

## ASET Science & Engineering Practices (SEP) Tool: Obtaining, Evaluating, and Communicating Information

**Name or ID:**

**Lesson/Unit Title:**

**Intended Grade:**

### Directions for use

Indicate if a component is present using Y (yes) or N (no) and then, if it is present, fill in the right 2 columns.

A single lesson will most likely not address each of the components below.

The numbering of these components is not meant to indicate they should be used in sequence, they are simply for reference.

<b>SEP 8</b>	<b>Obtaining, Evaluating, and Communicating Information:</b> Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations as well as orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.		
<b>Components of SEP</b>	Present? Y/N	<b>What teacher actions were taken to facilitate this component for students?</b>	<b>What are the students doing?</b>
<b>In this lesson/unit plan, it is clear that <i>students</i> have a structured opportunity to:</b>			
1) <b>Read, summarize, and/or compare</b> grade-appropriate <b>scientific texts</b> and/or other reliable media			
2) <b>Describe</b> and/or <b>integrate</b> information within and across <b>multiple written texts, media, and/or formats</b> (e.g., diagrams, tables, charts)			
3) <b>Synthesize and evaluate</b> scientific information from appropriate <b>sources</b>			
4) <b>Communicate</b> scientific and/or technical information clearly and persuasively in written and/or oral forms			

## ASET Grade Band Criteria (Grade Bands: 6-8, 9-12)

<b>Science &amp; Engineering Practices</b>		
<p><b>SEP 8: Obtaining, Evaluating, and Communicating Information:</b> Obtaining, evaluating, and communicating information in 6-8 builds on K-5 experiences and progresses to evaluating the merit and validity of ideas and methods. In 9-12 they build on K-8 experiences and progress to evaluating the validity and reliability of the claims, methods, and designs.</p>		
<p><i>By the end of the grade band <b>students</b> will have had a structured opportunity to develop an understanding of each of these. Individual lessons or units should include opportunities for <b>students</b> to practice one or more of the following components .....</i></p>		
	<b>6-8 Grade Band</b>	<b>9-12 Grade Band</b>
1) <b>Read, summarize, and/or compare</b> grade-appropriate <b>scientific texts</b> and/or other reliable media	Students <b>critically</b> read scientific texts adapted for classroom use to: <ol style="list-style-type: none"> <li>a. determine/summarize the central ideas</li> <li>b. describe how these ideas are supported by evidence (based on 3-5 criteria)</li> <li>c. obtain scientific and/or technical information</li> <li>d. <b>describe patterns</b> in and/or <b>evidence</b> about the natural and designed world(s).</li> </ol>	Students <b>critically</b> read scientific <u>literature</u> adapted for classroom use to: <ol style="list-style-type: none"> <li>a. determine/summarize the central ideas <u>or conclusions</u></li> <li>b. describe how these ideas are supported by evidence (based on 3-5 criteria)</li> <li>c. obtain scientific and/or technical information</li> <li>d. <b>summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms</b></li> </ol>
2) <b>Describe</b> and/or <b>integrate</b> information within and across <b>multiple written texts, media, and/or formats</b> (e.g., diagrams, tables, charts)	Students <b>integrate</b> qualitative and/or quantitative scientific and/or technical information in written <b>text</b> with that contained in <b>media and visual displays to clarify claims and findings.</b>	Students <b>compare, and integrate sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a scientific question or solve a problem.</b>
3) <b>Synthesize and evaluate</b> scientific information from appropriate <b>sources</b>	Students: <ol style="list-style-type: none"> <li>a. <b>Gather, read, and synthesize</b> information from multiple appropriate sources and               <ol style="list-style-type: none"> <li>i. <b>assess the credibility, accuracy, and possible bias</b> of each publication and methods used, and</li> <li>ii. <b>describe how the information is supported or not supported by evidence.</b></li> </ol> </li> <li>b. <b>Evaluate data, hypotheses, and/or conclusions</b> in scientific and technical texts in light of competing information or accounts.</li> </ol>	Students: <ol style="list-style-type: none"> <li>a. <b>Gather, read, synthesize and evaluate</b> information from multiple <u>authoritative</u> sources and               <ol style="list-style-type: none"> <li>i. <b>assess the credibility, accuracy, and possible bias</b> of each publication and methods used, and</li> <li>ii. <b>describe how the information is supported or not supported by evidence.</b></li> </ol> </li> <li>b. <b>Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, reifying the data when possible</b></li> </ol>
4) <b>Communicate</b> scientific and/or technical information clearly and persuasively in written and/or oral forms	Students communicate <b>scientific and/or technical information</b> (e.g. about a proposed object, tool, process, system) in: <ul style="list-style-type: none"> <li>• writing (using various forms of media as well as tables, diagrams and charts)</li> <li>• and/or through oral presentations.</li> </ul>	Students communicate <b>scientific and/or technical information or ideas</b> (e.g. about phenomena and/or the process of development <u>and the design and performance of a proposed process or system</u> ) in multiple formats: <ul style="list-style-type: none"> <li>• writing (<u>including graphically, textually, and mathematically</u>)</li> <li>• and/or through oral presentations.</li> </ul>