| PreKindergartn (3-4 year old; MA EEC) | Kindergarten (5 year old) |

1. From Molecules to Organisms: Structures & Processes

PreK-LS1-1(MA). Compare, using descriptions and drawings, the external body parts of animals (including humans) and plants and explain functions of some of the observable body parts. [Clarification Statement: Examples can include comparison of humans having two legs and horses four, but both use legs to move.]

PreK-LS1-3(MA). Explain that most animals have 5 senses they use to gather information about the world around them.

PreK-LS1-4(MA). Use their senses in their exploration and play to gather information.

PreK-LS1-2(MA). Recognize that all plants and animals grow and change over time.

ELA: SL.K.5

K.LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

K.LS1-2 (MA). Recognize that all plants and animals have a life cycle: most plants begin as seeds, develop and grow, make more seeds and die; animals are born, develop and grow, produce young, and die.

PreK-ESS2-3

2: Ecosystems: Interactions, Energy, & Dynamics

PreK-LS2-2(MA). Using evidence from the local environment explain how familiar plants and animals meet their needs where they live. [Clarification Statement: Basic needs include water, food, air, shelter, and, for most plants, light. Examples of evidence can include squirrels gathering nuts for the winter and plants growing in the presence of sun and water. The local environment includes the area around the student's school, home, or adjacent community.]
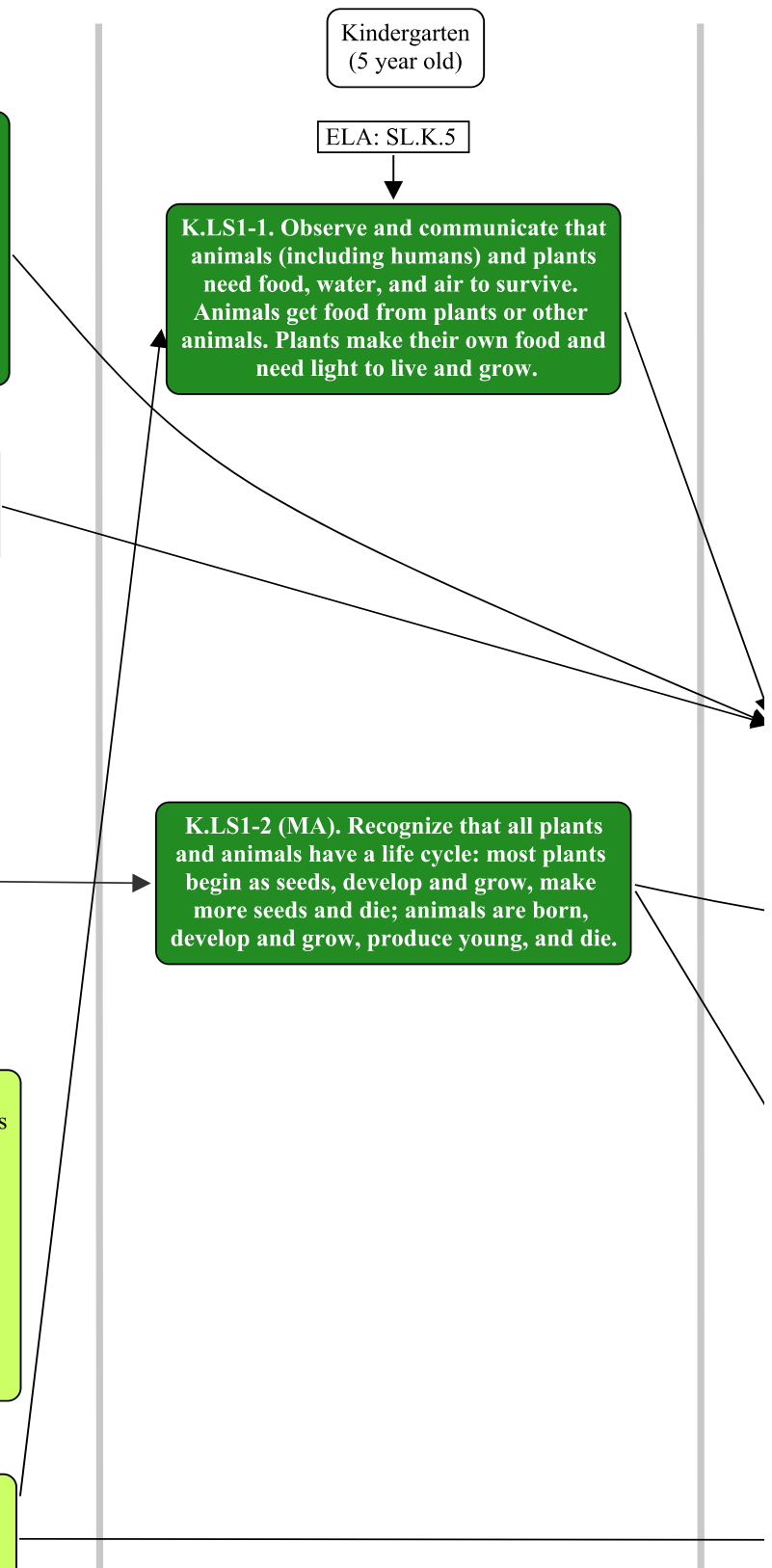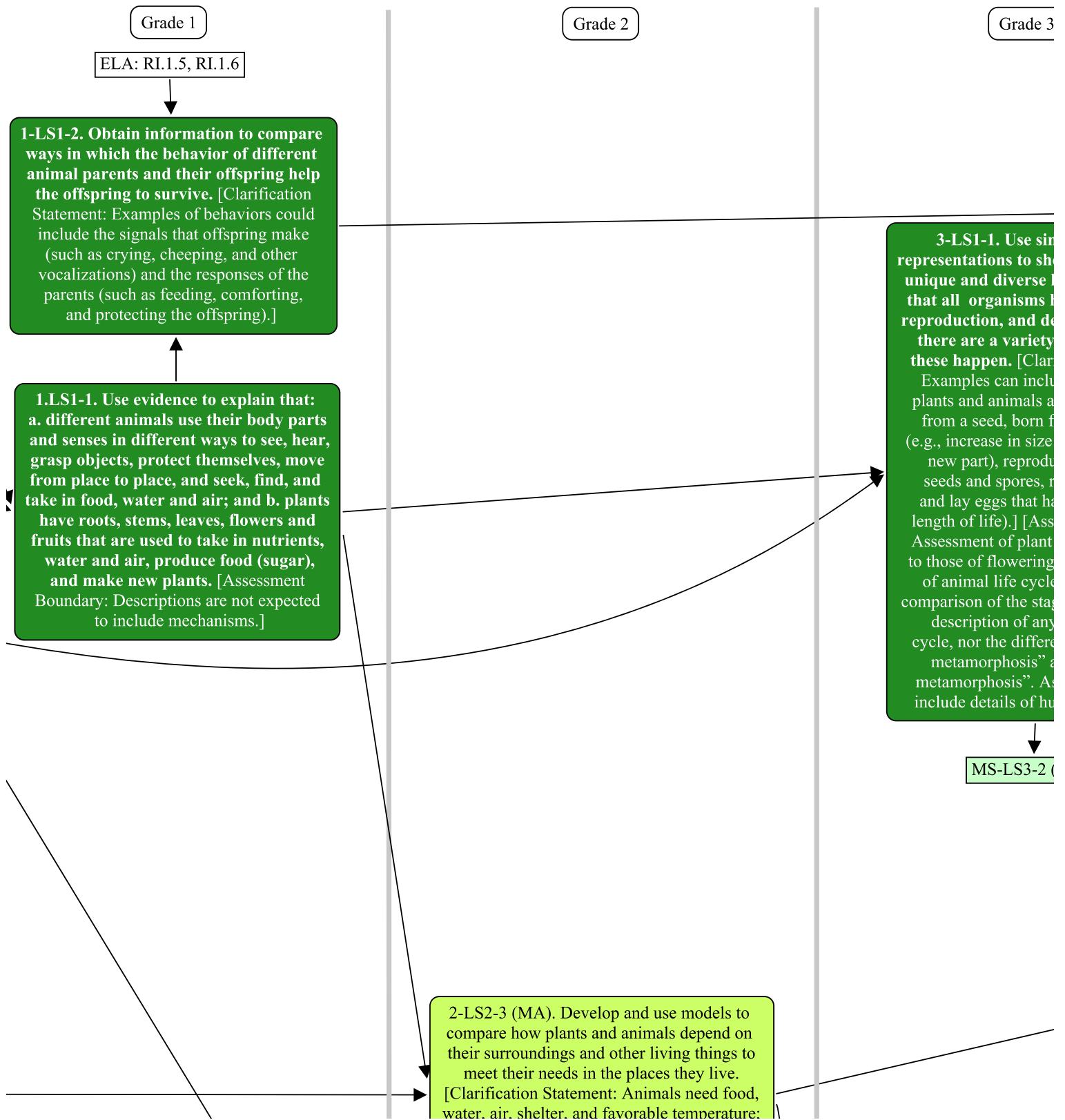
PreK-LS2-3(MA). Give examples from the local environment of how some animals and plants are dependent on one another to meet

Based on *A Framework for K-12 Science Education* (NRC, 2012) and adapted from the *Next Generation Science Standards* (2013)
Please direct comments, suggested edits, and questions to: mathsciencetech@doe.mass.edu.
The standards and strand maps are available at: www.doe.mass.edu/stem/review.html
(*) denotes integration of technology/engineering through a practice or core idea.

Grade 1

Grade 2

Grade 3

ELA: RI.1.5, RI.1.6

1-LS1-2. Obtain information to compare ways in which the behavior of different animal parents and their offspring help the offspring to survive. [Clarification Statement: Examples of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]

1.LS1-1. Use evidence to explain that: a. different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air; and b. plants have roots, stems, leaves, flowers and fruits that are used to take in nutrients, water and air, produce food (sugar), and make new plants. [Assessment Boundary: Descriptions are not expected to include mechanisms.]

3-LS1-1. Use si representations to sh unique and diverse that all organisms h reproduction, and de there are a variety these happen. [Clar Examples can inclu plants and animals a from a seed, born f (e.g., increase in size new part), reprodu seeds and spores, r and lay eggs that ha length of life).] [Ass Assessment of plant to those of flowering of animal life cycle comparison of the sta description of any cycle, nor the differe metamorphosis" a metamorphosis". As include details of hu

MS-LS3-2 (

2-LS2-3 (MA). Develop and use models to compare how plants and animals depend on their surroundings and other living things to meet their needs in the places they live. [Clarification Statement: Animals need food, water, air, shelter, and favorable temperature;

Grade 4

Grade 5

4-LS1-1. Construct an argument that animals and plants have internal and external structures that support their survival, growth, behavior, and reproduction. [Clarification Statement: External animal structures might include legs, wings, feathers, trunks, claws, horns and antennae. Animal organs might include eyes, ears, nose, heart, stomach, lung, brain, and skin. Plant structures might include leaves, roots, stems, bark, branches, and flowers.] [Assessment Boundary: Assessment is limited to macroscopic structures.]

mple graphical ow that species have life cycles. Describe have birth, growth, eath in common but of ways in which ification Statement: ude different ways re born (e.g., sprout rom an egg), grow and weight, produce ce (e.g., develop root runners, mate atch) and die (e.g., essment Boundary: life cycles is limited plants. Assessment es is focused on a ges, not on a detailed one organism's ences of "complete and "incomplete ssessment does not uman reproduction.]

(gr. 8)

MS-LS1-2 (gr. 6)

MS-LS1-4 (gr. 7)

MS-LS1-3 (gr. 7)

MS-LS4-2 (gr. 6)

4-PS3-2

ELA: SL.5.4

5-LS1-1. Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly througha process in which they use air, water, and energy from the sun to produce sugars and plant materials. [Assessment Boundary: The chemical formula or details about the process of photosynthesis is not expected.]

HS-LS1-5

5-LS2-1. Develop a model of a food web to describe the movement of matter among producers, primary and secondary consumers, decomposers, and air and soil in the environment; a. show that plants produce sugars and plan materials; b. show that some animals eat plants for food and other animals eat the animals that eat plants; and c. show that some organisms, including fungi and bacteria, break down dead organisms and recycle some materials back to the air and soil. [Clarification Statement: Emphasis is on matter moving throughout the ecosystem. Waste includes matter in the form of gasses (such as oxygen and carbon dioxide), liquids (such as water), or solids (such as minerals or nutrients).] [Assessment Boundary: Assessment does not include molecular explanations.]
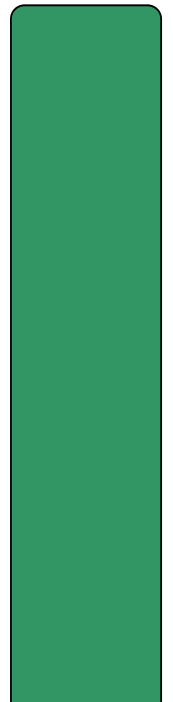
5-PS3-1

their basic needs.

PreK-LS2-1(MA). Use evidence from animals and plants to define several characteristics of living things that distinguish them from non-living things.

PreK-ESS2-1

3: Heredity: Inheritance and Variation of Traits

PreK-LS3-2(MA). Use observation to recognize differences and similarities among themselves and their friends.

PreK-LS3-1(MA). Use observations to explain that young plants and animals are like but not exactly like their parents. [Clarification Statement: Examples of observations include puppies that look similar but not exactly the same as their parents.]
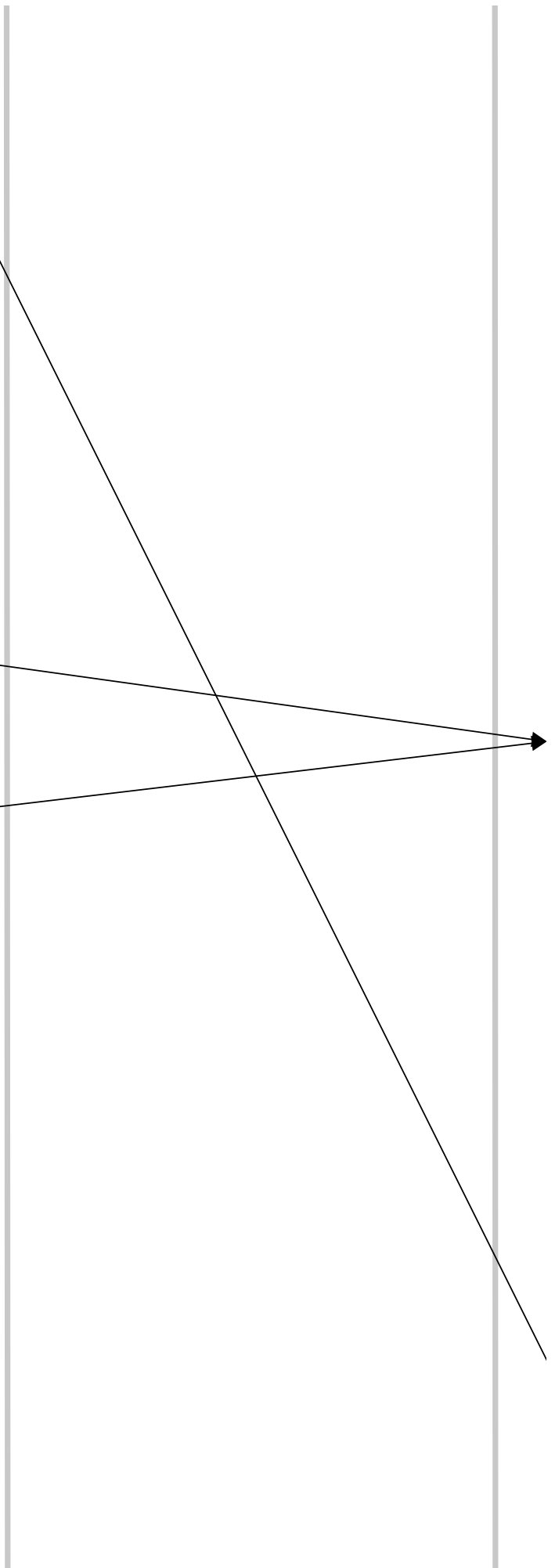
water, air, shelter, and favorable temperature;
plants need sufficient light, water, minerals,
favorable temperature, and animals or other
mechanisms to disperse seeds.]

MS-LS2-2 (gr. 7)

3-LS3-2. Distinguish [...]
characteristics and th[...]
that result from a dir[...]
the environment. Gi[...]
characteristics of livi[...]
are influenced by bot[...]
the environment. [Clar[...]
Examples of the envir[...]
characteristic could in[...]
plants grown with ins[...]
light are stunted; a liz[...]
due to a predator; and[...]
given too much food[...]
may become o[...]

Math: 2.MD.A.1, 2.MD.A.3

ELA: RI.1.6

1-LS3-1. Use information from observations
(first-hand and from media) to identify
similarities and differences among individual
plants or animals of the same kind.
[Clarification Statement: Examples of
observations could include leaves from the
same kind of plant are the same shape but
can differ in size.] [Assessment Boundary:
Assessment does not include inheritance or
animals that undergo metamorphosis
or hybrids.]

3-LS3-1. Provide evi[...]
through the analysis o[...]
and animals have trai[...]
parents and that variat[...]
exist in a group of si[...]
[Clarification Statem[...]
inherited traits that va[...]
color of fur, shape of[...]
legs, and size of flow[...]
Boundary: Assessmen[...]
genetic mechanisms [...]
prediction of traits.[...]
limited to non-hum[...]

MS-LS3-3 (MA) (gr.8)

ELA: W.3.2

3-LS4-2. Use evidenc[...]
explanation for how[...]
characteristics among in[...]
same species may prov[...]
these individuals in th[...]
reproduction. [Clarific[...]
Examples might include[...]
same species, one wi[...]
thorns than the other w[...]
its predation by deer; a[...]
within a species tha[...]
advantages so one orga[...]
likely to survive and the[...]
to leave offspring suc[...]
mice. Examples of evid[...]
needs and characteristi[...]
and habitats i[...]

MS-LS1-4 (gr. 7)

between inherited
ose characteristics
t interaction with
ve examples of
g organisms that
h inheritance and
ification Statement:
onment affecting a
clude normally tall
sufficient water or
ard missing a tail
, a pet dog that is
and little exercise
verweight.]

MS-LS1-5 (gr. 8)

dence, including
f data, that plants
ts inherited from
tion of these traits
milar organisms.
ent: Examples of
ry can include the
leaves, length of
rs.] [Assessment
t does not include
of inheritance nor
Assessment is
an examples.]

MS-LS4-5 (gr. 8)

e to construct an
the variations in
dividuals within the
vide advantages to
eir survival and
cation Statement:
e rose bushes of the
h slightly longer
which may prevent
and color variation
at may provide
nism may be more
erefore more likely
h as rock pocket
ence could include
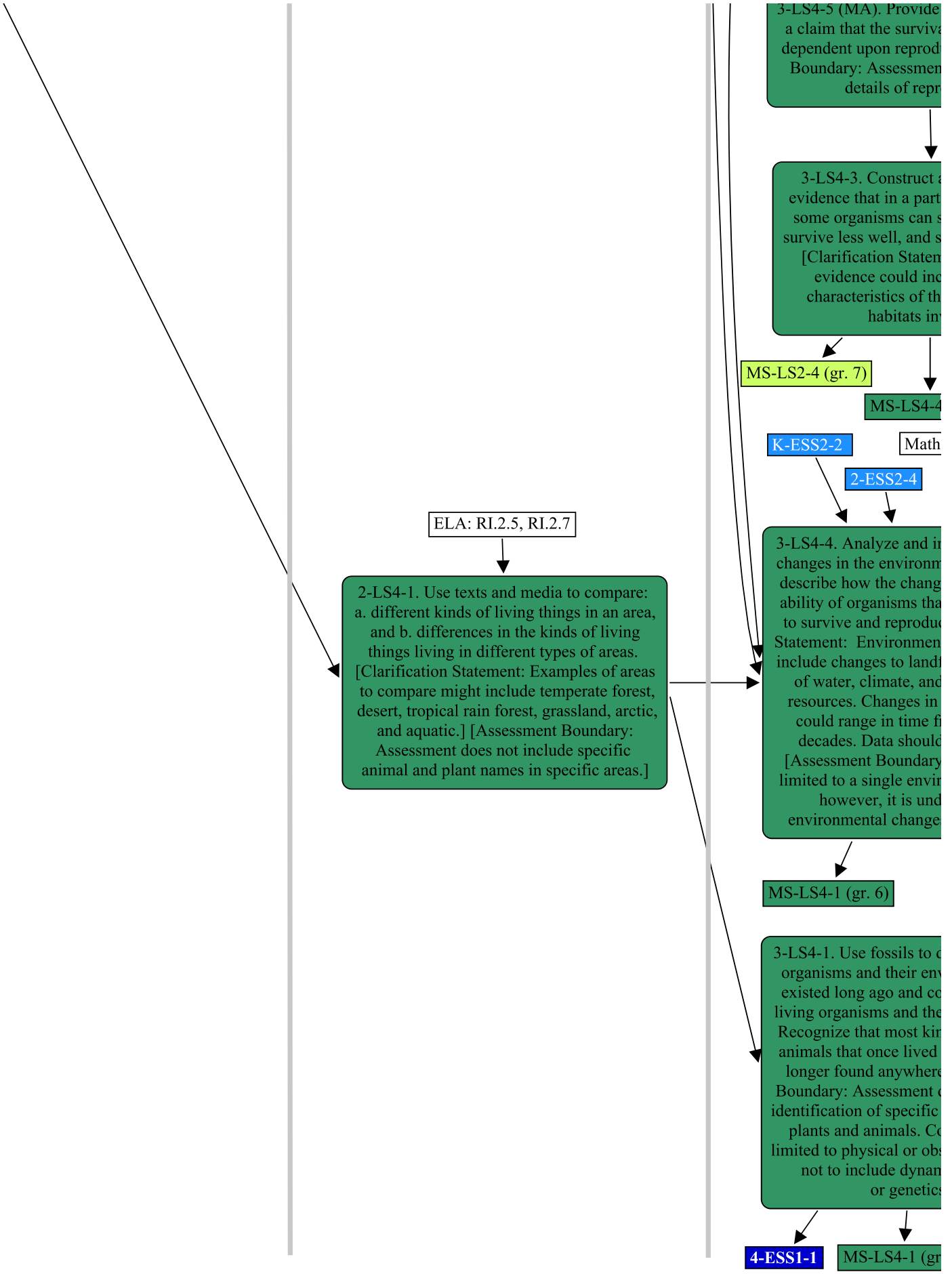cs of the organisms
nvolved.]

MS-LS4-4 (gr. 8)

MS-LS2-3 (gr. 7)   **MS-LS2-7 (MA) (gr. 7)**

5-LS2-2 (MA). Compare at least two designs
for a composter to determine which is most
likely to encourage decomposition of
materials.* [Assessment Boundary:
Assessment is limited to qualitative
descriptions or comparisons of dcomposition.]

3-5-ETS1-6 (MA) (gr. 4)

**4:
Biological
Evolution:
Unity
and
Diversity**

3-LS4-5 (MA). Provide
a claim that the surviva
dependent upon reprod
Boundary: Assessmen
details of repr

3-LS4-3. Construct a
evidence that in a part
some organisms can s
survive less well, and s
[Clarification Statem
evidence could inc
characteristics of th
habitats in

MS-LS2-4 (gr. 7)

MS-LS4-4

K-ESS2-2

Math

2-ESS2-4

ELA: RI.2.5, RI.2.7

2-LS4-1. Use texts and media to compare:
a. different kinds of living things in an area,
and b. differences in the kinds of living
things living in different types of areas.
[Clarification Statement: Examples of areas
to compare might include temperate forest,
desert, tropical rain forest, grassland, arctic,
and aquatic.] [Assessment Boundary:
Assessment does not include specific
animal and plant names in specific areas.]

3-LS4-4. Analyze and i
changes in the environm
describe how the chang
ability of organisms tha
to survive and reprodu
Statement: Environmen
include changes to landf
of water, climate, and
resources. Changes in
could range in time f
decades. Data should
[Assessment Boundary
limited to a single envir
however, it is und
environmental change

MS-LS4-1 (gr. 6)

3-LS4-1. Use fossils to
organisms and their env
existed long ago and co
living organisms and the
Recognize that most kin
animals that once lived
longer found anywhere
Boundary: Assessment
identification of specific
plants and animals. Co
limited to physical or obs
not to include dynam
or genetics

4-ESS1-1

MS-LS4-1 (gr

evidence to support
al of a population is
uction. [Assessment
t does not address
oduction.]

an argument with
icular environment
survive well, some
ome cannot survive.
ent: Examples of
clude needs and
e organisms and
volved.]

MS-LS1-5 (gr. 8)

(gr. 8)

: 3.MD.B.3

3-ESS2-2

nterpret data about
ent in an area and
es may affect the
t live in that area
ce. [Clarification
tal changes should
forms, distribution
l availability of
the environment
rom a season to
l be provided.]
: Assessment is
onmental change,
erstood that
s are complex.]

MS-LS2-1 (gr. 7)

escribe types of
vironments that
ompare those to
ir environments.
ds of plants and
on Earth are no
e. [Assessment
does not include
fossils or present
omparisons are
servable features;
ic processes
s.]

. 6)   MS-LS4-2 (gr. 6)