## Microscopic Life Unit Blueprint

Learning	Essential	Benchmarks	Formative and Summative Assessments	Using Assessments to Monitor Student
Experience (LE)	Questions*	( <b>Bolded</b> sections indicate portion of	(Unless noted as a Summative Assessment,	Learning
	(for conceptual	benchmark addressed.)	the assessments are formative and should be	
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<u>LE 1:</u>	/	Related to 4D(3-5)#3: Materials	Activity Sheet 1—Observing a Penny (See	Do students' drawings for step 3 include
<b>Observing</b> a	/	may be composed of parts that are	page 13 in Mircoworlds TG for a copy.)	many details that accurately represent the
Penny (See		too small to be seen without		penny?
pages 9-12 in		magnification.		
STC				
Microworlds		12D(3-5)#2: Make sketches to aid		
TG)		in [reporting observations and]		
		explaining procedures or ideas.		
Pacing				
Suggestions:				
1 Day				
Teacher				
<b>Resources:</b>				
Str.				

\*Essential questions are major questions driving the unit of study. They are directly aligned with the benchmarks. Generally, no one lesson addresses a question in its entirety. By the end of the unit, students should be able to answer these core questions.

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<u>LE 2:</u>	/	12D(3-5)#2: Make sketches to aid	Dots to Dollars Observation Sheet (This is a	• Do the drawings show that the student
<b>Dot to Dollars</b>	/	in [reporting observations and]	teacher-generated sheet.)	has in fact observed an object and
(See Teacher		explaining procedures or ideas.		drawn what was seen?
Tips for details	/			• Does each drawing have an "individual
on lesson.)		12A(3-5)#1: Keep records of their		character" and is not a stereotype of
		investigations and observations and		what the student expected to find?
Pacing		not change the records later.		• Do the drawings show relative size,
Suggestions:				shape, texture, shading, position, and
1-2 Days		12C(3-5)#3: Keep a notebook that		complexity?
		describes observations made,		• Do students' written observations
Teacher		carefully distinguishes actual		describe relative size, shape, texture,
<b>Resources:</b>		observations from ideas and		color, and other relevant details?
		speculations about what was		• Do students refrain from changing their
33 Z/A		observed, and is understandable		observations (written and sketches)
		weeks or months later.		once class sharing has occurred?
	/			• Do students record observations, not
	V			inferences, ideas, or speculations?

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<u>LE 3:</u>		12D(3-5)#2: Make sketches to aid	Observing With a Hand-Lens (Use teacher-	The following questions are also listed in
<b>Communicating</b>	/	in [reporting observations and]	generated sheet.)	LE 2. The teacher should observe
Your	/	explaining procedures or ideas.		improvement between the two lessons.
<b>Observations</b>	/			• Do the drawings show that the student
(See pages 15-19		12A(3-5)#1: Keep records of their		has in fact observed an object and
in STC		investigations and observations and		drawn what was seen?
Microworlds		not change the records later.		• Does each drawing have an "individual
TG.)		_		character" and is not a stereotype of
		12C(3-5)#3: Keep a notebook that		what the student expected to find?
Pacing		describes observations made,		• Do the drawings show relative size,
Suggestions:		carefully distinguishes actual		shape, texture, shading, position, and
1-2 Days		observations from ideas and		complexity?
		speculations about what was		• Do students' written observations
Teacher		observed, and is understandable		describe relative size, shape, texture,
<b>Resources:</b>		weeks or months later.		color, and other relevant details?
				• Do students refrain from changing their
AN LA				observations (written and sketches)
	/			once class sharing has occurred?
	/			• Do students record observations, not
	V			inferences, ideas, or speculations?

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LE 4: Using a		District Written Benchmark: Use a	Teacher observation of students using the	Are students able to:
<b>Microscope</b>	/	microscope properly and be able to	microscopes	• Correctly place an object on the stage
(See Teacher	/	bring an object into focus.		of the microscope?
Tips for details	/			• Adjust the mirror for adequate light?
on lesson.)				<ul> <li>Bring the object being observed into</li> </ul>
	/			focus?
Pacing	/			
Suggestion:				Proper handling of the microscope:
1 day				• Do student hold the microscope by the
				arm and base?
Teacher				• Do students start focusing with the
<b>Resources:</b>				lowest objective?
				• After using the microscope, do students
A DA				lower the stage and place it on the
				lowest objective?
				5
				Note: These skills and behaviors should
	/			improve over time.
				<b>r</b>
	/			
	V			

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LE 5: Strands of	/	12D(3-5)#2: Make sketches to aid	Strands of Thread Observation Sheet	• Do the drawings show that the student
<b>Thread</b>	/	in [reporting observations and]	(Teacher-generated sheet)	has in fact observed an object and
(See Teacher		explaining procedures or ideas.		drawn what was seen?
Tips for details	/			• Does each drawing have an "individual
on lesson.)		12A(3-5)#1: Keep records of their		character" and is not a stereotype of
		investigations and observations and		what the student expected to find?
Pacing		not change the records later.		• Do the drawings show relative size,
Suggestion:				shape, texture, shading, position, and
1 day		12C(3-5)#3: Keep a notebook that		complexity?
		describes observations made,		<ul> <li>Do students' written observations</li> </ul>
Teacher		carefully distinguishes actual		describe relative size, shape, texture,
<b>Resources:</b>		observations from ideas and		color, and other relevant details?
		speculations about what was		• Do students refrain from changing their
23 ZA		observed, and is understandable		observations (written and sketches)
		weeks or months later.		once class sharing has occurred?
	/			• Do students record observations, not
	/			inferences, ideas, or speculations?
	V			

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	benchmarks)		used to guide teaching and learning.)	
<u>LE 6:</u>	Why is it	Introduce 4D(3-5)#3: Materials may	Class discussion about microscopic organisms	What prior knowledge do students appear
Introducing	sometimes	be composed of parts that are too	(based on books)	to have about microscopic life?
<b>Microscopic</b>	helpful to	small to be seen without	Suggested Questions:	
Life in a Pond	magnify	magnification.	1. What do you think lives in a pond?	
(See Teacher	things?		2. What do you think are the needs of	
Tips for details		Introduce 5C(3-5)#1: Some living	living things that live in a pond?	
on lesson.)	What do living	things consist of a living cell. Like		
	things made up	familiar organisms, they need food,		
Pacing	of one cell	water, air; a way to dispose of		
Suggestion:	need to live?	waste; and an environment they can		
1-2 days		live in.		
Teacher				
<b>Resources:</b>				
وكمات				

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<u>LE 7:</u>	Why are	5C(3-5)#2: Microscopes make it	Class discussion about what the students	• Do students understand they are
Investigating	microscopes	possible to see that living things	observed.	observing organisms that consist of
Single-Celled	important?	are made mostly of cells. Some		only 1 cell?
Organisms	-	organisms are made of a collection		• While the students will not be able to
(See Teacher	What do living	of similar cells that benefit from		observe the organisms eat, do they see
Tips for details	things made up	cooperating. Some organisms' cells		behaviors common to other organisms,
on lesson.)	of one cell	vary greatly in appearance and		such as movement?
	need to live?	perform very different roles in the		
Pacing		organism.		
Suggestion:				
3 days		Introduce: 5C(3-5)#1: Some living		
		things consist of a living cell. Like		
Teacher		familiar organisms, they need food,		
<b>Resources:</b>		water, and air; a way to dispose of		
		waste; and an environment they can		
13 XA		live in.		
	/	12D(3-5)#2: Make sketches to aid	Single-Celled Organisms Observation Sheet	• Do the drawings show that the student
	/	in [reporting observations and]	(Teacher-generated sheet)	has in fact observed an object and
		explaining procedures or ideas.		drawn what was seen?
				• Does each drawing have an "individual
		12A(3-5)#1: Keep records of their		character" and is not a stereotype of
		investigations and observations and		what the student expected to find?
		not change the records later.		• Do the drawings show relative size,
				shape, texture, shading, position, and
	/	12C(3-5)#3: Keep a notebook that		complexity?
		describes observations made,		<ul> <li>Do students' written observations</li> </ul>
		carefully distinguishes actual		describe relative size, shape, texture,
	/	observations from ideas and		color, and other relevant details?
		speculations about what was		• Do students refrain from changing their
		observed, and is understandable		observations (written and sketches)
	/	weeks or months later.		once class sharing has occurred?
	/			• Do students record observations, not
	V			inferences, ideas, or speculations?

Learning Experience (LE)	Essential Questions* (for conceptual benchmarks)	Benchmarks (Bolded sections indicate portion of benchmark addressed.)	<b>Formative and Summative Assessments</b> (Unless noted as a Summative Assessment, the assessments are formative and should be used to guide teaching and learning.)	Using Assessments to Monitor Student Learning
LE 8: Exploring <u>Single-Celled</u> <u>Organisms</u> <u>through the</u> <u>Internet</u> (See Teacher Tips for details on lesson.) Pacing Suggestion: 1 day	Why are microscopes important? What do living things made up of one cell need to live?	5C(3-5)#2: Microscopes make it possible to see that living things are made mostly of cells. Some organisms are made of a collection of similar cells that benefit from cooperating. Some organisms' cells vary greatly in appearance and perform very different roles in the organism. 5C(3-5)#1: Some living things consist of a living cell. Like familiar	Class discussion of web sites Quick Write: What do living things made of one cell need to live?	Quick Write Do students know that just like their hermit crabs and isopods, microscopic, single-celled organisms need food, water, and an environment?
Teacher Resources:		organisms, they need food, water, air; a way to dispose of waste; and an environment they can live in.		
LE 9: Microscope Performance Assessment (See Teacher Tips for details on lesson.) Pacing		District Written Benchmark: Use a microscope properly and be able to bring an object into focus.	Teacher observation of individual student use of microscope. (See "Teacher Tips" for additional information.)	See Using a Microscope Performance Assessment Rubric/Checklist, which is available on the electronic curriculum
Suggestion: 1 day Teacher Resources:				

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LE 10: Multi-	Why are	5C(3-5)#2: Microscopes make it	Multi-Cellular Plants Observation Sheet	• Do students' drawings and written
<b>Cellular Plants</b>	microscopes	possible to see that living things are	(Teacher-generated sheet)	observations indicate they observed a
(See Teacher	important?	made mostly of cells. Some		collection of similar cells?
Tips for details		organisms are made of a		
on lesson.)		collection of similar cells that		The following skills should be
		benefit from cooperating. Some		improving considerably.
Pacing		organisms' cells vary greatly in		• Do the drawings show that the student
Suggestion:		appearance and perform very		has in fact observed an object and
2 days		different roles in the organism.		drawn what was seen?
		**Note: The teacher will need to		• Does each drawing have an "individual
Teacher		deliberately point out the above		character" and is not a stereotype of
<b>Resources:</b>		concept.		what the student expected to find?
		12D(3-5)#2: Make sketches to aid in [reporting observations and] explaining procedures or ideas.		<ul> <li>Do the drawings show relative size, shape, texture, shading, position, and complexity?</li> <li>Do students' written observations describe relative size, shape, texture,</li> </ul>
		12A(3-5)#1: Keep records of their		color, and other relevant details?
		investigations and observations and		• Do students refrain from changing their
		not change the records later.		observations (written and sketches) once class sharing has occurred?
		12C(3-5)#3: Keep a notebook that		• Do students record observations, not
		describes observations made,		inferences, ideas, or speculations?
		carefully distinguishes actual		
		observations from ideas and		
		speculations about what was		
		observed, and is understandable		
		weeks or months later.		

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<u>LE 11:</u>	How and why	5C(3-5)#2: Microscopes make it	Summative Assessment of Sketches and	• Do students' drawings and written
<b>Specialized</b>	do the cells	possible to see that living things are	<b>Observations:</b> Cells within a Living Thing	observations indicate they observed
Cells within an	within some	made mostly of cells. Some	Observation Sheet	very different cells within one
<u>Organism</u>	living things	organisms are made of a collection	Use Drawings and Observations Checklist to	organism?
(See Teacher	differ?	of similar cells that benefit from	assess students' skills.	
Tips for details		cooperating. Some organisms' cells	(Both items are teacher-generated sheets)	Criteria to formally assess:
on lesson.)		vary greatly in appearance and		• Do the drawings show that the student
		perform very different roles in the		has in fact observed an object and
Pacing		organism.		drawn what was seen?
Suggestion:		**Note: The teacher will need to		• Does each drawing have an "individual
2 days		deliberately point out the above		character" and is not a stereotype of
		concept. Students need to think		what the student expected to find?
Teacher		about why the cells look different.		• Do the drawings show relative size,
Resources:		For example, why does a root cell		shape, texture, shading, position, and
		look different from a leaf cell?		complexity?
AN GA		While they don't need to know the		• Do students written observations
		specifics, the students should		describe relative size, shape, texture,
		different things, thus they look		• Do students refrain from changing their
		different (shape size and color are		observations (written and sketches)
		typical differences) This concent is		once class sharing has occurred?
		only introduced at A <sup>th</sup> grade		Do students record observations not
		oniy <u>introduceu</u> ut 4 grude.		inferences ideas or speculations?
		12D(3-5)#2. Make sketches to aid		interences, ideas, or speculations.
		in [reporting observations and]		
		explaining procedures or ideas		
		12A(3-5)#1 Keep records of their		
		investigations and observations and		
		not change the records later.		
		12C(3-5)#3: Keep a notebook that		
		describes observations made.		
		carefully distinguishes actual		
		observations from ideas and		
		speculations about what was		
		observed, and is understandable		
		weeks or months later.		

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LE 12:	How and why	5C(3-5)#2: Microscopes make it	Single-Celled and Multi-Celled Living Things	Students should be able to identify the
<b>Summative</b>	do the cells	possible to see that living things are	(Teacher-generated sheet)	first picture as single-celled and the
Assessment	within some	made mostly of cells. Some		second as multi-celled.
(See Teacher	living things	organisms are made of a collection		
Tips for details	differ?	of similar cells that benefit from		The needs of living things should include
on lesson.)		cooperating. Some organisms' cells		food, water, and a place to live.
		vary greatly in appearance and		
Pacing		perform very different roles in the		
Suggestion:		organism.		
1 day				
		5C(3-5)#1: Some living things		
Teacher		consist of a living cell. Like familiar		
<b>Resources:</b>		organisms, they need food, water,		
		air; a way to dispose of waste; and an environment they can live in.		