



Research Core - Science (PMSA)

August 2017

Unit I: Encounter the Task

Understandings/Focus Questions	Content	Skills/Standards	Assessment	Differentiation
<ol style="list-style-type: none"> 1. What do we need to know to properly conduct research? 2. How are research articles evaluated? 3. Why are ethics important in the research process? 	<ol style="list-style-type: none"> 1. Introduction to Research 2. The Importance of Ethics <p>Items to be given to students on Day 1:</p> <ol style="list-style-type: none"> 1. <u>Research Journal</u> - Activities that can be used by any research core teacher that will allow students to systematically complete their yearlong research project efficiently and effectively regardless of the topic they are studying.  2. <u>Research Core Syllabus</u>  	<p>1. Introduction to Research</p> <ul style="list-style-type: none"> • Review the Structure of Scientific Revolution by Thomas Kuhn • What is Research • Evaluating the Quality of Research Articles Using the CRAAP Test and Checklist <p>2. The Importance of Ethics</p> <ul style="list-style-type: none"> • Online Human Subject Training • Case Studies and Other Assignments in Ethics <p>RI.11-CCR.1 RI.11-CCR.2 RI.11-CCR.3 RI.11-CCR.4 RI.11-CCR.5 RI.11-CCR.6 RI.11-CCR.7 RI.11-CCR.10</p>	<p><u>Closed-Ended Selected Response</u></p> <ul style="list-style-type: none"> • Multiple choice • True False • Matching <p><u>Open-Ended Constructed Response</u></p> <ul style="list-style-type: none"> • Short answer • Visual representation (web, concept map, flow chart, graph/table, picture) <p><u>Products</u></p> <ul style="list-style-type: none"> • Log/journal <p><u>Student Self-Assessment</u></p> <ul style="list-style-type: none"> • Teacher-made prompts for reflection • Bell Ringers • Discussion (whole-class or small group) • Self-evaluation 	<ul style="list-style-type: none"> • Use small groups or individual learning • Peer tutoring • Organize content delivery in different ways • Use guided or teacher notes • Cue students to remain on task • Give directions in simplified language • Use flowcharts and graphic organizers • Allow movement to increase physical comfort • Provide correctives measures to ensure mastery of material

Understandings/Focus Questions	Content	Skills/Standards	Assessment	Differentiation
		W.11-CCR.2 W.11-CCR.3 W.11-CCR.4 W.11-CCR.5 W.11-CCR.6 W.11-CCR.7 W.11-CCR.8 W.11-CCR.9 W.11-CCR.10 SL.11-CCR.1 SL.11-CCR.2 SL.11-CCR.4 SL.11-CCR.6 L.11-12.1 L.11-12.2 L.11-12.4 L.11-12.6 Next Gen Engineering Technology, & Application of Science		

Unit I: Encounter the Task

Understandings/Focus Questions	Content	Skills/Standards	Assessment	Differentiation
1. What do we need to know to properly conduct research? 2. What is the scientific method? 3. In what way can the scientific method be used to summarize journal articles?	Tools and Processes of Research 1. The Research Process - Discussion 2. The Scientific Method: 3. Summarizing Journal Articles 4. Review	1. The Research Process - Discussion <ul style="list-style-type: none"> Distinguish between qualitative and quantitative research Define Independent, Dependent, and Controls Variables Define Null Hypothesis 	<u>Closed-Ended Selected Response</u> <ul style="list-style-type: none"> Multiple choice True False Matching <u>Open-Ended Constructed Response</u> <ul style="list-style-type: none"> Short answer Visual 	<ul style="list-style-type: none"> Use small groups or individual learning Peer tutoring Organize content delivery in different ways Use guided or teacher notes Cue students to remain on task Give directions in simplified language

Understandings/Focus Questions	Content	Skills/Standards	Assessment	Differentiation
		<p>2.The Scientific Method:</p> <ul style="list-style-type: none"> • Application of Independent, Dependent and Controls variables • Determine the null hypothesis of an experimental design. <p>3. Summarizing Journal Articles</p> <ul style="list-style-type: none"> • Using the Six-Step Scientific Method, students will learn how to summarize journal articles. Students will be given a scaffold that includes a list of words that cannot be used in the summary. <p>4. Review</p> <ul style="list-style-type: none"> • Students will be able to appropriately identify independent, dependent and controls variables in an experimental design. • Students will also be able to identify and formulate hypotheses 	<p>representation (web, concept map, flow chart, graph/table, picture)</p> <p>Products</p> <ul style="list-style-type: none"> • Log/journal • Typed Summary of Article <p>Student Self-Assessment</p> <ul style="list-style-type: none"> • Teacher-made prompts for reflection • Bell Ringers • Discussion (whole-class or small group) • Self-evaluation • Peer-evaluation 	<ul style="list-style-type: none"> • Use flowcharts and graphic organizers • Allow movement to increase physical comfort • Provide correctives measures to ensure mastery of material

Understandings/Focus Questions	Content	Skills/Standards	Assessment	Differentiation
		including the null hypothesis RI.11-CCR.1 RI.11-CCR.2 RI.11-CCR.3 RI.11-CCR.4 RI.11-CCR.5 RI.11-CCR.6 RI.11-CCR.7 RI.11-CCR.10 W.11-CCR.2 W.11-CCR.3 W.11-CCR.4 W.11-CCR.5 W.11-CCR.6 W.11-CCR.7 W.11-CCR.8 W.11-CCR.9 W.11-CCR.10 SL.11-CCR.1 SL.11-CCR.2 SL.11-CCR.4 SL.11-CCR.6 L.11-12.1 L.11-12.2 L.11-12.4 L.11-12.6 Next Gen Engineering Technology, & Application of Science		