

Connecting Elementary Science and Literacy

This annotated bibliography is a professional development resource for elementary teachers. Organized and presented as a 3 x 4 matrix, the bibliography helps teachers think about science and literacy connections. It provides a guide for the teaching of particular skills at appropriate times.

	Student Writing	Student Reading	Student Speaking and Listening
<p><u>Inquiry Stage One:</u> Engage and Explore</p>	<p>Purposes:</p> <ul style="list-style-type: none"> • think • reflect <p>Types of writing:</p> <ul style="list-style-type: none"> • note taking • descriptive • speculative <p><u>Resources for Writing: Stage One</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • inspire • raise questions • enrich <p>Types of books:</p> <ul style="list-style-type: none"> • fictional reality • wonder • personal experiences • biographies <p><u>Resources for Reading: Stage One</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • share ideas • generate questions • build vocabulary <p>Types of settings:</p> <ul style="list-style-type: none"> • small-group discussion • one-on-one • informal large-group discussion <p><u>Resources for Speaking and Listening: Stage One</u></p>
<p><u>Inquiry Stage Two:</u> Design and Conduct Scientific Investigations</p>	<p>Purposes:</p> <ul style="list-style-type: none"> • document process • save emerging thoughts <p>Types of writing:</p> <ul style="list-style-type: none"> • procedural • data display • descriptive • technical • graphic <p><u>Resources for Writing: Stage Two</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • provide examples of investigations • extend experience • provide information and vocabulary <p>Types of books:</p> <ul style="list-style-type: none"> • experiment • field guide • information <p><u>Resources for Reading: Stage Two</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • discuss strategies • clarify procedures and data collection • list to others' ideas <p>Types of settings:</p> <ul style="list-style-type: none"> • small-group discussion • conversation partners <p><u>Resources for Speaking and Listening: Stage Two</u></p>

<p><u>Inquiry State Three:</u> Analyze and Interpret Data</p>	<p>Purposes:</p> <ul style="list-style-type: none"> • clarify thinking • communicate ideas • raise new questions <p>Types of writing:</p> <ul style="list-style-type: none"> • analytic and interpretive • explanatory model building • predictive • reflective <p><u>Resources for Writing: Stage Three</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • support and validate ideas • provide information • raise new questions <p>Types of books:</p> <ul style="list-style-type: none"> • information • reports • scientific notebooks <p><u>Resources for Reading: Stage Three</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • organize thinking • argue based on evidence • reflect on data <p>Types of settings:</p> <ul style="list-style-type: none"> • small-group analysis • small- and large-group presentation and discussion <p><u>Resources for Speaking and Listening: Stage Three</u></p>
<p><u>Inquiry Stage Four:</u> Present Findings and Understandings</p>	<p>Purposes:</p> <ul style="list-style-type: none"> • communicate • clarify to others <p>Types of writing:</p> <ul style="list-style-type: none"> • formal • reporting <p><u>Resources for Writing: Stage Four</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • exemplify writing styles and presentation strategies • provide alternative models <p>Types of books:</p> <ul style="list-style-type: none"> • information • scientific reports • text <p><u>Resources for Reading: Stage Four</u></p>	<p>Purposes:</p> <ul style="list-style-type: none"> • communicate formally • listen and argue clearly <p>Types of settings:</p> <ul style="list-style-type: none"> • formal presentation • debate <p><u>Resources for Speaking and Listening: Stage Four</u></p>

This matrix is based on a chart that was included in *Supporting the Science-Literacy Connection*, part of the book *Learning Science and the Science of Learning: Science Educators' Essay Collection*, edited by Rodger Bybee (NSTA Press, 2002). The chart draws from the inquiry standard of the *National Science Education Standards* (NRC, 1996) to define inquiry as a four-component or four-stage process for developing understanding: (1) engagement and exploration, (2) design and conduct of scientific investigations, (3) analysis and interpretation of data, and (4) presentation of findings and understanding. Each of these stages uses reading, writing, and speaking and listening for specific purposes and, therefore, requires customized strategies for language instruction.

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