

# Integrating Library Research with Computer Science and Digital Fluency Standards: *A Comprehensive Framework*



# INTRODUCTION

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Hey there, teachers and librarians! This comprehensive framework mixes library research (you know, finding stuff in books and online) with computer science (using computers and cool tech) and digital fluency (being smart about using technology). In your classrooms, this combo can help you teach skills that are important in the 21st century.

When students do research, it's not just about reading books, articles, and journals. They need to be familiar with computers and software, use critical thinking skills to understand, and put together information that can be effectively communicated to others. It's not just about finding facts; it's about using facts to explain an idea and applying digital literacy skills and computer science standards to express a variety of ideas.

As students become skilled in using technology, they prepare for success in school and beyond. This framework demonstrates how easily library skills complement computer science and digital fluency standards.

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# KINDERGARTEN

<b>Research Question</b>	Librarian OR Teacher generated
<b>Purpose (ELA/ENG)</b>	Develop questions and participate in shared research and exploration to answer questions and to build and share knowledge. <b>KW6</b>
<b>Search Skills</b>	Identifying fiction and non-fiction
<b>Sources</b>	2 books—Librarian OR Teacher provided <b>KW6</b>
<b>Note Taking</b>	What do you wonder about? Develop questions and participate in shared research and explorations to answer questions and build knowledge. <b>KW6</b> Reading for information is modeled. <b>KW7</b>
<b>Organization</b>	List of facts
<b>Length</b>	1 Chart paper
<b>In-Text Citations</b>	N/A
<b>Works Cited</b>	Librarian OR Teacher modeled. With help, students write the author's name and title of the resource.
<b>Focus</b>	Authors write books that provide information.
<b>Computer Science and Digital Fluency Learning Standards</b>	Keyboard introduction <b>K-1, DL.1</b> Create a basic search based on a provided keyword. <b>K-1, DL3</b> <b>K-1 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	Explore physical and/or touchscreen keyboards, and be able to identify specific keys such as arrow keys, enter, space bar, backspace.

# FIRST GRADE

<b>Research Question</b>	Librarian OR Teacher generated
<b>Purpose (ELA/ENG)</b>	Under First Grade Purpose add: Develop questions and participate in shared research and explorations to answer questions and build knowledge. <b>1W6</b>
<b>Search Skills</b>	Review non-fiction.
<b>Sources</b>	3 (2 books & electronic) —Librarian OR Teacher provided <b>1W6</b>
<b>Note Taking</b>	What do you wonder about? Develop questions and participate in shared research and explorations to answer questions and build knowledge. <b>1W6</b> Reading for information is modeled. <b>1W7</b>
<b>Organization</b>	List of facts
<b>Length</b>	1 Chart part
<b>In-Text Citations</b>	N/A
<b>Works Cited</b>	Librarian OR Teacher modeled. With help, students write the author's name and title of the resource.
<b>Focus</b>	Non-fiction books provide information. <b>1W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Keyboard introduction <b>K-1, DL.1</b> Create a basic search based on a provided keyword. <b>K-1, DL3</b> Define citation/bibliography (establish standard vocabulary) <b>K-1 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	The teacher will provide the keyword to help students conduct basic searches using appropriate tools.

# SECOND GRADE

<b>Research Question</b>	Librarian OR Teacher generated
<b>Purpose (ELA/ENG)</b>	Develop questions and participate in shared research and explorations to answer questions and build knowledge. <b>2W6</b>
<b>Search Skills</b>	Locate a non-fiction book for developing further knowledge.
<b>Sources</b>	1 book <b>2W6</b>
<b>Note Taking</b>	Gathers info. from illustrations, text, features, OR interprets information represented. Takes notes to answer research questions by writing down words and phrases, drawing pictures from sources, but does not copy whole sentences. <b>2W7</b> <a href="https://slsa-nys.libguides.com/ifc/gradeassessments">https://slsa-nys.libguides.com/ifc/gradeassessments</a> - <b>Document 2.18</b>
<b>Organization</b>	With help, creates a visual map of connections among ideas and concepts about the topic.
<b>Length</b>	Research information is presented in a variety of ways (drawing, writing, speaking).
<b>In-Text Citations</b>	N/A
<b>Works Cited</b>	With Librarian OR Teacher generated form, creates a list of sources with title and author. Librarian OR Teacher guided.
<b>Focus</b>	Recall and represent relevant information from experiences or gather information from provided sources to answer a question. <b>2W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Locate and use the main keys on a keyboard to enter text independently. <b>2-3, DL.1</b> Conduct basic searches based on student identified keywords. <b>2-3, DL.3</b> Use a variety of digital tools and resources to create digital artifacts. <b>2-3, DL.4</b> <b>2-3 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	Identify key words with which to perform an internet search using teacher-approved tool(s), to obtain information.

# THIRD GRADE

<b>Research Question</b>	Librarian OR Teacher guided.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions, and to build knowledge. <b>3W6</b>
<b>Search Skills</b>	Search bookmarked websites and online catalog (author, title, keywords), with assistance, to locate materials.
<b>Sources</b>	2 sources <b>3W6</b>
<b>Note Taking</b>	Simple note-taking strategies. <b>3W7</b> <a href="https://slsa-nys.libguides.com/ifc/gradeassessments">https://slsa-nys.libguides.com/ifc/gradeassessments</a> - Document 3.10
<b>Organization</b>	With help, uses notecards to fill in Librarian OR Teacher created outline.
<b>Length</b>	Research information is presented in a variety of ways (drawing, writing, speaking).
<b>In-Text Citations</b>	N/A
<b>Works Cited</b>	With a Librarian OR Teacher generated form and guidance, student creates a list of sources with title, author, copyright year, publisher. <a href="https://slsa-nys.libguides.com/ifc/gradeassessments">https://slsa-nys.libguides.com/ifc/gradeassessments</a> -Document 5.21
<b>Focus</b>	Recall relevant information from experiences or gather information from multiple sources; take brief notes on sources and sort evidence into provided categories. <b>3W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Use a variety of digital tools and resources to create digital artifacts. <b>2-3, DL.4</b> (Library Catalog or database to search, and introduction to Microsoft 365/Google Suite for document creation.) <b>2-3 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	Different digital tools are used for different purposes, such as communicating, collaborating, researching, and creating original content.

# FOURTH GRADE

<b>Research Question</b>	Librarian OR Teacher guided.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions, and to build knowledge through investigating multiple aspects of a topic. <b>4W6</b>
<b>Search Skills</b>	Uses pre-selected primary sources to gather information, compare primary and secondary sources on same topic.
<b>Sources</b>	2 primary and 2 secondary sources <b>4W6</b>
<b>Note Taking</b>	Paraphrases, summarizes information that answers research questions, noting what is fact and what is opinion. <b>4W7</b>
<b>Organization</b>	With help, uses common organization patterns (chronological order, main idea with supporting details).
<b>Length</b>	1 page. May be accompanied by a drawing or oral presentation.
<b>In-Text Citations</b>	N/A
<b>Works Cited</b>	With Librarian OR Teacher generated form, creates a list of sources with title, author, copyright year, publisher.—Librarian OR Teacher guided.
<b>Focus</b>	Identifies facts and opinions on a topic. Recall relevant information from experiences or gather relevant information from multiple sources; take notes and categorize information, and provide a list of sources. <b>4W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Select appropriate digital tools to communicate and collaborate while learning with others. <b>4-6, DL.2</b> <b>4-6 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	“Students progress from understanding that people use digital tools to communicate and collaborate to how they use the tools. Communication and collaboration should be purposeful and, when possible and appropriate, with an authentic audience.”

# FIFTH GRADE

<b>Research Question</b>	Librarian OR Teacher guided.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions. <b>5W6</b>
<b>Search Skills</b>	Evaluate print, video and electronic resource (primary and secondary) for relevance to the topic and credibility of author/ creator/publisher. (Fact checking)
<b>Sources</b>	Multiple <b>5W6</b>
<b>Note Taking</b>	Uses various note-taking strategies (outlining, underlining, bulleted lists, highlighting, graphic organizers) dependent on purpose. Summarize and paraphrase information. <b>5W7</b>
<b>Organization</b>	With help, organizes notes and ideas. Develops an outline and mind map/graphic organizer. <a href="https://slsa-nys.libguides.com/ifc/gradeassessments -Document 5.16">https://slsa-nys.libguides.com/ifc/gradeassessments -Document 5.16</a>
<b>Length</b>	1 page
<b>In-Text Citations</b>	N/A
<b>Works Cited</b>	With Librarian OR Teacher generated form, creates a list of sources with title, author, copyright year, publisher. <b>5W7</b>
<b>Focus</b>	Evaluates information within a source for accuracy, relevance, comprehensiveness, and point of view. Recalls relevant information from experiences or multiple sources. <b>5W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Conduct and refine advanced multi-criteria digital searches to locate content relevant to varied learning goals. <b>4-6, DL.3</b> <b>4-6 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	Focus should be on the quality of results a search generates, and how to improve search results based on the task or purpose by defining multiple search criteria and using filters.



# SIXTH GRADE

<b>Research Question</b>	Student generated
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions. <b>6W6</b>
<b>Search Skills</b>	Evaluate print, video and electronic resource (primary and secondary) for relevance to the topic and credibility of author/ creator/publisher. (Fact checking) Selects information from multiple sources that answers the research question(s). <b>6W7</b>
<b>Sources</b>	Multiple <b>6W6</b>
<b>Note Taking</b>	Takes notes using one or a variety of note-taking strategies (outlining, underlining, bulleted lists, highlighting, graphic organizers) dependent on purpose. Quote and paraphrase information of others. <b>6W7</b>
<b>Organization</b>	Curates information by selecting the best and most appropriate. Librarian OR Teacher provides choices of graphic organizers.
<b>Length</b>	1 page
<b>In-Text Citations</b>	In text citation
<b>Works Cited</b>	Student generated with help from Librarian OR Teacher, creates a list of sources with title, author, copyright year, publisher. Introduced to MLA format. <b>6W7</b>
<b>Focus</b>	Differentiates between important and non-important details. Demonstates ability to make note cards. Recall relevant information from multiple sources. <b>6W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Use a variety of digital tools and resources to create and revise digital artifacts <b>4-6, DL.4</b> (Noodletools, mind maps/graphic organizers, Microsoft 365/Google Suite and intro to advanced tools). <b>4-6 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	The focus is on understanding the editing process when creating digital artifacts on multiple platforms.

# SEVENTH GRADE

<b>Research Question</b>	Student generated
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions for focused inquiry. <b>7W6</b>
<b>Search Skills</b>	Evaluate print, video and electronic resource (primary and secondary) for relevance to the topic and credibility of author/ creator/publisher. Effectively navigates a website and identifies features including side bars, menus, tabs, subject headings, etc. (Fact checking). Selects information from a variety of credible sources that answers the research question(s). <b>7W7</b> Uses navigation skills to find relevant information.
<b>Sources</b>	Data driven from a variety of validated sources. <b>7W6</b>
<b>Note Taking</b>	Evaluate different perspectives and points of views. Highlight key thoughts with Librarian OR Teacher instruction. Uses relevant information and paraphrasing or quoting from reliable/credible sources. <b>7W7</b>
<b>Organization</b>	Curates. Uses common organizational patterns such as chronology, compare/contrast, cause/effect. Librarian OR Teacher provides choices of graphic organizers.
<b>Length</b>	Up to 2 pages
<b>In-Text Citations</b>	Introduction to MLA format for citations.
<b>Works Cited</b>	Student generated with help from Librarian OR Teacher, creates a list of sources with title, author, copyright year, publisher. <b>7W7</b>
<b>Focus</b>	Evaluates the development of an argument or claim and its strength. Demonstrates skill in creating note cards. Based on research and conclusions, generate additional questions. <b>7W6</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Compare types of search tools, choose a search tool for effectiveness and efficiency, and evaluate the quality of search tools based on returned results. <b>7-8, DL.3</b> Navigating webpages and databases and evaluating information. Review of advanced tools in Microsoft 365/Google Suite <b>7-8 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	Understand how different search tools work, why different search tools provide different results, and how and why some websites rise to the top of a search.

# EIGHTH GRADE

<b>Research Question</b>	Student generated
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions for focused inquiry. Narrow or broaden inquiry when appropriate. <b>8W6</b>
<b>Search Skills</b>	Introduce keyword searches Use a variety of credible sources <b>8W7</b>
<b>Sources</b>	Data driven from a variety of validated source <b>8W6</b>
<b>Note Taking</b>	Highlights text with Librarian OR Teacher instruction. Uses margins to make notes/ create labels. Uses relevant information for paraphrasing or quoting from reliable/ credible sources. <b>8W7</b>
<b>Organization</b>	Librarian OR Teacher provides choices of graphic organizers.
<b>Length</b>	2 pages
<b>In-Text Citations</b>	Review MLA format for citations. Introduction to parenthetical citations.
<b>Works Cited</b>	Student generated with help from Librarian OR Teacher; creates a list of sources with title, author, copyright year, publisher. Introduced to MLA format. <b>8W7</b>
<b>Focus</b>	Self-generated question as a basis for research. Demonstrates skill in creating note cards. Based on research and conclusions, generate additional questions. <b>8W6</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Select and use digital tools to create, revise, and publish digital artifacts. <b>7-8, DL.4</b> Advanced search tools in databases and Internet. Review of advanced tools in Microsoft 365/Google Suite. <b>7-8 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	A designated school-approved location for students to publish artifacts for an audience to view. Advanced digital tools may refer to the tool itself (i.e. the tool is more advanced) or to utilization of more advanced features on a tool.

# NINTH GRADE

<b>Research Question</b>	Student generated and topic is refined as needed.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions to solve a problem. Narrow or broaden inquiry when appropriate. <b>9W6</b>
<b>Search Skills</b>	Keyword searching on databases Boolean truncation Assess usefulness of each source <b>9W7</b>
<b>Sources</b>	Demonstrate understanding and analyze resources. <b>9W6</b>
<b>Note Taking</b>	Use note cards to paraphrase text instead of using direct quotes from an author.
<b>Organization</b>	Fill-in-the-blank/ guided outline. Integrate information from the text selectively to maintain flow of idea. <b>9W7</b>
<b>Length</b>	3+ pages
<b>In-Text Citations</b>	MLA parenthetical citations <b>9W7</b>
<b>Works Cited</b>	Student generated with Librarian or Teacher assistance.
<b>Focus</b>	Note Cards Database skills Uses outlines as tools for organization. Synthesize multiple resources; fluidity of final paper. <b>9W6</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Type proficiently on a keyboard <b>9-12.DL.1</b> Using advanced tools in Microsoft 365/Google Suite. <b>9-12 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	The focus is to demonstrate proficient keyboarding skills by the end of 12th grade.

# TENTH GRADE

<b>Research Question</b>	Student generated and topic is refined as needed.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions to solve a problem. Narrow or broaden inquiry when appropriate <b>10W6</b>
<b>Search Skills</b>	Keyword searching on databases Boolean truncation Assess usefulness of each source <b>10W7</b>
<b>Sources</b>	Demonstrate understanding and analyze resources. <b>10W6</b>
<b>Note Taking</b>	Independent searching on databases and Internet. Assess strengths and limitations of each source for task+D12:D14, purpose and audience. <b>11W7</b>
<b>Organization</b>	Guided outline. Integrate information from the text selectively to maintain flow of ideas. <b>10W7</b>
<b>Length</b>	4+ pages
<b>In-Text Citations</b>	MLA parenthetical citations <b>10W7</b>
<b>Works Cited</b>	Student generated with help
<b>Focus</b>	Student generated with limited help. Avoid over-reliance on one source <b>11W7</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Independently select advanced digital tools and resources to create, revise, and publish complex digital artifacts or collection of artifacts <b>9-12.DL.4</b> . Using advanced tools in Microsoft 365/Google Suite. <b>9-12 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	Mastery of this standard implies an ability to choose and use the technology tool or resource best suited for a task or purpose.

# ELEVENTH GRADE

<b>Research Question</b>	Student generated. Problem solution proving concepts.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions to solve a problem. Narrow or broaden inquiry when appropriate <b>11W6</b>
<b>Search Skills</b>	Independent searching on databases and Internet. Assess strengths and limitations of each source for task, purpose and audience. <b>11W7</b>
<b>Sources</b>	Synthesize multiple sources; demonstrate understanding and analyze sources. <b>11W6</b> Create annotated bibliography.
<b>Note Taking</b>	Note Cards Paraphrasing Direct quotations
<b>Organization</b>	Student generated outline Utilize language to create fluid transitions in organization and structure <b>11W7</b> . Synthesize, show understanding of, and analyze multiple sources. <b>11W6</b>
<b>Length</b>	5+ pages (1250 words, double-spaced)
<b>In-Text Citations</b>	MLA parenthetical citations <b>11W7</b>
<b>Works Cited</b>	Student generated with limited help. Avoid over-reliance on one source. <b>11W7</b>
<b>Focus</b>	Note cards Paraphrasing & direct quotes Synthesize; show understanding of, and analyze multiple sources. <b>11W6</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Transfer knowledge of technology in order to use new and emerging technologies on multiple platforms <b>9-12.DL.5</b> . Using advanced tools in Microsoft 365/Google Suite. <b>9-12 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	New technologies could include different tools for collaboration, creation, etc. that the student has not used before. Platforms could include devices running different operating systems or could be emerging STEAM technologies. Digitally fluent individuals can move between platforms and can use that knowledge when encountering new technology.

# TWELFTH GRADE

<b>Research Question</b>	Student generated. Problem solution proving concepts.
<b>Purpose (ELA/ENG)</b>	Conduct research to answer questions, including self-generated questions to solve a problem. Narrow or broaden inquiry when appropriate. <b>12W6</b>
<b>Search Skills</b>	Independent searching on databases and Internet. Assess strengths and limitations of each source for task, purpose and audience. <b>12W7</b>
<b>Sources</b>	Synthesize multiple sources; demonstrate understanding and analyze sources. <b>12W6</b> Create annotated bibliography.
<b>Note Taking</b>	Note Cards Paraphrasing Direct quotations
<b>Organization</b>	Student generated outline Utilize language to create fluid transitions in organization and structure <b>12W7</b> . Synthesize, show understanding of, and analyze multiple sources. <b>12W6</b>
<b>Length</b>	6-8 pages
<b>In-Text Citations</b>	MLA parenthetical citations <b>12W7</b> Avoid over-reliance on one source <b>12W7</b>
<b>Works Cited</b>	Student generated with limited help. Avoid over-reliance on one source. <b>12W7</b>
<b>Focus</b>	Student independence. Synthesis of information to Indicate evidence-based critical thinking Questioning ideas rather than merely accepting them. Thinking beyond presented material. <b>12W6</b>
<b>Computer Science and Digital Fluency Learning Standards</b>	Transfer knowledge of technology in order to use new and emerging technologies on multiple platforms <b>9-12.DL.5</b> . Proficient in Microsoft 365/Google Suite. <b>9-12 CSDF Standards at a Glance</b>
<b>Digital Literacy (DL) Focus</b>	New technologies could include different tools for collaboration, creation, etc. that the student has not used before. Platforms could include devices running different operating systems or could be emerging STEAM technologies. Digitally fluent individuals can move between platforms and can use that knowledge when encountering new technology.

# RESOURCES



## **Project Look Sharp:**

Engage K-12 students in rigorous and reflective analysis of media documents. Includes complete lessons and a guide for decoding media.



## **Computer Science and Digital Literacy Standards:**

Emphasizes problem-solving and increasing students' abilities to use digital technologies for tasks such as creating, researching, communicating, collaborating, and sharing information and work.



## **Empire State Information Fluency Continuum:**

Emphasizes inquiry in learning and establishes information fluency standards for grades K-12 that encourage students to be thinkers, explorers, and citizens. Includes grade-specific benchmarks and graphic organizers.



## **Next Gen English Standards:**

<https://www.nysed.gov/curriculum-instruction/new-york-state-next-generation-english-language-arts-learning-standards>



## **Noodletools:**

An online research management platform that promotes critical thinking and authentic research. Students stay organized as they evaluate information, build accurate citations, archive source material, take notes, outline topics, and prepare to write. Three differentiated levels support individual students across grades and abilities. Contact [Cecelia\\_Fuoco@caboces.org](mailto:Cecelia_Fuoco@caboces.org) for district-specific information.