

# Developing Student Skills for Locating and Using Just-in-Time Information

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Note: The Type II Taxonomy of Thinking Skills that is part of the Schoolwide Enrichment Model has recently been modified to include a new category on *Using Advanced Research Skills & Reference Materials*.

This short article hopefully will encourage creative scholars and teacher practitioners in our field to consider developing a curriculum on finding and using what I call Just-In-Time (J-I-T) information. These courses should begin at the primary level and continue into adulthood. In this essay, we will explore the importance of student skills in locating and using just-in-time information and offer insights into how students can develop and hone these essential skills.

**Type II Enrichment**

## **TAXONOMY OF COGNITIVE & AFFECTIVE PROCESSES** (The "Type II Matrix" JSR: 2001)

<b>I. Cognitive Thinking Skills</b>	<b>II. Character Development and Affective Process Skills</b>
A. Creative Thinking Skills	A. Character Development
B. Analytic, Problem-Solving & Decision-Making Skills	B. Interpersonal Skills
C. Critical and Logical Thinking Skills	C. Intrapersonal Skills
<b>III. Learning How-To Learn Skills</b>	<b>IV. Using Advanced Research Skills &amp; Reference Materials</b>
A. Listening, Observing, & Perceiving	A. Preparing for Research & Investigative Projects
B. Reading, Notetaking, & Outlining	B. Library & Electronic Reference
C. Interviewing & Surveying	C. Finding & Using Community Resources
D. Analyzing & Organizing Data	<b>VI. Meta-Cognitive Technology Skills</b>
<b>V. Written, Oral, and Visual Communication Skills</b>	A. The ability to identify trustworthy and useful information
A. Written Communication Skills	B. The ability to selectively manage overabundant information
B. Oral Communication Skills	C. The ability to organize, classify, & evaluate information
C. Visual Communication Skills	D. The ability to conduct self-assessments of web-based information
	E. The ability to use relevant information to advance the quality of one's work
	F. The ability to communicate information effectively

The impact of Johannes Gutenberg's invention of the printing press and the subsequent invention of the internet are two pivotal moments in human history that have transformed communication, knowledge dissemination, and society. Both inventions have had profound effects on the way information is produced, distributed, and consumed, and they have reshaped the world in their respective eras.

Gutenberg's printing press, developed in the mid-15th century, revolutionized the spread of information. Before its invention, books and documents were painstakingly copied by

hand, making them scarce and expensive. The printing press allowed for mass production of books, making knowledge accessible to a broader audience. This democratization of information was instrumental in the spread of the Renaissance, the Reformation, and the Age of Enlightenment, fostering intellectual and cultural revolutions that transformed society.

The internet, which, was first developed by Robert Kahn and Vinton Cerf around 1983, brought about a digital revolution of similar magnitude. It connects people across the globe, enabling the instant exchange of information, ideas, and culture. It has democratized content creation and dissemination, allowing anyone to be a publisher, and it has redefined the way we learn, work, and interact. The internet has accelerated globalization, reshaped economies, education, and altered the dynamics of politics and social movements.

One key similarity between Gutenberg's press and the internet is their transformative power in information dissemination. Both made it easier for diverse voices to be heard and contributed to a more informed citizenry. They allowed marginalized voices to gain prominence, fostering greater social inclusivity and diversity of thought. There are, however, significant differences. Gutenberg's press facilitated the production of physical books. In contrast, the internet is fluid, with information constantly evolving. It has created new challenges like information overload, misinformation, and issues of privacy and security.

Moreover, the internet's influence has transcended communication, permeating every aspect of modern life, from commerce to entertainment, from education to healthcare. It has given rise to tech giants, data-driven economies, and concerns about digital addiction and surveillance. In the fast-paced, information-driven world of the 21st century, the ability to locate and use just-in-time information is a crucial skill for students. Whether it's for an assignment, a research project, or simply to stay informed about the latest news and trends, students must be adept at finding relevant and reliable information quickly and efficiently. This skill not only empowers them in their academic pursuits but also prepares them for success in an ever-changing, information-rich landscape.

In a world where information is readily available at our fingertips, students often find themselves overwhelmed by the sheer volume of data. This abundance of information can be a double-edged sword, as it provides students with access to a wealth of knowledge but also presents the challenge of discerning what is relevant and reliable. Just-in-time information refers to data that is acquired precisely when it is needed to accomplish a specific task or goal. For students, this could mean finding the latest research articles for a term paper, accessing historical documents for a history project, or locating up-to-date statistics for a business presentation. The ability to locate and utilize just-in-time information is, therefore, an invaluable skill in today's educational landscape.

One of the fundamental aspects of acquiring just-in-time information is the art of effective searching. Students should become proficient in using search engines, databases, and digital libraries to uncover the most relevant resources for their needs. Search engines like Google have become an integral part of modern education, but students must understand how to construct effective search queries. Using specific keywords and employing search operators can help refine search results, saving time and effort in sifting through irrelevant information. Moreover, students should be aware of academic databases and library catalog systems, as these often yield more authoritative sources.

In addition to effective search techniques, students must also be discerning when it comes to evaluating the credibility and reliability of sources. The internet is awash with both accurate and inaccurate information, making it imperative for students to employ critical thinking skills. Assessing the source's reputation, authorship, and publication date are essential steps in this process. In academic contexts, peer-reviewed journals, university websites, and established research institutions are often considered reliable sources. Developing a keen sense of source evaluation is vital in ensuring that just-in-time information is accurate and trustworthy.

The importance of digital literacy in today's educational landscape cannot be overstated. Students must be comfortable navigating various digital platforms, including online libraries, research databases, and academic journals. They should also be adept at utilizing reference management tools like EndNote, Mendeley, or Zotero, which can help streamline the process of organizing and citing sources. Furthermore, students should understand how to navigate online forums, discussion boards, and other platforms where expert opinions and community knowledge can be valuable resources.

It is equally crucial for students to adapt to the evolving nature of information. The current landscape is characterized by the constant creation and dissemination of new data. Staying updated on the latest developments in their fields of study is an essential aspect of using just-in-time information effectively. Subscribing to newsletters, following academic journals, and setting up Google Alerts for specific keywords can help students stay informed about the most recent research and news relevant to their studies.

Moreover, as the digital environment continues to evolve, students must also be aware of potential ethical considerations when using just-in-time information. Plagiarism, for instance, remains a significant concern. To avoid academic misconduct, students should be well-versed in citing sources correctly and understanding the principles of intellectual property. Additionally, respecting copyright laws and permissions when using digital content is crucial to avoid legal ramifications.

The ability to synthesize and apply just-in-time information is another vital aspect of this skill. Simply accumulating a vast amount of data is not enough; students must know how to integrate this information into their work effectively. They should be able to extract key points, draw connections between various sources, and articulate their understanding in a coherent and well-structured manner. This involves not only critical

thinking but also strong communication skills, including writing, presentation, and discussion.

Collaboration and information sharing among students are also valuable aspects of developing just-in-time information skills. Learning from peers and engaging in group projects can expose students to diverse sources of information and different methods for information retrieval. Collaborative efforts can foster a collective understanding of how to locate, evaluate, and apply just-in-time information.

Technology continues to play a pivotal role in the development of just-in-time information skills. Mobile applications, cloud storage, and collaborative platforms have made it easier than ever for students to access and share information in real-time. These tools empower students to work efficiently, whether they are in a classroom, library, or their own home. The use of technology also enables students to create digital portfolios, organize research materials, and collaborate with peers seamlessly. Student skills in locating and using just-in-time information are essential for academic success and life beyond the classroom. These skills encompass effective searching, source evaluation, digital literacy, adaptability, and ethical considerations. Moreover, the ability to synthesize and apply information is key to transforming data into knowledge. As the digital landscape continues to evolve, students must stay up to date with emerging technologies and tools that facilitate information retrieval and sharing and this is why ongoing curriculum on J-I-T is so important.

To develop these skills, educational institutions should emphasize information literacy in their curricula, offering courses and resources that teach students how to locate, evaluate, and use information effectively. Instructors play a vital role in guiding students through the process of research and source integration. Furthermore, promoting a culture of intellectual curiosity and encouraging students to be proactive in seeking knowledge will foster a lifelong commitment to learning and honing just-in-time information skills.

In conclusion, both Gutenberg's printing press and the internet have had profound impacts on humanity. They democratized access to knowledge, transformed cultures, and reshaped society. While Gutenberg's press laid the foundation for modern literacy, the internet has ushered in an era of unprecedented connectivity and information accessibility. Today's world is characterized by the rapid flow of information and students must equip themselves with the skills necessary to locate and use just-in-time information. These skills go beyond simply knowing how to use a search engine; they involve effective search techniques, source evaluation, digital literacy, adaptability, ethical considerations, and, most importantly, the ability to synthesize and apply information in creative and investigative ways. Nurturing these skills will not only enhance academic performance but will also prepare students for the challenges and opportunities of the information-rich world they will navigate throughout their lives. As we move forward, it is essential to navigate the opportunities and challenges of the digital age with the lessons from the past in mind, ensuring that technology continues to empower and benefit humanity.