Inquiry Sequence for Unit Planning

UNIT NAME: Evidence of Evolution	CREATED BY: Danielle Culver	SUBJECT: Biology	GRADE: 10

Unit Rational:

This unit is designed to excite students about the topic of evolution a topic that is often hard to get students to engage with. I chose a DBI mainly because of the excitement and curiosity the activity brings. It also naturally provides a lot of scaffolding opportunities throughout the activity. The culminating activity of the brochure allows all levels of students to display their understandings and talents in a personal and unique way which can range from simple for special needs students to extravagant and detailed for more gifted students.

Essential Question:	EQ: Are certain types of evidence for evolution stronger than others?
When designing essential questions, think about… - Have I related the topic to students' past and present experiences? - Does the topic relate to human issues and human well-being? - How might I teach so that my students and I work together to build a community of practice? - Have I made good use of disciplinary concepts used by practitioners? How Might I explore the emotional, ethical, and human dimensions that relate to the topic?	

Naming Conceptual and Procedural Knowledge When identifying these skills, think about…	Procedural Knowledge (Idaho Core Standards)	Declarative Knowledge (Concepts I want students to understand)

- Do these skills mirror what experts do in their discipline?	**CCSS.ELA-Literacy.RST.9-10.1** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions **CCSS.ELA-Literacy.RST.9-10.2** Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. • **CCSS.ELA-Literacy.RST.9-10.4** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*. • **CCSS.ELA-Literacy.RST.9-10.8** Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. **CCSS.ELA-Literacy.RST.9-10.9** Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. **CCSS.ELA-Literacy.RST.9-10.7** Translate	1. What pattern did Darwin observe among organisms of the Galapagos Islands? 2. How did Hutton, Lyell, and Malthus, contribute to Darwin's theory of Evolution by Natural Selection? 3. How is natural variation used in artificial selection? 4. How is natural selection related to species fitness?' 5. What evidence of evolution did Darwin present? 6. What evidence of evolution has been brought forth since Darwin's time? 7. How has evolutionary theory changed over time?

	quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically	

Vocabulary When identifying these words, think about... Will these words be needed in multiple contexts?	Academic Vocabulary Theory Evidence Brochure Audience modification	Content Vocabulary Evolution Fossil Artificial selection Fitness Adaptation Survival of the fittest Struggle for existence Natural selection Decent with modification Common decent Homologous structure Vestigial organ Ontogeny Phylogeny Embryology Blastocyst Zygote Flora Fauna
Culminating activity		**Project Description**

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When designing a culminating project, think about... - Where do I want the students to be at the end of the unit? - Does the project allow students to demonstrate their conceptual and procedural understandings? - Is it authentic by mirroring what "real experts" would do? - Does it require intellectual quality? - Does it consider differentiation? Are there different ways to complete the project? - How does your culminating performance allow students to reach the mentioned standards? *Attach Rubric or Assessment Guidelines	The students will be performing a data based inquiry to learn information about evolution and the evidence that there is for evolution. They will be working in small land large groups as well as individually throughout the unit. The cumulating project will be for them to design a brochure depicting their choices for the best evidences of evolution. The brochure will include written as well as visual information and this will be presented to the class.
	Measurable Objectives: 1. Students will create an effective brochure that is designed to inform other students on the evidence for the Theory of Evolution. 2. Students will gather data for their brochure through informational text and cite this information in their brochure. 3. Students will decide which information is well supported by evidence , summarize , and include this information in their brochure. 4. Students will use graphical and visual information in their brochure to support the evidence they have presented.

Frontloading

When designing frontloading activities, think about…

- How does your activity activate and build the students' prior knowledge or background information regarding your unit inquiry?
- How does the activity work to motivate students for reading and inquiry regarding the theme?
- How will the frontloading activity work to organize inquiry, set purposes, and consolidate learning about the theme throughout the unit, i.e., how will it help students set purposes for their reading, focus their learning, clarify what they are coming to know, and help them to monitor their learning progress?

FRONTLOADING STRATEGIES:

Vocabulary worksheet – Students write in definition in their own words, give an example or sentence including the vocabulary word and depict it with a picture.

Presentation of visuals in Phase I

Video Presentations in Phase II

Previous background knowledge in Biology

Sequencing Scaffolding Activities

When designing a scaffolding activity, think about …

- Does it allow students to explore the big ideas connected or relevant to the essential topic?
- Does it allow students to practice techniques required for disciplinary expertise in a variety of ways?
- Does it assist students to expand their conceptual and strategic repertoire?
- Does it provide for multiple entrance levels?
- Does it provide for multimodal learning?
- Does it provide for differentiation?
- Does it provide for student discovery and meaning making in a social setting?

Principles of Scaffolding

o Close to home→ Far From Home	o Easy→ Hard	o Whole→ Part→ Whole
o Current Knowledge→ Need to Know	o Concrete→ Abstract	o Learning→ Doing→ Reflecting
o Visual→ Written	o Directly Stated→ Implied	o Model→ Mentor→ Monitor
o Short→ Long	o Supported→ Independent	

Formative Assessments

When planning formative assessments within a unit think about...
- What is the intent of the unit? What is the purpose of this activity?
- How will the students be showing me what they know?
- What will I be monitoring or looking for in the students' thinking?
- How will I track the assessment of my students?
- How will the students leave this activity thinking about something in a new way or changed in some way?
- How is this activity layered for all students' learning?
- How does this activity allow students to practice more than one thing at a time?
- How will students be demonstrating true understanding – the capacity to flexibly use, extend, transfer, and think about what has been learned?

Week 1:				
Activity/Strategy	Texts & Resources	Scaffolding Options	Idaho Core Standards Connection (Content Standards if applicable)	FORMATIVE ASSESSMENT Y/N

Monday: Introduce vocabulary activity Phase I of DBI- visuals students respond individually on information sheet and then in share in small and whole class	Vocabulary worksheet DBI information sheet Pictures in envelopes	o Current Knowledge→ Need to Know o Visual→ Written o Easy□ Hard o Learning □ Doing□ Reflecting	CCSS.ELA-Literacy.RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions CCSS.ELA-Literacy.RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	Yes-worksheet Yes – information sheet, small and large group discussions
Phase II: videos students respond individually on information sheet and then in share in small group and whole class	DBI information sheet Video clips on evolution		• CCSS.ELA-Literacy.RST.9-10.4Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*. • CCSS.ELA-Literacy.RST.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	Yes – information sheet, small and large group discussions

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			• CCSS.ELA-Literacy.RST.9-10.9Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	

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Tuesday:				

Wednesday: Close reading activity of text Students close read with annotations and pick out three main ideas. Small group discussion of three main ideas. Each group voices one of their main ideas to the large group. Large group discussion of parts they did not understand. Answer a set of text based questions. Phase III. Of DBI Close readings of: Eyewitness accounts, Articles, excerpts from books, texts, websites, videos. students respond individually on information sheet, cite sources, and then in share in small group and whole class	Copies of text to annotate, bookmark with explanation of annotations Text based question worksheet Articles, texts, websites, etc. DBI information sheet	o Close to home→ Far From Home o Current Knowledge→ Need to Know o Visual→ Written o Short→ Long o Easy→ Hard o Directly Stated→ Implied o Supported→ Independent o Learning→ Doing→ Reflecting	CCSS.ELA-Literacy.RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions CCSS.ELA-Literacy.RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. • CCSS.ELA-Literacy.RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*. • CCSS.ELA-Literacy.RST.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	Yes- annotated text and small and large group discussions Yes – text based question worksheet. Yes annotated texts, etc., large and small group discussions, and DBI information sheet.

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			• CCSS.ELA-Literacy.RST.9-10.9Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	

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Thursday:				
Friday:				

Week 2:

Activity/Strategy	Texts & Resources	Scaffolding Options	Idaho Core Standards Connection (Content Standards if applicable)	FORMATIVE ASSESSMENT Y/N
Monday: Continue phase III	Same as Wednesday	Same as Wednesday	Same as Wednesday	Same as Wednesday
Tuesday:				

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Wednesday: Phase I V.Synthesis Students will organize the data that they have gathered into a ranked list ordering their information from what they think is the strongest to the weakest. Students answer essential question in an essay type format (free write), organize findings and plan brochure on template provided. Students share their rough drafts with two other students and each will give constructive feedback on the high points and what what could be improved. This could be linked to key shift #4 Students will collaborate for a variety of purposes while also building independent literacy skills. This will improve my instruction by having critical eyes on the	Brochure template, grading and planning sheet.	o Easy→ Hard o Directly Stated→ Implied o Supported→ Independent o Learning→ Doing→ Reflecting	• CCSS.ELA-Literacy.RST.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. • CCSS.ELA-Literacy.RST.9-10.9Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. • CCSS.ELA-Literacy.RST.9-10.7Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information	Yes – free writing and brochure plan

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brochure before they are finalized and an opportunity to revise and improve will produce a better product.			expressed visually or mathematically (e.g., in an equation) into words.	

Thursday:				
Friday: Students present their final brochure.				

Week 3:

Activity/Strategy	Texts & Resources	Scaffolding Options	Idaho Core Standards Connection (Content Standards if applicable)	FORMATIVE ASSESSMENT Y/N

Monday:	Brochure grading rubrics		CCSS.ELA-Literacy.RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions	Summative assessment of brochure through rubric.
Phase IV continued: Finalize brochure and present to class.			CCSS.ELA-Literacy.RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	
			• CCSS.ELA-Literacy.RST.9-10.4Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*.	
			• CCSS.ELA-Literacy.RST.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	

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			CCSS.ELA-Literacy.RST.9-10.9Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. CCSS.ELA-Literacy.RST.9-10.7Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically	

Tuesday:			
Wednesday:			
Thursday:			
Friday:			

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