

# Effective Mindsets for Teaching Information Use in Project-based Learning

Worcester Polytechnic Institute  
Institute on Project Based Learning, 2018

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# Information Literacy Related Outcomes Example from WPI's Interactive Qualifying Project

The IQP is a general education requirement, not directly related to students' majors. WPI Faculty created the IQP to help students learn to solve real-world problems and make decisions with an understanding of and appreciation for the social and humanistic contexts of their work. The IQP also is central to how WPI students learn to do research, write, and work in teams. According to the faculty-approved learning outcomes, IQP students will:

1. Demonstrate an understanding of the project's technical, social and humanistic context. (1, 7, 8)
2. Define clear, achievable goals and objectives for the project. (6)
3. Critically identify, utilize, and properly cite information sources, and integrate information from multiple sources to identify appropriate approaches to addressing the project goals. (7, 10)
4. Select and implement a sound approach to solving an interdisciplinary problem. (7, 10)
5. Analyze and synthesize results from social, ethical, humanistic, technical or other perspectives, as appropriate. (8, 9)
6. Maintain effective working relationships within the project team and with the project advisor(s), recognizing and resolving problems that may arise. (5)
7. Demonstrate the ability to write clearly, critically and persuasively. (4)
8. Demonstrate strong oral communication skills, using appropriate, effective visual aids. (4)
9. Demonstrate an awareness of the ethical dimensions of their project work. (9)

*Approved by the WPI Faculty in October 2006.*

The IQP is an opportunity for significant intellectual and professional development that, done well, prepares WPI graduates broadly for successful and satisfying lives and careers.

*The numbers in parentheses denote corresponding [WPI curriculum-wide undergraduate outcomes](#) adopted by the faculty on May 20, 2004.*

**Red = IL-related outcomes. Color added by author.**



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# IQP Information Seeking Skills: Library Assignment

During the first few weeks of term your team's job is to begin research for your literature review and background chapter. Finding information for IQP is tricky, even for the most experienced searchers. The following assignment will help to kick start your research. Your library assignment is to be completed and handed in to your personal librarian, during your team's research appointment.

Prior to that appointment with your librarian please complete the following:

1. Complete the IQP Research Skills Survey found in your ID2050 course site
2. Review the IQP online research guide and note any questions you have: <http://libguides.wpi.edu/iqpresearch>
3. Determine how your team will be organizing all of the information for your IQP. For example, will you be using Endnote or will you be gathering links and citations in a Google Doc?
4. Compile an APA formatted list of your team's top eight sources of information that you've found so far. Each member of the team should find her or his own sources. The whole team should then review all sources found, in order to determine the team's top eight.
5. Schedule a team appointment with your librarian to discuss all of the above. Use this appointment request form: [wpi.edu/+library/help/request-consultation.html](http://wpi.edu/+library/help/request-consultation.html)

## About the Research Appointment

Appointments are typically 30-50 minutes based on the team's needs. All members of the team should be present. The purpose of the research appointment is for your team to:

- Ask any questions you have so far.
- Solidify your plan for organizing and citing sources for your IQP.
- Discuss your eight sources with your site librarian. Explain how and why you chose those sources and how they will fit into your background chapter and literature review.
- Work with your librarian and your team to determine next steps for finding more resources.

Please bring the following with you:

- Your team's plan for organizing and citing your sources. (e.g. Will you be using Endnote, Google Docs, etc.)
- APA formatted list of your team's top eight (8) sources. These sources may fall into any of the following categories:
  - Peer-reviewed scholarly journal articles
  - Government reports and websites
  - News articles
  - Books
  - Organization/NGO/Association reports and websites
  - Any other type of source that you can justify as being important – just be sure you can defend it!



## Example Assignment developed through a Faculty and Librarian Collaboration:

### ME 2300 Introduction to Engineering Design, D16 Information-Rich Engineering Design (I-RED)\* Lab

Using the resources and instruction from this lab, **complete the following tasks and submit a written research report at the start of Lab 3, the first design review.**

**Use a cover memo** with *subject* line “Research Report”. Include your name and your project team name in the “*from*” field. The **body of the memo** should describe what types of questions you are trying to answer in order to come up with excellent design specs.

During this lab you will be introduced to reasons for and best practices in information seeking for an engineering design project. The better you understand the problem you are trying to address the more useful and more marketable your design will be. Following your memo, please turn in the following:

Find the ten types of sources described below and include the following for each source:

- A complete and accurate APA citation.
- A brief paragraph including the following:
  - Where did you search (e.g. Summon, Google, Google Scholar, Engineering Village, IBISworld, etc.), and why did you search there as opposed to somewhere else?
  - What keywords worked? Did any not work?
  - What did you learn from searching for this source that will help you in future research? What tips would you want your teammates to know about?

Types of sources required:

1. 1 encyclopedic article from How Stuff Works, How Things Work, About.com, etc.
2. 1 product
3. 1 technical handbook
4. 1 marketing report using IBISworld
5. 1 magazine or newspaper article that provides insight into the market for your product
6. 1 article from a trade magazine/journal
7. 1 peer-reviewed technical research article
8. 1 peer-reviewed article looking at the social or human element of your design.
9. 1 standard or regulation
10. 1 utility patent that are **relevant** and **useful** for your project and cite these patents. Include the patent title, abstract and a figure that shows the device in your report.

#### **Coordinate with the rest of the team to insure that your reports do not overlap**

All team members should identify **different** devices, **different** patents, **different** literature sources and **different** products or components.

Divide up the key words amongst the team members. Then get together and compare notes before submitting your *individual* reports.

\*I-RED is based on the following: Fosmire, Michael, and David Radcliffe, eds. Integrating Information Into the Engineering Design Process. Purdue University Press, 2013.

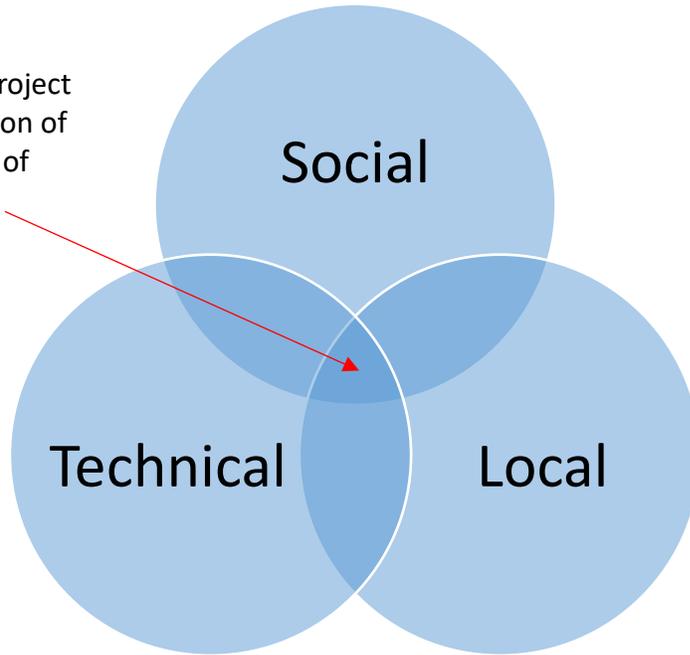


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# The Venn of Project Research: A Worksheet

What are some social, technical, and local (to your project) questions that your team will need to address during ID2050 and on-site?

Your completed project is at the intersection of these three types of information



Project Example: You are working with a neighborhood in Worcester, MA to set up a community garden.

<b>Social Questions</b> (These are often theoretical questions or questions that may lead to appropriate methodologies that you might apply to your project.)	
Question	Where/how might you find answers?
[Example: How do neighborhoods benefit from community gardens]	[Example: Search in Greenfile, Summon, and Google Scholar for academic research; search in Google for blogs or towns describing examples]



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<b>Technical Questions</b> (These are questions that may lead you to research, best practices, product websites, experts, patents, standards, and more.)	
Question	Where/how might you find answers?
[Example: What are the best types of plants to grow in a community garden in this region and what are good techniques for cultivation?]	[Example: Search in Summon to find books and ebooks on community gardening; visit local gardening stores or websites and look for best practices and advice from experts]

<b>Local Questions</b> (These are questions about local culture, politics, history, communication, and more that will help you to better understand how a community might react or accept a proposed solution.)	
Question	Where/how might you find answers?
[Example: Are there already examples of Worcester having community gardens in other neighborhoods?]	[Example: Search the Worcester city website – parks site:.worcesterma.gov -- as well as the Telegram and Gazette archive available through the library website in our databases A-Z list.]

WPI's Project Based Learning (PBL) Educators' Resource Library:  
<http://libguides.wpi.edu/pbl>



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