Information Literacy: Literacy Across STEM Areas

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Integrating Information Literacy: Across STEM Areas

John Brown Watson Memorial Library System

Information Literacy

Resources for Writing

Resources for Reading

Resources for Speaking

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Associate Librarian
Coordinator of Systems Administration and Digital Services
Objectives:

- To expand information literacy and STEM integration
- To empower instructors to more effectively utilize information resources in student assignments.
- To provide exercises which increase student awareness of librarians as information consultants.
- To deepen collaboration between instructors and librarians.
- Best practice, strategies, and resources utilized by librarians for integrating literacy across the STEM
- Strategies for teaching students the essential literacy skills beyond basic search strategies and navigation of the library website are also examined.
How-to literacy strategies for improvement of P-16 students research, reading, and writing skills across STEM will include: resources and strategies for navigating the information world,

- best practices for determining the need for information,
- accessing information effectively,
- critically evaluate and interpreting the information,
- analyzing and express their understandings creatively and effectively.
What is Information Literacy?

Information literacy is described as the ability to locate, manage and use information effectively for a range of purposes.

- allows individuals to engage in effective problem solving, decision-making and research.
- enables learners to master content and extend their investigations, become more self-directed

**An information literate individual is able to:**

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one’s knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally

(ACRL, 2000)
Strategies for Integration

- Promote Collaborative Approaches
- The collaboration between the librarians and STEM instructors focused on specific literacy skills for success

- BlackBoard can be used to scaffold instruction and infuse information literacy activities throughout subject-specific courses.
  - BlackBoard have a variety of add-ons, plugs-ins, and building blocks that are integrated with the software
Strategies for Collaboration

- Inclusion of librarian’s name and contact information on course syllabus
- Announcement that a librarian will be a part of the class and is available for questions.
- Faculty Promotion of the library and its resources.
Create assignment with faculty

LiveText (Assessment requirement)

Periodic reminders of the importance of asking librarians for assistance.
Strategies for Integration Information Literacy Across STEM Areas

 Have class comes to library

 Librarian cover what ever you want including:
   Search Techniques
   Specialized features of databases and service
   Plagiarism
   APA
   Microsoft Office (Word/PowerPoint)

 Go to the classroom

 Go BACK when/if ask or as needed
Librarian Liaison Consultants

- One on one
- Small Groups
  - Appointment
  - Drop-in
  - Office hours
- Schedule class sessions
  - Outside of regular class hours
Resources for Writing

Provide specially designed content for courses, including suggested resources, tutorials, search strategies and research guides
Information Literacy Integration

- Resources for Writing:
  - Research Companion: Multimedia-based information literacy resource design to help students do more effective scholarly research and to support educators as they teach the core information literacy principles of finding, evaluating, and using information.
Resources for Writing

Engineering

Technical writing is an essential skill for developing and practicing engineers

- Given engineering-related scenarios to decide if plagiarism occurred
- Short exercise on when to cite.
- Students identified parts of and types of citations.
- Used the LibGuides to provide in-depth information
STEM: Science, Technology, Engineering, Mathematics

Technology

- When students are in computer classrooms or have access to a computer
- Direct them to find citations online.
- Choose citations from various Science, Technology, Engineering, Mathematics databases to reflect current engineering topics
Resources for Writing

The Purdue Online Writing Lab

References Microsoft Word
Resources for Writing and Research

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**ProQuest | Research Companion**

- **Find Information**
  - Log into Research Companion wherever there is Wi-Fi or cellular service
  - Keep track of your progress through the Learning Modules
  - Complete Self-check and Review questions

- **Evaluate Information**
  - Source Evaluation Aid

**Information Literacy Interactive Tutorial**

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<table>
<thead>
<tr>
<th>% Complete</th>
<th>Learning Module</th>
<th>Time Left</th>
<th>Last Viewed</th>
<th>Related Tools</th>
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</thead>
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<tr>
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<td>01: Where do I start?</td>
<td>(4m 50s)</td>
<td></td>
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<tr>
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<td>02: How do I choose a topic?</td>
<td>(14m 33s)</td>
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<td>03: Where do I find information?</td>
<td>(16m 59s)</td>
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<td>Search Aid</td>
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<td>04: How do I evaluate sources?</td>
<td>(21m 57s)</td>
<td></td>
<td>Source Evaluation Aid</td>
</tr>
<tr>
<td>0%</td>
<td>05: What counts as evidence?</td>
<td>(16m 05s)</td>
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Resources for Reading

- Resources for Reading: Ebrary- offers authoritative ebooks in a wide range of subject areas, include STEM, along with powerful tools to help users find, use, and manage the information needed.
Resources for Reading

**Early World of Learning**
- Preschoolers & children in the early elementary Grades
- Interactive learning environments
- Narrated stories, interactive games, and original videos
- Leveled readers to develop and strengthen phonics, vocabulary, phonemic awareness, and comprehension skills.
- Lexile Framework® for Reading ensures that early readers use text at their level.
- *Know It* offers a richly visual first encyclopedia

**CLCD**
- Resource for librarians, teachers, parents and students from PreK through grade 12
- Children’s Literature classes at the academic level.
- 2.5 million titles, non-fiction & fiction for PreK-12 grades with 42 quality professional review sources.
Resources for Reading

ProQuest eBooks

- ProQuest ebrary Central (ebooks) College Complete
  37,000 titles, covering the entire cross-disciplinary college curriculum

- ProQuest ebrary Central (ebooks) Public Library Complete
  31,000 titles non-fiction ebook collection

- ProQuest ebrary Central (ebooks) Schools and Educators Complete
  11,000 titles in professional development and training resources.

EBSCO eBooks

- EBSCO eBooks has approximately 100 titles covering Career information, Computers, Health, Small Business, and Writing
Library Links

Examples
- A link to course e-reserves
- links to general library resources
- Subject guides hosted on the Library’s website
- Help pages for documenting or citing sources, such as Zerto or RefWorks
- Share animated tutorials (AVON, YouTube)
Speaking

Resources for Speaking: Databases provide full text and images for the leading periodicals in science and technology, covering computers, engineering, physics, telecommunications, transportation and more.

Also includes videos and Pronunciator or Mango Language which provides both guided and self-directed instructions for 80 foreign languages, and ESL for 50 non-English languages, along with a Course Designer which allows for the creation and deployment of custom courses by educators.
Standard Activities for the Virtual and Face-to-Face

- Introductory announcements and/or emails to students
- “Ask Your Librarian” discussion forum
- Instructional documents
- Video instruction sessions
- Participation in discussion forums (when requested)
- Responses to phone, chat, and email queries
Additional Activities

- Tips about finding and narrowing topics
- Tips on choosing and using library databases and resources
- Links to library resources; such as Subject Specific Databases, subject guides, LibGuides, and Reference Assistance
  - APA
  - MLA
  - Plagiarism
This guide contains resources for education pertaining to STEM (Science, Technology, Engineering and Mathematics): a collection of relevant databases, journals, website, eBooks, standards, organizations, and more related to STEM education.

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Contact:
John Brown Watson Memorial Library System

These free resources are available for you to investigate and infuse into your current curriculum.

Bridges: An Integrated STEM Teaching Guide — an interactive inquiry-based instructional unit on building different types of bridges created through a partnership between Elmer’s Glue and Ohio Center for
### Evaluating Resources

<table>
<thead>
<tr>
<th><strong>Context</strong></th>
<th>What is my purpose in looking at this site?</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>❑ Entertainment?</td>
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<td></td>
<td>❑ Scholarship?</td>
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<tr>
<td></td>
<td>❑ General information?</td>
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<tr>
<td></td>
<td>❑ Hobby or avocation?</td>
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</tbody>
</table>

| **Authority**        | ❑ Is the author and the author’s affiliation clearly indicated? |
|                      | ❑ Is there contact information for the author?                |
|                      | ❑ Is the publisher (or publishing source) reputable?          |

| **Accuracy**         | ❑ Do editors check the information?                        |
|                      | ❑ Is appropriate documentation provided when the author refers to another’s work? |
|                      | ❑ Is the page error-free?                                  |

| **Objectivity**      | ❑ Is the purpose of the site clearly stated?               |
|                      | ❑ Does the author make use of emotional appeals instead of logical arguments as a means to influence the opinion of the audience? |
|                      | ❑ Is sponsorship acknowledged?                             |

| **Currency**         | ❑ Is the publication date (date created) clearly stated?   |
|                      | ❑ Is the page revised regularly, with the date posted?     |
|                      | ❑ Are all links active?                                   |

| **Coverage**         | ❑ What is the purpose of the page? Is the scope clearly stated? |
|                      | ❑ To what depth does this page purport to explore the topic? Does it claim to be what it is not? |
|                      | ❑ Who is the audience for the page? Experts                |
Resources for Speaking

Students having academic or high-level conversations in small and large group settings takes time and scaffolding

- In order for our students to engage in academic conversation, or accountable talk, they need
- Practice with informal conversation in pairs and triads.
- Strategies or building students' oral skills:
  - Think-pair-share,
  - Elbow partner,
  - Shoulder share, and
  - Chunk and chew

- For every 5-8 minutes you talk, give them 1-2 minutes to talk to each other.
- Walk around and listen, informally assessing and checking for understanding.
Resources for Speaking

Teaching Ideas
https://www.teachingideas.co.uk/subjects/speaking-and-listening

Online Resources for Improving Public Speaking Skills
http://sites.nd.edu/graduate-school-professional-development/2013/02/12/10-helpful-online-resources-for-improving-public-speaking-skills/

43 Excellent ESL Resources for Students
http://www.studentguide.org/43-excellent-esl-resources-for-students/

STEM Literacy
https://www.oercommons.org/hubs/stem-literacy
http://www.readingrockets.org/reading-topics/stem-literacy
Summary

Incorporating problem solving, vocabulary building, writing and speaking through STEM activities is important for integrating Information Literacy.
References


The Writing Lab, The OWL at Purdue, the English Department, and Purdue University

https://owl.english.purdue.edu/
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