OVERVIEW AND MODULE 1 AT A GLANCE

The Urban Ecology Curriculum for English Learners is an interdisciplinary, standards-based, upper elementary/middle school curriculum designed to bolster English language and literacy learning for Long Term English Learners (LTELs)[1], or students "at risk" of becoming LTELs, by providing access to rigorous, STEM content. The curriculum emphasizes locally-relevant field studies focused on engaging students in scientific study through the "four ways of knowing science": understanding science, talking science, doing science, and acting on science. English language skills and abilities are developed using a project-based learning approach that establishes content and inquiry as a vehicle for language and literacy development, with an emphasis on expository/informational writing and oral language development.

Urban ecology is a new branch of environmental science that seeks to understand the natural systems of urban areas and the threats that face them. Urban ecologists study the trees, rivers, wildlife and open spaces found in cities to understand the extent of those resources and the pressures they face from human development. Urban ecology is *the study of cities as the interactions among biological, chemical, physical and human social forces*.

The Urban Ecology Curriculum for English Learners is comprised of several modules, organized conceptually. These modules may be used sequentially or they may be used in any order. However, it should be noted that Module 1 provides foundational knowledge and experiences for students, as well as a through description of urban ecology as a science. All subsequent modules are explorations of the scientific method that deepen scientific knowledge and principles related to Urban Ecology. All modules are based on the Urban Ecolab Curriculum which includes a total of eight modules, and can be accessed at the following website: cures.lmu.edu/for-instructors/urban-ecolab-curriculum. The table below offers an overview of the three **Urban Ecology for English Learners Modules** adapted for grades four thru eight.

URBAN ECOLOGY FOR ENGLISH LEARNERS MODULE DEVELOPMENT

ORIGINAL URBAN ECO LAB MODULE	URBAN ECOLOGY FOR ENGLISH LEARNERS MODULE	BIG IDEA	ACTION-ORIENTED PROJECTS
Module 1: **Introduction to Urban Ecology**	Module 1: **Introduction to Urban Ecology**	Cities are urban ecosystems.	**Science Product:** Animal habitat investigation **Literacy Product:** Communicate in a Public Service Announcement
Module 2: **Patterns of Urban Land Use**	Module 2: **Patterns of Urban Land Use**	Humans create and transform neighborhoods that can be studies as a system.	**Science Product:** 3D Neighborhood Land Use Map at present or over time and with or without the use of technology **Literacy Product:** Proposal for land use development in school or home community
Module 6: **Biodiversity**	Module 3: **Biodiversity**	Healthy urban communities have diverse natural systems.	**Science Product:** Field Data Collection to determine levels of biodiversity in community habitats **Literacy Product:** Biodiversity Science Report

[1] In California, Long-Term English Learners are defined as ELs in grades 6-12 who have (a) 6+ years of continuous enrollment in US schools; (b) remained at the same EL proficiency level for 2+ years; and (c) are not making normative progress on academic achievement tests. Students "at risk" of becoming LTELs are in upper elementary school and have (a) been enrolled in US schools since grade 1; (b) remained at the Intermediate (Expanding) level of English proficiency; and (c) are not making normative progress on academic achievement tests.

Loyola Marymount University
Center for Equity for English Learners
Center for Urban Resilience

URBAN ECOLOGY CURRICULUM FOR ENGLISH LEARNERS*

Module 1: Introduction to Urban Ecology (2nd Ed.)

MODULE 1

Purpose: This module introduces the overarching concepts, content, and frameworks which provide the foundation for the curriculum.

Note: It is recommended that you cover the content in this Module prior to moving on to other modules in the Urban Ecology Curriculum for English Learners.

BIG IDEA:

Cities are urban ecosystems.

PROJECT:

Animal habitat investigation

Literacy Application:

Public Service Announcement

Module 1

Introduction to Urban Ecology

6 units

Total 22 lessons

(approximately 90 -100 minutes per lesson)

Total Approximate Time

(40 hours)

UNIT 1: Cities as Systems

Lesson 1 - Pre-Assessment & Defining Urban Ecology
Lesson 2 - What makes a city?
Lesson 3 - Interrelatedness: Building Neighborhoods and Cities
Lesson 4 - Cities as Urban Ecosystems

UNIT 2: Ecosystem Structure

Lesson 1 - Ecosystem Structure Categories
Lesson 2 - Field Experience
Lesson 3 - Informational Text Reading: Part I - What is an Ecosystem?
Part II - Ecology of Hummingbirds
Lesson 4 - Project Development Time

UNIT 3: Site Evaluation

Lesson 1 - Understanding Scientific Inquiry
Lesson 2 - Site Evaluation
Lesson 3 - Informational Text Reading: What is Urban Ecology?
Lesson 4 - Project Development Time

UNIT 4: Complex Urban Ecosystems

Lesson 1 - Drivers & Forces, Presses & Pulses
Lesson 2 - Different Drivers & Forces in Cities and Hummingbird Data Collection #1
Lesson 3 -Hummingbird Data Collection #2
Lesson 4 - Project Development Time

UNIT 5: Microhabitats and Community Relationships

Lesson 1 - Microhabitats Field Experience
Lesson 2 - Hummingbird Data Collection #3
Lesson 3 - Data Analysis
Lesson 4 - Project Development Time

UNIT 6: Action in Urban Ecology

Lesson 1 - Finalize and Film Public Service Announcement (PSA)
Lesson 2 - Video Editing and Presentation of PSA, Adminster Post Assessment

*Based on Urban EcoLab Curriculum cures.lmu.edu/for-instructors/urban-ecolab-curriculum

MODULE 1 – DESIRED RESULTS, GRADES 4- 8

Understanding by Design: Stage 1

	Grades 4 & 5	Grade 6	Grade 7	Grade 8
BIG IDEAS	**"Systems and Interactions"** • Systems consist of parts that work together • Systems are part of the natural environment or constructed by humans • Systems impact, interact and interrelate with each other	**"Systems and Interactions"** • Systems are made of parts that work together • Systems are natural or human-made • Systems interact and are interdependent	**"Systems, Structures, and Functions"** • The structure of a system is dependent on its function • Systems have specific structures to perform a function	**"Systems in Conflict (Human Impact)"** • Systems can interact with each other in negative ways • Conflict can be natural or human-made
GOALS	**Students will understand the concept and attributes of urban ecology:** a. Students will recognize connections and understand interactions between natural systems and human systems in an urban environment. b. Students will understand how these interactions impact our ecosystems immediately and/or over time.	**Students will understand essential concepts of urban ecology:** a. Students will understand how natural systems and human systems interact with each other in urban settings and the immediate and/or long-term consequences of such interactions.	**Students will understand essential concepts of urban ecology**: a. Students will understand how natural systems and human systems possess specific structures in order to function in urban settings and the changes in the structures result in either positive, neutral or negative consequences.	**Students will understand essential concepts of urban ecology:** a. Students will understand how natural systems and human systems can interact in conflicting ways in urban settings, and it may result in negative consequences (human impact).
GUIDING QUESTIONS	• What is a city? • What is a system? • What makes up an ecosystem? • How do natural and human systems interact with each other in cities? • What can we do to create healthy and sustainable ecosystems where we live?	• "What is a system?" • "In what ways human and natural systems interact with each other in cities?" • "How can we develop healthy and sustainable cities?"	• What is a system?" • "What are the structural features of human and natural systems in urban settings?" • "How do these structures support human and natural systems to function efficiently?" • "What will occur when the structures of natural and human systems change?" • "How do physiological/genetic structures of hummingbirds assist their survival in urban settings? • "How can we develop healthy and sustainable cities?"	• "What is a system?" • "In what ways can natural systems come in conflict with one another in urban settings?" • "In what ways can human systems negatively impact natural systems in urban settings?" • "How can we reduce negative human impact in an urban ecosystem? • "How can we develop healthy and sustainable cities?"

	Grades 4 & 5	Grade 6	Grade 7	Grade 8
UNDERSTANDINGS	• A system is a collection of interrelated parts. • A city is an urban ecosystem. • Ecosystems contain biotic, abiotic and human-made elements. • Humans impact the urban ecosystem. • There is an important connection between urban ecology and environmental action. • Creating and maintaining healthy and sustainable cities, benefits global ecosystems.	• A city is a special type of system, an urban ecosystem. • Urban ecology is the study of cities as the interactions among human systems and natural systems. • In an ecosystem, biotic, abiotic, and human-made elements interact with each other. • An ecosystem will change over time according to its energy flow within the system. • A sustainable ecosystem is a system that provides what is required for the organisms to live there. • Humans impact the urban ecosystems biologically, chemically, physically and socially. • Organisms in an ecosystem are linked together by their need and interact in a variety of ways. • Cities are organized in a way that allows for efficient use of resources. • When humans live in healthy and sustainable cities, it benefits global ecosystems.	• A city is a special type of system, an urban ecosystem. • Cities are organized in a way that allows for efficient use of resources. • Urban ecology is the study of cities as the interactions among human systems and natural systems. • An urban ecosystem possesses a specific structure with biotic, abiotic, and human-made elements in order to function efficiently. • Humans impact the urban ecosystems biologically, chemically, physically and socially. • When a change occurs within nature or human systems, favorable and/or unfavorable consequence(s) may result. • Physiological and/or genetic structures of animal/plant species are dependent on their functions. • Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival. • A sustainable ecosystem is a system that provides what is required for organisms to live there. • When humans live in healthy and sustainable cities, it benefits global ecosystems.	• A city is a special type of system, an urban ecosystem. • Urban ecology is the study of cities as the interactions among human systems and natural systems. • In an ecosystem, biotic, abiotic, and human-made elements interact with each other. • Humans impact the urban ecosystems biologically, chemically, physically and socially. • Principles of chemistry underlie healthy functioning of biological systems. • A sustainable ecosystem is a system that provides what is required for the organisms to live there. • When humans live in healthy and sustainable cities, it benefits global ecosystems.

STANDARDS ALIGNMENT BY GRADE LEVEL AND CONTENT AREA

The Urban Ecology Curriculum for English Learners presents an opportunity to deliver cross-disciplinary instruction and thus has been aligned to the following content area standards in grades 4-8:

- Common Core State Standards, English Language Arts (2010)
- California English Language Development Standards (2012)
- California Science Standards (1999)
- Next Generation Science Standards - California (2013)

The Project Curriculum Committee examined grade level content as well as cross-grade level articulation to identify standards that are targeted in this curriculum. Throughout the units you can determine which standards are "essential standards" for your classroom context. "Essential standards" are defined as those covered in-depth. You may also target "complementary standards", defined as standards that may have been covered prior to this module, or that may be presented during the module at an introductory level.

A complete list of standards organized by grade level can be found in the "Grade Level Standards" Tab.

MODULE 1 – ASSESSMENT EVIDENCE

Understanding by Design, Stage 2 and Project Based Learning

Stage 2: How will student be assessed on content knowledge, language use, and literacy application? What project-based outcome will be expected? How will it be measured?

PROJECT DESCRIPTION

Name of Project	Increase or sustain the Hummingbird Population in Our Neighborhood!
Mode	Public Service Announcement – Students will organize ideas of their chosen topic into data, mapping, and recommendations that presents the problem and gives a solution through a persuasive media (PSA).
Project Idea	Students work in teams to solve the existing problem of the hummingbird population in their neighborhood. They design effective research questions and conduct data collection based on their observation of hummingbirds and evaluation of the selected field site. Students apply knowledge of "healthy and sustainable city" where an urban ecosystem provides what is required for all organisms to live as the result of positive interactions among human and natural systems. They will create public service announcements (PSAs) with a PowerPoint/iMovie or other technological tool that demonstrates their understanding of urban ecology and how they could apply it to communicate the necessary elements to provide hummingbirds with a habitat that will allow them to thrive in the students' neighborhood.
Driving Question	"How can we build a healthy and sustainable city for hummingbirds and humans?"
Standards	Project will be assessed using the rubric. See below.
Audience	Public Service Announcements will be presented to the class, school, and community.
	*** Planning Template adapted from Buck Institute for Education, 2008**

Other Evidence (Formative Assessment):

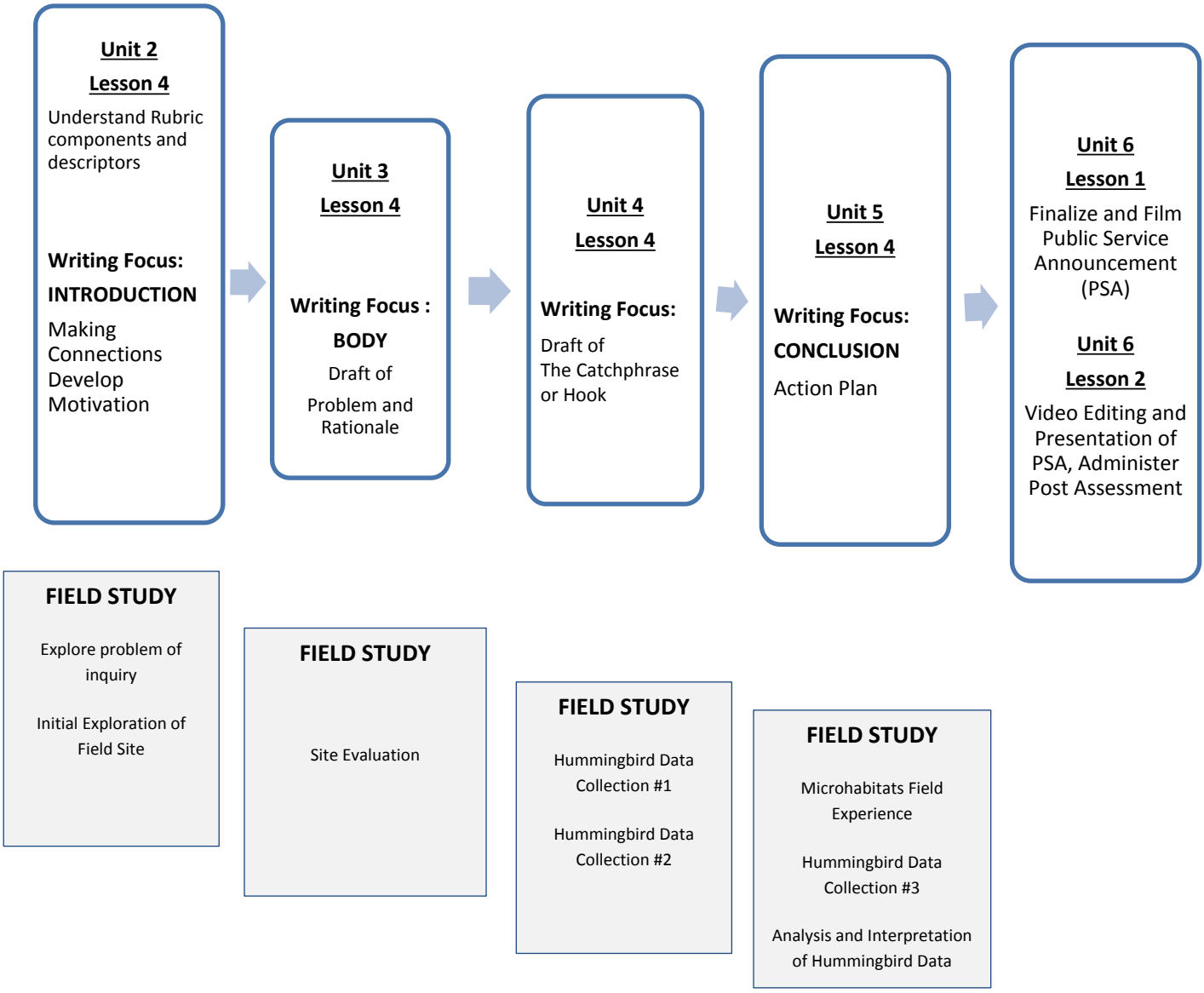
- Pre-and-Post Writing Assessment
- Science Interactive Notebooks (writing)
- Oral presentations
- Anecdotal Notes
- Field Notes

MODULE 1 – ASSESSMENT EVIDENCE

Understanding by Design, Stage 2 and Project Based Learning

BENCHMARKS TO SUPPORT PROJECT DEVELOPMENT (PSA)

MODULE 1 – INTRODUCTION TO URBAN ECOLOGY BENCHMARKS TO SUPPORT PROJECT DEVELOPMENT: Public Service Announcement (PSA)



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PUBLIC SERVICE ANNOUNCEMENT RUBRIC

CRITERIA	4	3	2	1
Content	• Creates an original, accurate and interesting PSA that adequately addresses the urban ecology issue • PSA presents accurate data from field study inquiry • PSA presents many elements of human and animal interactions	• Creates an accurate PSA that adequately addresses the urban ecology issue • PSA presents some data from field study inquiry • PSA presents some elements of human and animal interactions	• Creates an accurate PSA but it does not adequately address the urban ecology issue • PSA presents limited data from field study inquiry • PSA presents few elements of human and animal interactions	• PSA is not accurate • PSA presents little or no data from field study inquiry • PSA presents no elements of human and animal interactions
Speaking[2]	• Uses expanded content area vocabulary and descriptive words • Uses consistent grammatical forms and structures with only occasional errors • Speaks with no hesitation and effectively communicates message	• Uses content area vocabulary and descriptive words • Uses consistent grammatical forms and structures with more than occasional errors • Speaks with some hesitation that does not interferes with communication	• Uses content area vocabulary and descriptive words • Uses consistent grammatical forms and structures with frequent errors or uses basic structures with only occasional errors • Speaks with some hesitation that interferes with communication	• Uses basic content area vocabulary and descriptive words • Uses consistent grammatical forms and structures with frequent errors • Speaks with much hesitation that greatly interferes with communication
Writing[1]	• Uses more complex sentences and language structures to write brief expository compositions that effectively state the problem and propose a solution • Includes more complex urban ecology vocabulary in written products • Makes a few minor errors in capitalization, punctuation, spelling and grammar	• Uses simple sentences and language structures to write brief expository compositions that effectively state the problem and propose a solution • Includes key urban ecology vocabulary in written products • Makes some errors in capitalization, punctuation, spelling and grammar	• Uses a few simple sentences and language structures to write brief expository compositions that effectively state the problem and propose a solution • Includes few key urban ecology vocabulary in written products • Makes many errors in capitalization, punctuation, spelling and grammar	• Writes words or phrases and uses limited language structures to write brief expository compositions that effectively state the problem and propose a solution • No evidence of urban ecology vocabulary in written products • Punctuation and spelling errors prevent understanding
Responsible use of Resources	• The PSA follows fair use for all music and sound effects that are included • All text is the original work of the group members or is used with permission	• The PSA follows fair use for most music and sound effects that are included • All text is the original work or is used with permission • There are some minor issues with copyright and fair use	• Most PSA is the original work of the group members, but some material is used without permission or in violation of copyright	• The PSA does not follow fair use practices • Text, sound effects and/or music is used without permission and/or in violation of copyright
Collaboration with Peers	• Almost always listens to, shares with, and supports the efforts of others in the group • Tries to keep people working well together	• Usually listens to, shares with, and supports the efforts of others in the group • Does not cause problems in the group	• Often listens to, shares with, and supports the efforts of others in the group but sometimes is not a good team member	• Rarely listens to, shares with, and supports the efforts of others in the group. Often is not a good team member
Technical Production	• Tone and voice convey emotions and enthusiasm • The recording is clear and loud enough to be heard	• Tone and voice frequently convey emotions and enthusiasm • The recording is clear and loud enough to be heard	• Tone and voice frequently convey emotions or enthusiasm • Most of the recording is clear and loud enough to be heard	• Tone and voice rarely convey emotions or enthusiasm • Recording is unclear and/or not loud enough to be heard

[2] Developed based on California Department of Education ELD Standards, Expanding Level Standards (2012)

MODULE 1 – LEARNING PLAN

Understanding by Design, Stage 3

Learning plans are provided for each unit. They include the following:

I. Lesson Outcome

II. Standards Connection and Integrated Content and Language Objectives

III. Key Dimensions of Academic Language

IV. Materials and Resources

V. Urban Ecology Instructional Sequence (Introduction, Input, Application/Inquiry, Closure/Reflection) with Support for English Learners:
   a. Language Development Routines (Focus on Language Modes and Scaffolding Strategies)
   b. Vocabulary Development Routines
   c. Content Area Reading/Writing
   d. Metacognitive/Metalinguistic Connection(s)

VI. Handouts/Resource Support Materials