>	
<p>Student Task Sheet Included: yes Student Work Samples Included: yes</p>	

## ENVIRONMENTS

Big Idea: Living and nonliving changes in ecosystems can affect the populations they support.

Learning Target #3, Assessment Task Letter	
Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Student Sheet 6 is where students plan the Beetle investigation.</p>	<p><b>Suggestions for Instructional Adjustments:</b> The modified version is better but student sheet 6 from the kit will work too.</p>
<p><b>Learning Target 3:</b> Organisms have a range of tolerance within their preferred environmental system. - 4-5 LS1B-D</p>	
<p><b>Success Criteria:</b> I can manipulate an organism's environment in order to determine their optimum conditions.</p>	
<p>Student Task Sheet Included: yes Student Work Samples Included: no</p>	

Learning Target #4, Assessment Task Letter	
Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> If...Then statements. Example on Learning Progression.</p>	
<p><b>Learning Target 4:</b> Changes in ecosystems can affect the organisms within the environmental system. - 4-5 LS2D &amp; E</p>	
<p><b>Success Criteria:</b> Predict how a slow or rapid change might affect the living and non-living factors of the environment.</p>	
<p>Student Task Sheet Included: no Student Work Samples Included: no</p>	

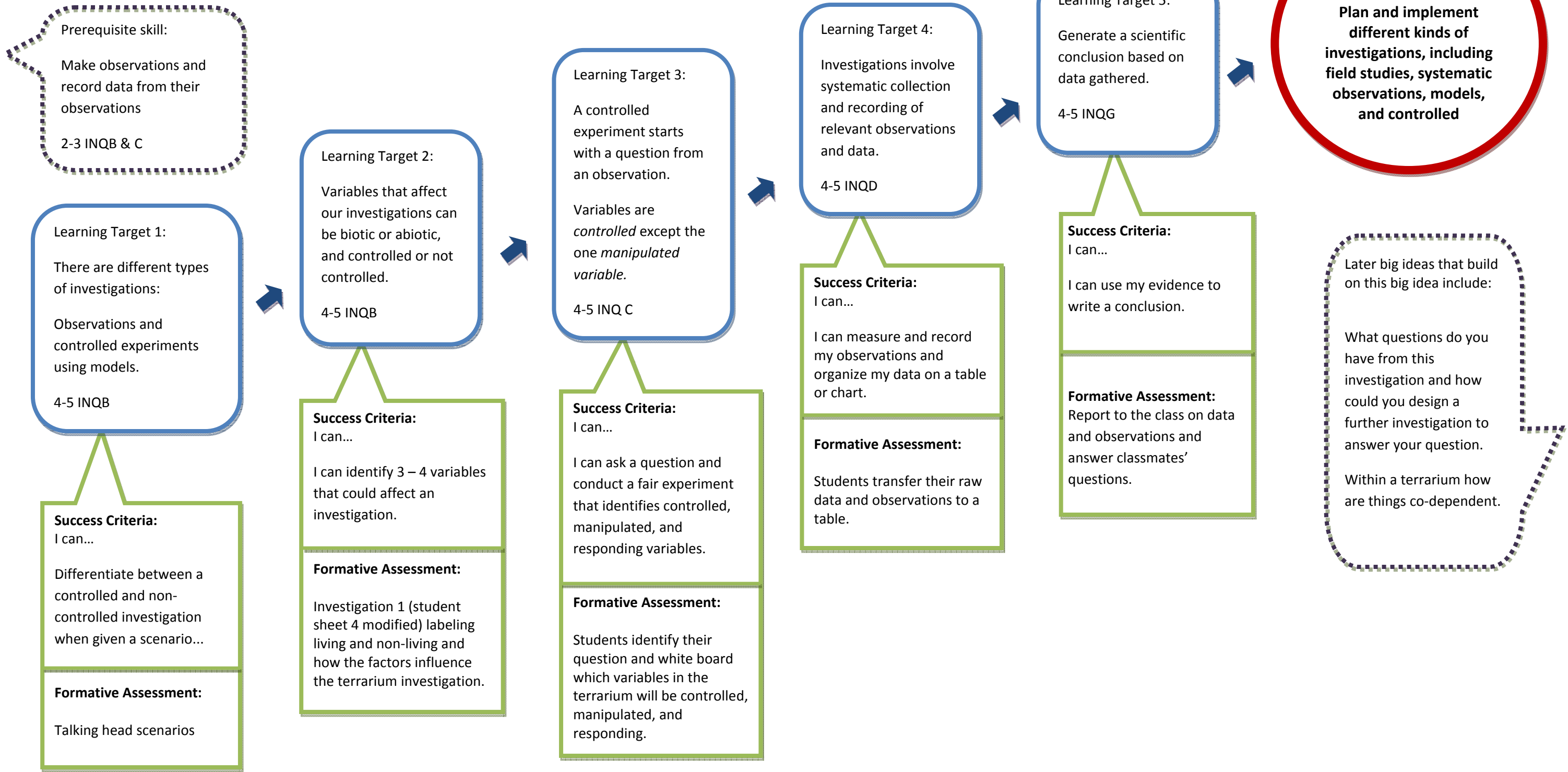
## ENVIRONMENTS

Big Idea: Living and nonliving changes in ecosystems can affect the populations they support.

Learning Target #5, Assessment Task Letter	
Assessment Task Details	Teacher Background
<b>Brief Description of the Assessment Task:</b> If...Then statements. Example on Learning Progression.	
<b>Learning Target 5:</b> All plants and animals change the ecosystem where they live. - 4-5 LS2D & E	
<b>Success Criteria:</b> Identify how a change in resources affects the living and non-living factors of the environmental system.	
Student Task Sheet Included: no Student Work Samples Included: no	

# Learning Progression

## FOSS Environments: EALR 2 Inquiry



## ENVIRONMENTS

Big Idea: Plan and implement different kinds of investigations, including field studies, systematic observations, models, and controlled experiments.

### Formative Assessment Task Cover Sheet

Learning Target #1, Assessment Task Letter	
Assessment Task Details	Teacher Background
<b>Brief Description of the Assessment Task:</b> Students decide which scenario they agree with from a “Talking Heads” sheet.	
<b>Learning Target 1:</b> There are different types of investigations: Observations and controlled experiments using models. - 4-5 INQ B	
<b>Success Criteria:</b> Differentiate between a controlled and non-controlled investigation when given a scenario.	
Student Task Sheet Included: yes Student Work Samples Included: yes	

**Funding information:**



## ENVIRONMENTS

Big Idea: Plan and implement different kinds of investigations, including field studies, systematic observations, models, and controlled experiments.

Learning Target #2, Assessment Task Letter	
Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Labeling living and non-living factors and their influence.</p>	
<p><b>Learning Target 2:</b> Variables that affect our investigations can be biotic or abiotic, and controlled or not controlled. - 4-5 INQ B</p>	
<p><b>Success Criteria:</b> I can identify 3 – 4 variables that could affect an investigation.</p>	
<p>Student Task Sheet Included: yes Student Work Samples Included: no</p>	

Learning Target #3, Assessment Task Letter	
Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Students identify their question and white board which variables in the terrarium will be controlled, manipulated, and responding.</p>	<p><b>Suggestions for Instructional Adjustments:</b> The WA modified version is better but student sheet 6 from the kit will work too.</p>
<p><b>Learning Target 3:</b> A controlled experiment starts with a question from an observation. Variables are <i>controlled</i> except the one manipulated variable. - 4-5 INQ C</p>	
<p><b>Success Criteria:</b> I can ask a question and conduct a fair experiment that identifies controlled, manipulated, and responding variables.</p>	
<p>Student Task Sheet Included: no Student Work Samples Included: no</p>	

## ENVIRONMENTS

Big Idea: Plan and implement different kinds of investigations, including field studies, systematic observations, models, and controlled experiments.

Learning Target #4, Assessment Task Letter	
Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Students transfer their raw data and observations to a table.</p>	
<p><b>Learning Target 4:</b> Investigations involve systematic collection and recording of relevant observations and data. - 4-5 INQ D</p>	
<p><b>Success Criteria:</b> I can measure and record my observations and organize my data on a table or chart.</p>	
<p>Student Task Sheet Included: no Student Work Samples Included: no</p>	

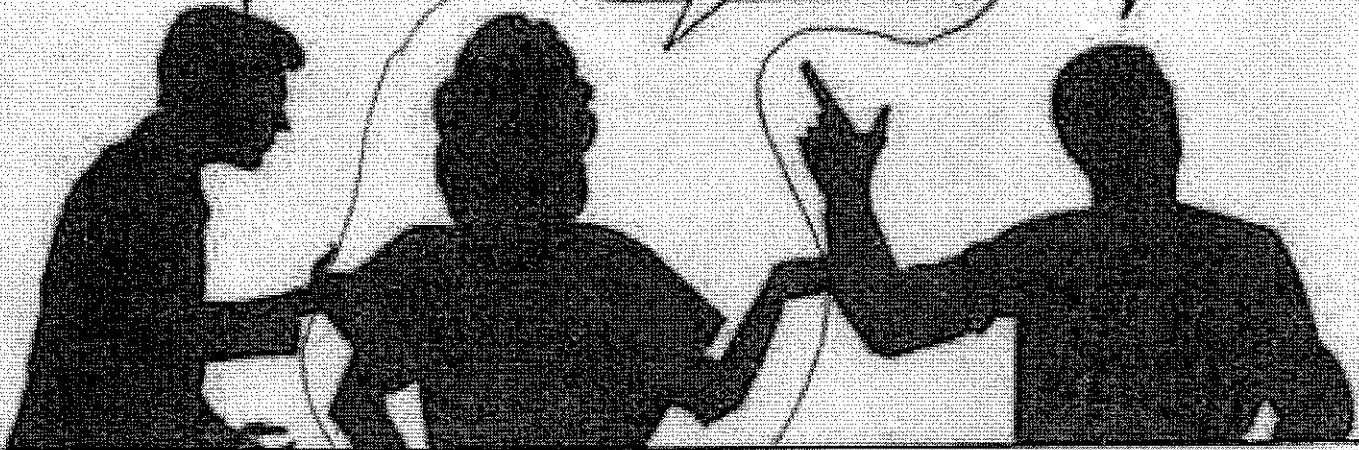
Learning Target #5, Assessment Task Letter	
Assessment Task Details	Teacher Background
<p><b>Brief Description of the Assessment Task:</b> Report to the class on data and observations and answer classmates' questions.</p>	
<p><b>Learning Target 5:</b> Generate a scientific conclusion based on data gathered. - 4-5 INQ G</p>	
<p><b>Success Criteria</b> I can use my evidence to write a conclusion.</p>	
<p>Student Task Sheet Included: no Student Work Samples Included: no</p>	

The science teacher wanted to find out what students understood about controlled experiments. Three students gave their answers to the class.

A controlled experiment is one that takes a long time to perform

I think a controlled experiment is one that investigates a lot of variables

Controlled experiments investigate only one variable while all other variables are kept the same.



Fred

Ann

Joe

Choose which student you agree with about controlled experiments and explain why.

I agree with Ann because

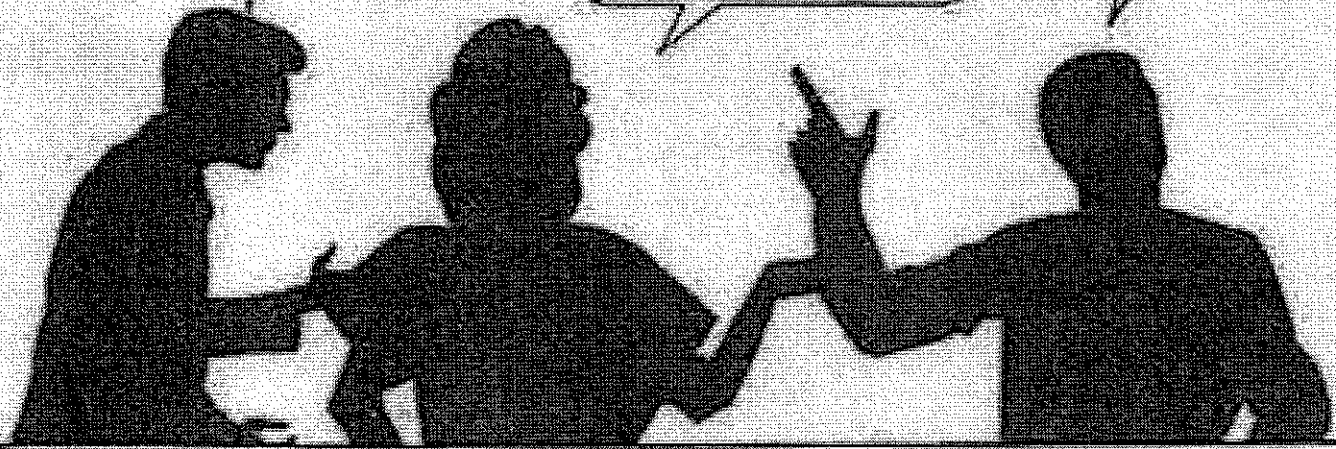
she thinks that a controlled experiment is one that investigates a lot of variables and that is what they need lots of variables to investigate the controlled experiment

The science teacher wanted to find out what students understood about controlled experiments. Three students gave their answers to the class.

A controlled experiment is one that takes a long time to perform

I think a controlled experiment is one that investigates a lot of variables

Controlled experiments investigate only one variable while all other variables are kept the same.



Fred

Ann

Joe

Choose which student you agree with about controlled experiments and explain why.

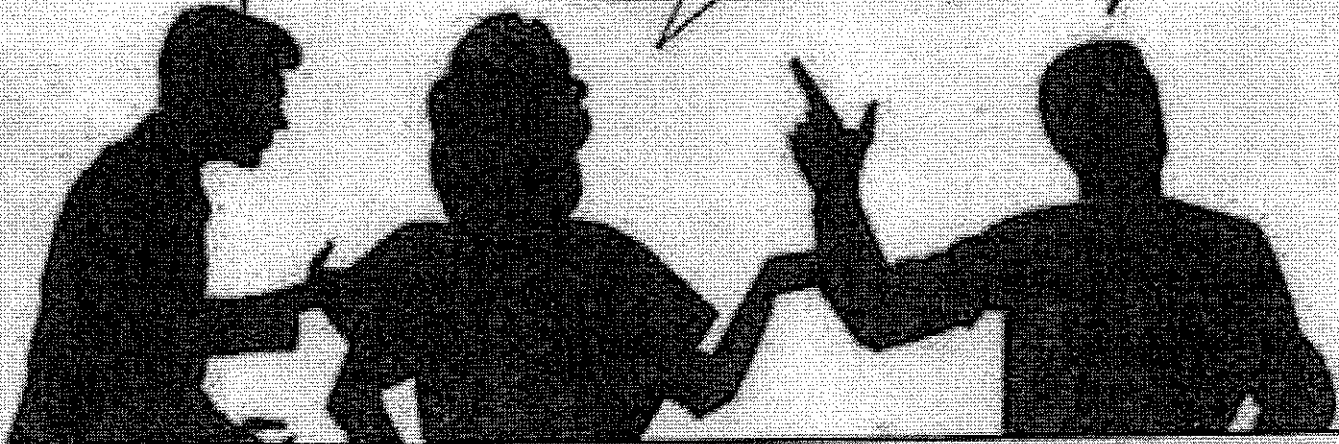
I agree with Joe because  
I remember that a controlled  
experiment investigation only has one  
variable while the others are the same  
as before.

The science teacher wanted to find out what students understood about controlled experiments. Three students gave their answers to the class.

A controlled experiment is one that takes a long time to perform

I think a controlled experiment is one that investigates a lot of variables

Controlled experiments investigate only one variable while all other variables are kept the same.



Fred

Ann

Joe

Choose which student you agree with about controlled experiments and explain why.

I agree with Fred because  
he might be right, I mean  
like it might take forever  
like a year and a half.

## Environments

### Bibliography

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Keeley, Page. *Science Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning*. Thousand Oaks, CA: Corwin, 2008. Print.

Popham, W. James. *Transformative Assessment*. Alexandria, VA: Association for Supervision and Curriculum Development, 2008. Print.