



# The Project Information Literacy Retrospective

*Insights from more than a decade of information literacy research, 2008–2022*

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## Abstract

This paper presents a summary of the entire body of research, 2008 to 2022, from Project Information Literacy (PIL) on the strategies students use for finding, using, and creating information for college courses, in everyday life, and the workplace while navigating a vast, ever-changing information landscape. Major findings from 12 reports and seven related research articles are presented. A computational analysis of 2,475 citations from 1,961 sources provides empirical data for interactive information visualizations about the geographic reach and impact of PIL’s research on the wider educational context. This retrospective, the final publication produced as part of more than a decade of studying college students, concludes with a discussion of PIL’s practical impact on information literacy instruction and suggestions for future research.



# Part One: Inception

In 2008, Project Information Literacy (PIL) began with a seemingly straightforward question: “What’s it like to be a student in the digital age?” Founded at the University of Washington’s iSchool by Alison Head, a new media scholar, and Michael Eisenberg, co-developer of the Big6 information skills curriculum, researchers had an ambitious goal: to study the fast-growing field of information literacy through the lens of the student research experience.

From the beginning of PIL, the founders set their sights on being a large-scale, ongoing, and expansive research program. We would collect empirical data from a cross-disciplinary sample of undergraduates enrolled at four-year colleges and universities and community colleges across the U.S. In turn, we would publish open access reports for the broader academic community.

The timing was right. Students everywhere were turning to search engines and public internet sites such as Google and Wikipedia for academic research more than campus library resources. A plethora of new information technologies was raising concerns about what the Association of College and Research Libraries (ACRL) called the “escalating complexity” of the formidable information retrieval environment.<sup>1</sup> Despite librarians’ and educators’ efforts to sharpen students’ skills for retrieving and evaluating information, results from national testing agencies remained disappointingly low.<sup>2</sup> There was still much more to learn about students’ research processes.

PIL distinguished itself from other information literacy studies in terms of sample size, institutional breadth, and research design. Over 14 years, we published reports of 12 studies and seven related articles in peer-reviewed journals using the same datasets. Nearly 21,000 students and recent graduates from 91 institutions across the U.S., including public and private colleges and universities, were surveyed or interviewed for this collective PIL sample. Qualitative and quantitative methods were used together to capture the student research experience and reveal strategies and workarounds they use for finding, using, and creating information.

Our findings detailed the challenges students experience when interacting with information for college courses, in everyday life, and the workplace. Our recommendations put empirical research into the hands of frontline educators who used them to inform everyday practice in teaching and learning across higher education settings. In 2016, Barbara Fister, writing for *Inside Higher Education*, called PIL “hands-down the most important long-term, multi-institutional research project ever launched on how students use information for school and beyond.”<sup>3</sup>

This retrospective is the first summary of PIL’s entire body of research. In these pages, we highlight our major research findings and present new results from a computational citation analysis of PIL’s work over the life of the project. Moreover, we discuss societal contexts and surrounding events shaping our research as well as a variety of methods used in gathering data. Throughout, we describe the evolution of a collaborative research model that defines the PIL approach.



## Part Two: The Research

Though academic institutions have long promoted the development of inquiry and research skills as an important outcome for college graduates, the term *information literacy* did not gain salience in the academic literature until the 1980s as concerns grew about the need to adapt education to meet the challenges of the “information age.”

Academic librarians, in particular, took on responsibility for advancing the importance of being able to find, evaluate, and use information at a time when published knowledge was growing ever more available in a variety of formats. As the web became a popular conduit for new forms of expression, the need for student instruction became even more pressing. But, while the number of publications describing how to teach information literacy grew, less was known about the student perspective: How did students actually find, evaluate, learn about and interact with information?

Even though information-seeking behavior was a subject of study among some information scientists and librarians, and a few studies focusing on student experiences were widely-read and influential,<sup>4</sup> most of the burgeoning literature depended on small-scale research projects led by librarians that began and ended with students enrolled at the librarians’ institutions. A contributing factor was that many librarians had limited research training, and few had the mandate or resources to conduct large-scale studies.




To address this gap, we launched PIL. For more than a decade, the research team published reports from the front lines focusing on students’ encounters with information as captured in their own words. This corpus of research not only provided insight into how students use information for academic work, but also moved beyond this common focus for information literacy research by widening the lens to see how students conduct research in everyday life.

Filling a gap in the literature and making recommendations for teaching practice, PIL has explored what happens after graduation, as students move from the classroom to the workplace. When questions arose around the rise of disinformation, PIL conducted a large study of how college students consume and engage with news, and as concerns grew around

the prominence of algorithmic systems in our lives, PIL again asked students about their awareness and experiences.

With its large-scale design emphasizing students’ experiences rather than instructors’ observations, PIL’s research has provided a unique snapshot of how young adults find and use information for school and beyond.<sup>5</sup> An overview of each of these reports appears in Table 1.

Table 1: Summary of PIL’s 12 Reports

Sample Notes		<b>11</b> student focus groups		<b>7</b> U.S. campuses		<b>86</b> sophomores, juniors, and seniors
February 4, 2009	<b>Finding Context: What Today’s College Students Say about Conducting Research in the Digital Age</b>					
	Alison J. Head and Michael Eisenberg					
	<p>PIL’s first report collects and analyzes empirical data to model the undergraduate research process. Findings suggest students prioritize and carry out research activities based on satisfying four contexts for interpreting and defining their information needs: (1) big picture context or easy access background about a topic, (2) the meaning of language and terms, (3) situational factors such as satisfying the instructor’s expectations, and (4) available and relevant information sources. Study participants say they rely on a mix of traditional and self-taught methods to find these contexts; most use resources ranging from libraries to Google Search and Wikipedia. And yet, most are challenged by the arduous and frustrating process of obtaining context and sorting through irrelevant results from their online searches, whether they’re fulfilling college assignments or solving everyday life problems. As one student sums it up, “the more you know, the less you know.”</p>					

Sample  
Notes



Online survey



6 U.S. campuses



**2,318**  
sophomores,  
juniors, and  
seniors

December 1,  
2009

**Lessons Learned: How College Students Seek Information in the Digital Age**

Alison J. Head and Michael Eisenberg

Nearly all of the students surveyed for this report employ a predictable and risk-averse strategy for finding research resources. The large majority start with course readings — not Google — when fulfilling course assignments, and turn to Google, Wikipedia, and friends for everyday life research. While most rely on library databases to satisfy course requirements, far fewer, if any, consult librarians, though they do consider instructors trusted “research coaches.” Ultimately, the student research process is driven by familiarity and habit; most students prefer the same “tried and true” information sources. Even though students say they are curious about learning and approach research in a consistent and thoughtful manner, most employ a “less is more” approach to deal with the wide range of resources available to them from campus libraries and the web.

Sample  
Notes



Content analysis



191 research  
assignment  
handouts



28 U.S. college  
campuses

July 13, 2010

### Assigning Inquiry: How Handouts for Research Assignments Guide Today's College Students

Alison J. Head and Michael B. Eisenberg

As a whole, written guidelines for research assignments analyzed for this report emphasize the product — structure, length, and citation format — rather than the research process and how to hone a research question, where to seek information, or how to filter it for quality. Across disciplines, nearly all of the assignment prompts directed students to work individually to produce traditional research papers, and in most cases, by going to library shelves. Though previous PIL research found students use websites and library databases heavily, few assignment prompts recommend digital sources or disciplinary databases. In follow-up interviews, instructors report that they often discussed the research process in class, in some cases with the assistance of librarians. However, few handouts mention librarians as a resource, or specified how to get help from the instructor. While instructors express exasperation with students' lack of research know-how or ability to choose high-quality sources, their written guidance does little to address that gap.

Sample  
Notes



Online survey



25 U.S. campuses



**8,353**  
sophomores,  
juniors, and  
seniors

November 1,  
2010

**Truth Be Told: How College Students Evaluate and Use Information in the Digital Age**

Alison J. Head and Michael B. Eisenberg

PIL’s largest survey delves into why students think course research is difficult. Getting started — defining a topic and narrowing it down and figuring out what is required — is most difficult for students conducting course research. In everyday life research, they find sorting through irrelevant online search results in hopes of finding “the answer” most frustrating. Respondents report taking little at face value, consciously evaluating information from both the web and the campus library for course work, and to a lesser extent, for personal use. Most employed a range of formal standards and self-taught evaluation methods as well as relying on family, friends, and instructors for help, or as one student explains, “evaluating whether it’s good or not, because there’s so much — and you only have a little bit of time to spend.”



Sample  
Notes



**Face-to-face  
interviews**



**560** freshmen,  
sophomores,  
juniors, and  
seniors



**10** campuses  
across the U.S.

October 12,  
2011

**Balancing Act: How College Students Manage Technology While in the Library during Crunch Time**

Alison J. Head and Michael B. Eisenberg

Even though college students are often dubbed the “multitasking generation,” this report finds students deliberately manage their time during the final weeks of the term, using judicious methods to reduce their use of gaming or social media apps so they can prepare assignments and study. Most are “light technology users,” using one or two devices to support coursework and social communication. Many consider the library a necessary refuge, a quiet place where they can dial down or escape the technology normally omnipresent in their lives. Though students use library equipment, like printers and desktops, during a crunch time visit, few, in this study, search library databases or use librarian reference services available to them.

Sample  
Notes



**Telephone  
interviews** with  
23 U.S. employers



**Focus groups**  
with 33 recent  
graduates



**4** U.S. colleges  
and universities

October 15,  
2012

**Learning Curve: How College Graduates Solve Information Problems Once They Join the Workplace**

Alison J. Head

Employers interviewed for this report say recent graduates have valuable digital skills but lack a full repertoire of essential research abilities, including persistence, pattern-recognition, and a willingness to consult non-digital sources, such as turning to people for information. In turn, recent graduates feel unprepared for the sense of urgency and lack of feedback from their supervisors in the workplace. We found a considerable mismatch between the efficient search habits recent graduates practiced in college and the workplace reality where research is a fast-moving, intensive, reiterative, indeterminate, and social process.

Sample  
Notes



**Comparative analysis** of library resources at 30 U.S. high schools and six universities



**Face-to-face interviews** with 35 college freshmen in their first term



**Online survey** by 1,941 high school and college students

December 4,  
2013

**Learning the Ropes: How Freshmen Conduct Course Research Once They Enter College**

Alison J. Head

There is a large gap between the Google-centric search skills first-year students bring from high school to college and the research competencies they need to meet the demands of coursework professors assign. In their own words, interviewees for this report describe being “excited” about the newfound freedom to explore topics of their own choosing, yet “overwhelmed” by searching college library portals, and, often for the first time, skimming peer-reviewed articles to sift out trusted information they could use. The sheer size of academic library collections and services is a major challenge for study participants: The average academic library in the sample has 19 times as many online library databases and nine times as many books and journals as the average high school library. Most new arrivals to campus admit research skills from high school only got them so far, and they needed to retool their research toolkit to succeed in college.

Sample  
Notes



Online survey



1,651 recent  
college graduates



10 U.S. colleges  
and universities  
between 2007  
and 2013

January 5, 2016

**Staying Smart: How Today's Graduates Continue to Learn Once They Complete College**

Alison J. Head

During the first decade after college, recent graduates need to learn a combination of basic and complex life skills, such as managing money, making simple household repairs, and shopping for groceries on a budget, according to findings from this two-year study. Most favor information with three qualities: currency, utility, and interactivity, and turn to friends almost as much as to web searches for solutions, so they can hear from multiple voices. They want career and professional guidance and to sharpen their interpersonal skills; far fewer look for ways to become involved in their local communities, saying they have limited time. Most graduates believe their college experiences have taught them a suite of practical skills for searching, evaluating, and presenting information that they could adapt to their post-college lives. Yet, less than a third say they have gained skills for formulating and asking questions of their own during formal education, and had to develop these once they entered the workplace and began their careers, especially if they wanted to continue to learn. As one follow-up interview sums it up, “We were sheltered in this idealistic undergraduate world where anything is possible; however, that is not what the world is like.”

Sample  
Notes



**Interviews** with library learning space stakeholders



**49** academic librarians, architects, and library consultants



**22 library space redesign projects** between 2011–2016 on campuses in the U.S. and Canada

December 7,  
2016

**Planning and Designing Academic Library Learning Spaces: Expert Perspectives of Architects, Librarians, and Library Consultants**

Alison J. Head

Librarians and architects place a high premium on creating a hub for student learning, research, and discovery when planning and designing library spaces to meet the specific needs of their institutions, according to findings from this report. A large majority of the projects sought to revitalize existing but underused library spaces and replace them with flexible spaces for supporting collaborative learning activities as well as individual study. Librarians and architects say they prioritize student needs over those of faculty, but despite a common commitment to a user-centered approach, few of the projects studied relied on systematically collected empirical data either before or after the design phase. When disagreements arose, they were often between architects' preferences for aesthetics and librarians' concerns for functionality, or related to other campus units competing for space. Successful projects hinged on developing a shared language and understanding of the demands of rapidly changing pedagogy and technology.

Sample  
Notes



Online survey



11 U.S. campuses



5,844 students

October 16,  
2018

### How Students Engage with News: Five Takeaways for Educators, Journalists, and Librarians

Alison J. Head, John Wihbey, P. Takis Metaxas, Margy MacMillan, and Dan Cohen

Students encounter news multiple times a day in many ways, from discussions with peers to social media networks and traditional news outlets, according to this report's findings. More than two-thirds find the sheer amount of news overwhelming and more than a third agree that fake news makes them distrust the credibility of any news. The current news landscape does not meet students' high ideals of journalism, so they evaluate stories carefully before using information in academic assignments or sharing it among their peers. As one interviewee explained, "No news source is entirely credible but I think you can piece it together if you pull from enough different news sources." While these students use different news sources for academic work and everyday life, they find discussions with instructors valuable in both contexts.

**Sample  
Notes**



**16** focus groups



**8** U.S. colleges  
and universities



**103**  
undergraduates  
and **37** faculty  
members

**January 15,  
2020**

**Information Literacy in the Age of Algorithms: Student Experiences with News and Information, and the Need for Change**

Alison J. Head, Barbara Fister, and Margy MacMillan

In this report, we found students are concerned by the impact of algorithms on their everyday information interactions, but are far less aware of their use in academic contexts or for automated decision-making in contexts such as hiring practices or loan applications. Students understand the risks to society as a whole, and to family members born before ubiquitous computing and those who had never known life without it; some say they have developed defensive tactics to counter siloing and pigeonholing. Most feel a combination of resignation and indignation about the trade-offs between privacy and participation in digital society, or as one study participant puts it, “It’s a horrible totalitarian hellscape, but it’s kind of the best we can reasonably expect.” Despite concern among faculty about effects like personalized news search results leading to increased polarization, few interviewed for this study felt qualified to include material on algorithms in their teaching.

Sample  
Notes



**125,696** news  
articles



**532** images



**66** widely read  
U.S. news  
websites

September 15,  
2020

**Covid-19: The First 100 Days of U.S. News Coverage**

Alison J. Head, Steven Braun, Margy MacMillan, Jessica Yurkofsky, and Alaina C. Bull

This report finds early U.S. news coverage of the first three months of the pandemic came in three distinct waves: (1) in January 2020, a slow swell of stories relating to business and foreign affairs first appeared, (2) in February, domestic coverage increased as early U.S. cases were confirmed, and (3) in March, as Covid-19 overwhelmed healthcare systems, the coverage rose sharply and dominated the news across all categories. Twelve of the 66 news outlets in our sample account for over 60% of the news stories analyzed. An analysis of the visual representation of the coronavirus and its impact show changes in the emotional content (fear, hope, loneliness, determination, and grief) of photos accompanying Covid news stories — as the pandemic became a stark reality. In a departure from the usual practice, PIL released these results as a pair of brief reports suitable for classroom use, accompanied by teaching resources to build information agency in students.

Taken together, PIL's reports provide a study of students' experiences with information throughout their college education and beyond. In addition to our findings, each of the dozen studies offers recommendations for improving information literacy instruction. We have challenged long-held assumptions about students' information skills as practitioners rethink both their teaching practices and aspirations for learners during the complex and rapidly evolving digital age.



## Part Three: Impact

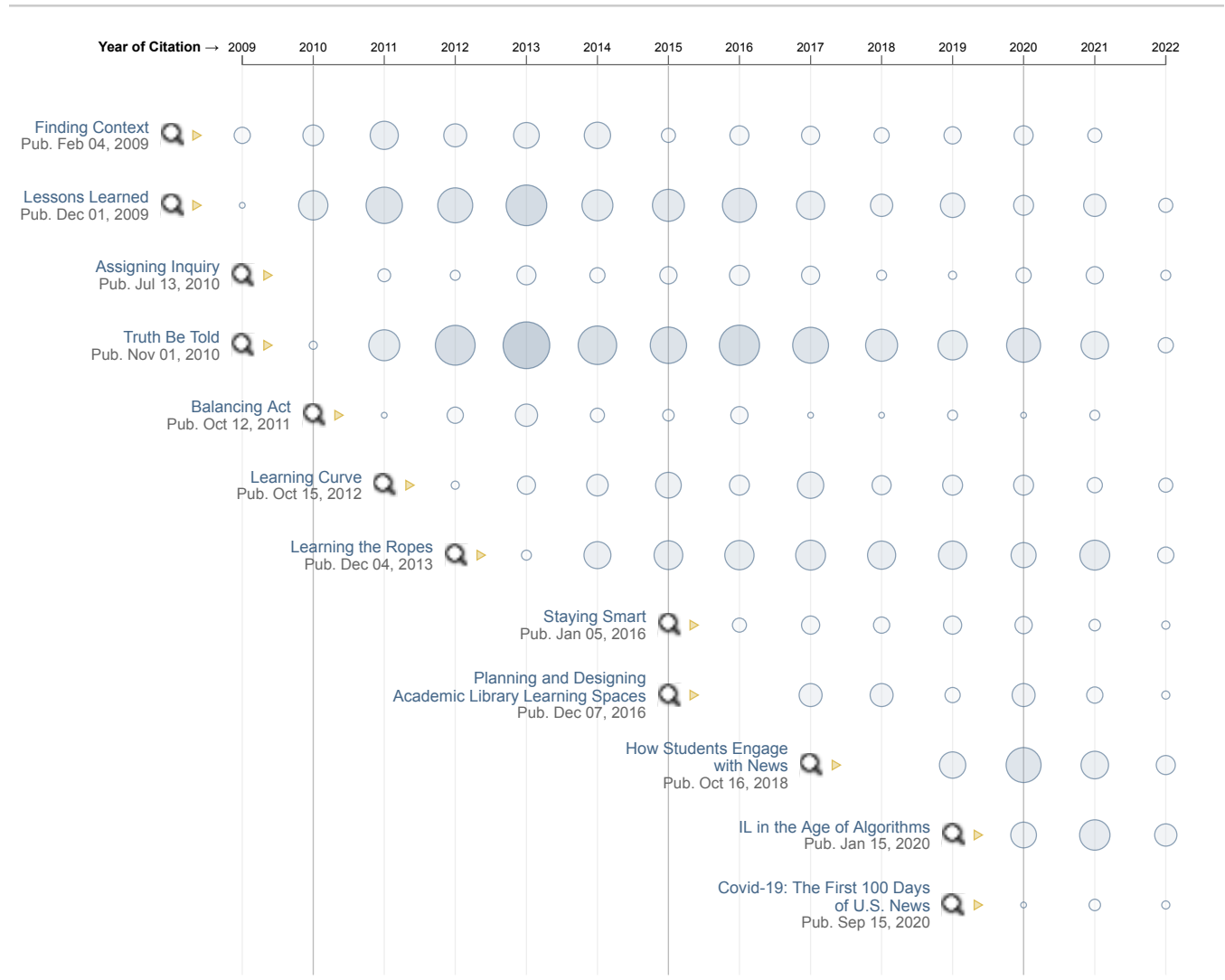
Many authors have cited PIL’s large-scale work, demonstrating its lasting influence on research, practice, teaching, and policy within and well beyond libraries. As part of this retrospective, we measured this impact by asking: How has PIL’s work informed the wider contexts of education during one of the most rapidly changing times for the internet?

In this section, we report on our computational analysis of an extensive dataset of citations to PIL publications. We began by identifying 2,127 sources that appeared from January 1, 2008 to June 30, 2022, and ended up with a total of 2,772 citations to one or more of all PIL publications — research reports, peer-reviewed articles, and Provocation Series essays. We then coded each for the country where the research was conducted and its disciplinary focus.<sup>6</sup> As a second step, we took a subset of 1,961 sources with a total of 2,475 citations specifically referencing one or more of the reports and journal articles directly related to PIL’s 12 studies to produce three interactive data visualizations. Together, these visuals provide evidence that PIL’s influence crosses boundaries of time, discipline, and geography.



Figure 1: Citations to PIL Reports over Time

Click the title of a report in the visualization below to see more details about how it has been cited across disciplines and countries over time.



PIL’s impact on the wider contexts of education becomes even more evident in our analysis of the citation dataset shown in Figure 1, where we looked at the distribution of citations to reports from our major studies over time. Each report is listed in a row and the blue circles represent the total quantity of works that cited that PIL publication year by year.

For instance, citations to “Truth Be Told,” our 2010 landmark study on how students evaluate information, and PIL’s most-cited work, show both rapid uptake of the research, and its continuing relevance to the field. In some cases, PIL’s work is used to provide a baseline for aspects of information use that have changed, but more often, studies that cite our work rely on our findings about student behaviors and challenges, such as getting started with research

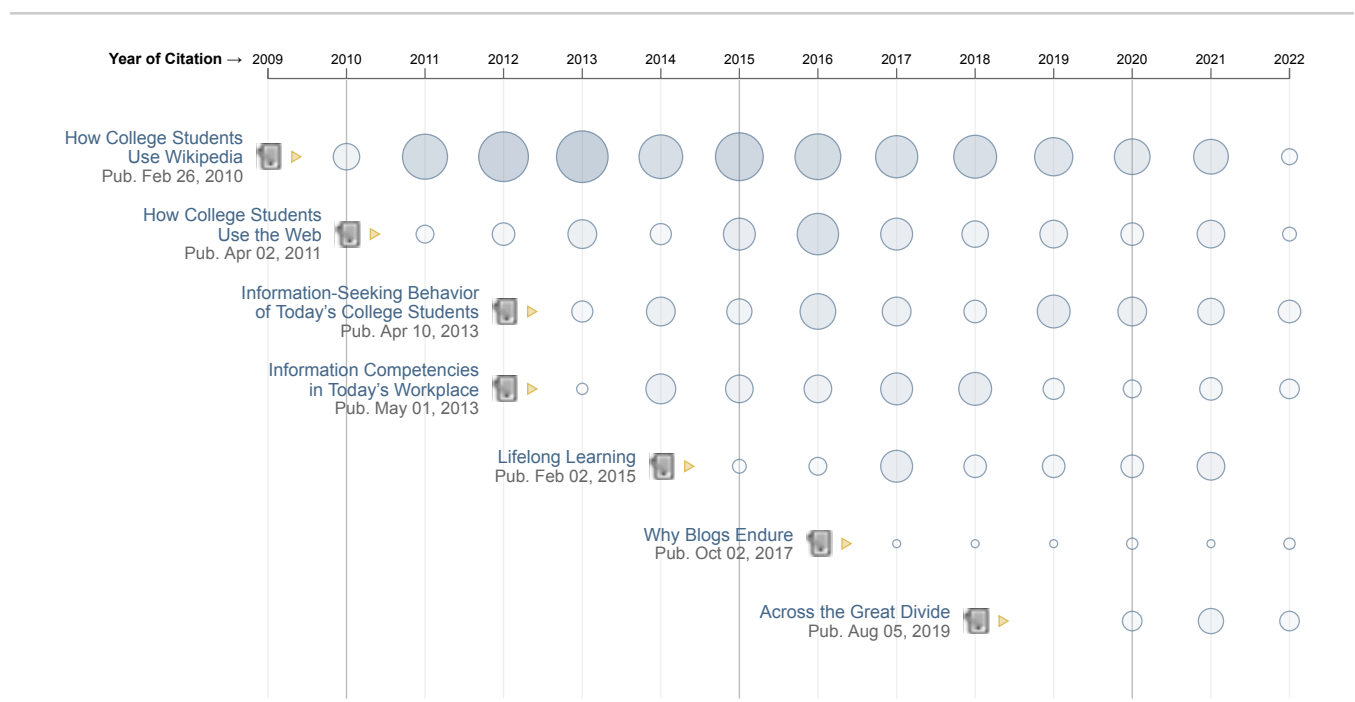
and evaluating information. Both findings have remained fairly constant across our own research reports as well as in studies conducted by other scholars, validating our original research.

By far, the majority of citations to PIL’s work come from venues intended for a readership by library and information science professionals, or even more narrowly, those concerned with information literacy. Our citation analysis, however, indicates that PIL’s work also transcends disciplinary boundaries. For instance, the report “How Students Engage with News” has informed work across a wide array of academic fields, such as anthropology, criminology, and political science.

To extend the reach and relevance of our findings, PIL has also published articles in peer-reviewed open access journals. These articles allowed us to focus on particular study data, and the journals, especially *First Monday*, enabled us to reach broader audiences interested in new media and the impact of the internet. As shown in Figure 2, while “Truth be Told” is the most frequently cited report, the journal article “How College Students Use Wikipedia” was cited by authors writing in a wider array of disciplines. Other articles showed more similar citation patterns to the reports, although with fewer citations.

Figure 2: Citations to PIL Journal Articles over Time

Click the title of a journal article in the visualization below to see more details about how it has been cited across disciplines and countries over time.



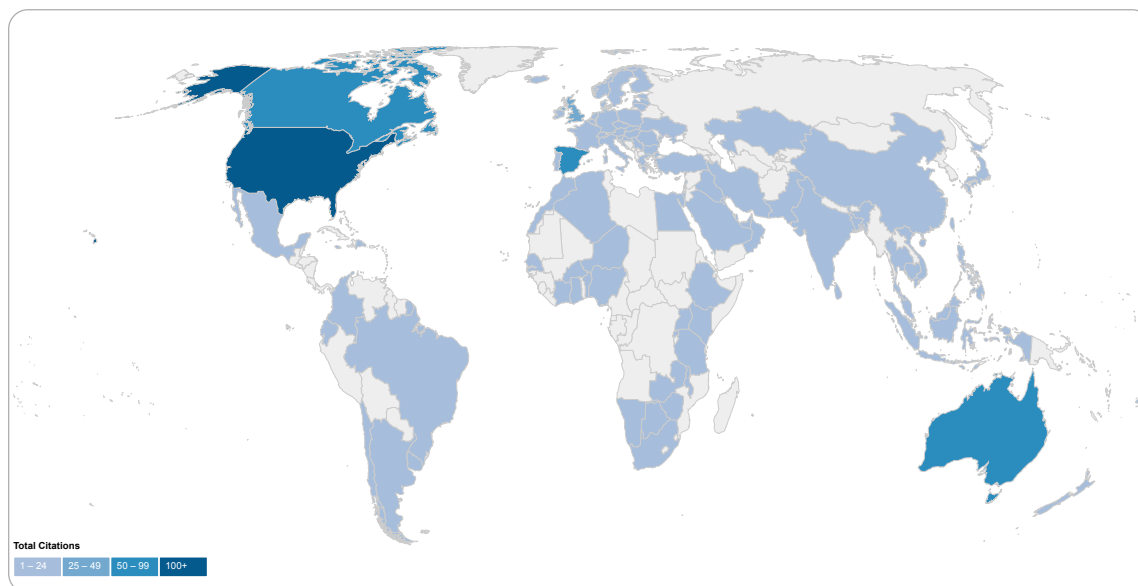
Not surprisingly, many of the disciplinary journals and theses where PIL's work has been cited have a distinctly educational theme. PIL reports and articles have been incorporated in general works on education, Scholarship of Teaching and Learning (SoTL) research, and resources for teaching in a wide variety of disciplines, such as the *Journal of Veterinary Medical Education*, *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias* and *Journal of Music History Pedagogy*.

## Geographic Reach

As well as crossing disciplinary boundaries, PIL's influence transcends international borders. The data shown in Figure 3 illustrate where PIL's reports and related research articles have been used to support the global expansion of information literacy research in the last decade.

*Figure 3: Citations to PIL Publications from across the World, 2009–2022*

Click and drag the slider on the timeline below to see how citations to PIL's publications have spread across the world over time. Hover over a country to see a total count of citations to PIL works from that country.



While it is not surprising that PIL citations tend to concentrate on work in North America, the United Kingdom, and Australia, there is considerable activity in other regions of the world. Both in the United States and internationally, PIL's work is frequently used to provide context to the results of smaller local studies, many of which adapted PIL survey questions.

In works citing PIL research, there are frequent allusions to a change in information literacy instruction from concrete interventions to idealistic aspirations. However, the story of PIL's instructional impact is not always as visible as its reach and is often far more direct. In countless conversations between conference sessions and in the corridors of our institutions, we have heard how PIL reports have provided librarians with the data they needed to develop information literacy instruction that aligns more closely with student needs.

For example, as Thomas Mackey, Professor of Arts and Media at SUNY Empire State College explains, "As faculty, we often think that we need to create absolutely everything for our courses from scratch but that's not the case; PIL's report on algorithms, trust, and personal privacy provided an invaluable Open Educational Resource (OER) for teaching and learning for developing informed and collaborative participants for today's evolving information environment."<sup>7</sup>

There is further direct evidence that illustrates these practical applications of PIL work, such as the introduction of algorithmic literacy into existing credit courses,<sup>8</sup> the development of online tutorials based on PIL resources,<sup>9</sup> and planning materials that draw on PIL research and recommendations to advocate for changes in policy.<sup>10</sup> A scan for links to PIL's work at higher education and other sites quickly turned up over 100 references to various PIL works across a number of countries. Many of those links appear on library sites meant to help faculty develop more effective research assignments or are offered directly to students through resource guides and assignments. PIL's research is also referenced in reports on local initiatives, planning processes, and program evaluations.

As a whole, our early reports present empirical data and include broad recommendations for practice to address the concerns expressed by students. These recommendations became increasingly direct and detailed in our later work as PIL evolved as a research institute. For instance, "Across the Great Divide" (2019) uses findings from the "News" study to provide a blueprint for incorporating critical understandings of the news in college classroom instruction across disciplines.

At the same time, "Covid-19: The First 100 Days of U.S. News Coverage" (2020) builds on findings from the "News" and "Algorithm" reports to develop an OER, complete with discussion questions and presentation slides. The discussion questions served as a model for resources released with the Provocation Series of essays, designed explicitly for use in teaching and learning. Our research has not only supported learning in a variety of ways; PIL itself was a learning organization, continually building on its past experience as new

questions were identified for the next research effort.

Overall, PIL's contributions to pedagogy rest on the explicit and accessible connections we have made between research results and teaching practice. As Steven Bell concludes in a 2013 *Library Journal* column: "We are all in the debt of PIL for exposing so many new insights into our students' research behavior — as well as recommendations and techniques we can put into our practice."<sup>11</sup>



## Part Four: How We Did It

### Research Design and Methodology

Grounded in the study of information-seeking behavior, PIL has drawn on rigorous social science methods to investigate how young adults learn, adapt, and devise problem-solving skills for finding and evaluating information. From online surveys and focus groups to content analysis and interviews, we applied a mixed methods approach to systematically collect and analyze both qualitative and quantitative data about students' information habits and preferences for course and everyday life research.

Throughout our work, we have defined *course research* in broad terms: from the moment students receive a research assignment through collecting materials until turning in the final assignment to an instructor. *Everyday life research* has included the information problems students solve in their daily lives: staying current on news and events, purchasing a product or a service, researching health and wellness questions, or retooling the skills they learned in college to meet new workplace challenges.

As the internet has changed and networked information infrastructures have become more complex, PIL expanded its investigations in recent years, exploring the challenges students encounter as they engage with news and negotiate an uncertain and deeply polarizing information landscape riddled with algorithms.

More than 250 U.S. four-year private and public colleges and universities have been part of PIL's Volunteer Sample. As funding became available, individual samples for studies were drawn from this pool. Students (and in some studies, faculty) were randomly selected from the larger population at each site to voluntarily participate in studies. Consistently, we have found the demographics of our survey samples reflect the broader student population as far as gender, majors, political affiliations, and grade point averages.

## Collaborative Approach

Behind the scenes, hands-on teamwork and communication have always been essential components of the PIL research process and work culture. The geographically distributed PIL team meets frequently and virtually to analyze, debate, and discuss the most significant takeaways at all stages. Teams participate in crafting and refining research questions. Data collection instruments are piloted, practice runs give our new team members the opportunity to grow comfortable with the interview process, and later they train others new to PIL.

When it comes time to analyzing results, we sift through the data together, weighing the evidence and looking for patterns. We use reliability testing to ensure consistent coding as team members analyze qualitative material and meaning emerges. Statistical tests are applied to account for uncertainty and error in the results.

Those who have followed PIL's research over the years are often surprised to learn that, unlike many research institutes, PIL doesn't have a parent institution, a physical headquarters, a large operating budget, or permanent staff. Instead, PIL is a nonprofit research institute,<sup>12</sup> made up of a shifting constellation of relationships, intentionally developed and nurtured by those working on the project. These collaborative relationships are rooted in a common culture that takes seriously the belief that knowledge construction is social and scholarship is a conversation. The attention to building strong, diverse relationships is also evident in our selection of research sites and our work with librarians in these institutions to expand and contextualize understanding of students' information seeking strategies.

For individual studies, a team of five to six members was assembled from various disciplines and experiences to bring a range of perspectives to bear on the project. Though practicing librarians were a mainstay, these teams also included researchers from other fields, including media studies, information science, statistics, journalism, data visualization, information design, and computer science. Our teams deliberately included members from a variety of geographic regions, disciplinary backgrounds, and institutional affiliations.

The teamwork begins with refining questions and developing instruments and continues through gathering and analyzing data to drafting and revising reports. In the later stages we seek feedback from external reviewers and in the case of the "News" and "Algorithm" reports, panels of experts to strengthen the work.

Finally, this collaborative process extends to reception and dissemination. Because the research is both open access and intellectually accessible, the results find a wide audience beyond libraries and the educational circles where the phrase "information literacy" is commonly used. The extensive use of explanatory videos, infographics, and most recently interactive visualizations have all served to make PIL's work accessible and appealing to a

broader audience.

For a lean research institute with a primarily virtual workspace, the bonds that have developed over the years are remarkably rich, strong, genuine, and long lasting. Working collaboratively and over time from one study to the next, we have been able to widen the definition of information literacy to include post-graduation experiences, news consumption patterns, algorithmic awareness, and news analysis practices. In this context, PIL has continually expanded the boundaries of information literacy as a concept as well as its potential stakeholders.

Reflecting on what PIL has learned since its launch in 2008, we share some parting wisdom in Table 2 , findings and takeaways that surfaced repeatedly in the research findings.

*Table 2: Lessons Learned from PIL's Research*

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**1 Start with students.**

To improve information literacy instruction and student success, we must pay attention to students' experiences rather than design learning activities rooted in assumptions, traditional teaching practices, and narrow academic goals. We have learned that students struggle to get started on research assignments; they follow a familiar path through the same resources to gather sources; they rely on peers and family members for help choosing sources; and disturbingly enough, after they graduate the vast majority feel they haven't been given a chance to practice asking questions of their own. Their limited repertoire of approaches to research, and the habits they practice to be "safe," is a response to their circumstances. If we truly want to foster greater information literacy among students, we need to rethink both the limitations of the situations we place them in and our approach.

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**2 Think long term.**

Transitions are important. While the transition from high school to college gets a fair amount of attention in higher education, and is often where information literacy is most systematically taught as a widely applicable set of skills, less focus is placed on the transition from college into post-graduate life. For information literacy to support lifelong learning, we need to pay more attention to what our long-term learning goals are and what we may be doing that interferes with meeting those goals.



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### 3 **Widen the lens.**

We hear from students that addressing their professors' expectations (tied closely to the incentive of grades) induces them to artificially limit the kinds of information they feel they can use, ignoring the information they encounter on a daily basis, and what knowledge and experience they may bring to the classroom. Further, the all-too-common emphasis on material that comes out of academic publication practices artificially divides the world of information into two separate spheres: information for school (which almost by definition is unlikely to be relevant after graduation), and everything else. Information literacy needs to combine an understanding of research output with a deeper investigation of how all types of information function in the world, not just in the classroom. We have found students pay attention to the news professors share, and they are deeply interested in the ways algorithms are influencing society. We also know from faculty interviews and from our analysis of PIL's impact that professors support the idea of learning how to find and use information of all kinds — but feel their training is specific to disciplinary knowledge patterns and practices. Information literacy planning must take into account learning opportunities for faculty who are confident about their disciplines' scholarship but may feel uncertain about venturing beyond it.

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### 4 **Develop students' agency.**

While students find workarounds to manage school expectations and reduce risk, these practical strategies don't always offer opportunities to engage on a personal level with research. Yet, when asked about how they interact with news or what they think about the way algorithms influence the information they encounter, we found students are curious and engaged and can articulate their own approaches to navigating information. Teaching and learning should intentionally strive to build students' sense of agency, giving students chances to practice framing important questions and to see the questions they may have and want to pose themselves.

## 5 Foster a collaborative culture.

Looking back, we believe the collaborative and open processes that PIL has engaged in to delve deeply into understanding students' experiences and to deliver research findings can be widely shared across both disciplinary and geographic borders. This type of collaborative culture offers promise for future efforts to study how best to promote effective teaching and learning about our complex information environment across a variety of settings and changing circumstances.

So much in the world of information has changed since PIL published its first report. In 2008, academic libraries were worried about the seeming simplicity of web search compared to their growing hodgepodge of electronic resources.<sup>13</sup> University faculty wondered what the heck to do about Wikipedia.<sup>14</sup> Google had just begun to track individual's searches to serve targeted ads,<sup>15</sup> Facebook struggled to turn a profit,<sup>16</sup> and YouTube won a media award for promoting democracy.<sup>17</sup> Though the world of information has undergone a transformation since PIL's founding, students tell us education for information literacy, for the most part, has not. Students continue to search for shortcuts, easy solutions, and familiar paths to meet the arcane demands of school assignments while taking a deep interest in the news but keeping a skeptical eye on the uses of algorithms to shape the information they encounter.

Yet clearly there's an appetite for reimagining information literacy in the academy in light of widespread concern about misinformation, fake news, and conspiracy theories. As our impact analysis has shown, that appetite is especially strong in the library community, but it reaches out across disciplines. And, while our research drew on the experiences of undergraduates in the U.S., it has found a global audience. This interdisciplinary and international engagement with PIL's research demonstrates that these reports have provided a solid foundation for both new research and innovative teaching practices; ones that are clearly needed. Given this interest, as our information environment grows ever more complex, we have confidence that educators and practitioners will continue to raise essential questions and propose creative approaches to information literacy awareness and education in a rapidly changing and challenging future. ■

*This report is dedicated in memory of Mark S. Pollock, Project Information Literacy's legal counsel, 2013 – 2021. \**

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## Supplementary Resources

There is a landing page with additional resources from the PIL Retrospective. All of these materials are open access and can be used without permission from PIL; to learn more, see <https://projectinfolit.org/publications/retrospective>.



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# Endnotes

1. “Information Literacy Competency Standards for Higher Education,” 2000, Association of College and Research Libraries (ACRL), <https://alair.ala.org/handle/11213/7668>
2. When Educational Testing Services tested 6,300 students from U.S. campuses in 2007, “only 13 percent could be considered information literate.” For further reading, see Irvin R. Katz, “ETS research finds college students fall short in demonstrating ICT literacy,” *C&RL News*, January 2007, 35-37, <https://crln.acrl.org/index.php/crlnews/article/viewFile/7737/7737>
3. Barbara Fister, “Information literacy and recent graduates: New from PIL,” *Inside Higher Education*, January 7, 2016, <https://www.insidehighered.com/blogs/library-babel-fish/in>
4. See, for example, Carole Kuhlthau’s 1991 article, “Inside the search process: Information seeking from the user’s perspective,” *Journal of the American Society for Information Science* 42(5): 361-371, and subsequent publications. Her initial study outlining an influential six-stage model of the search process had a study sample of 26 students enrolled at the same high school.
5. As a point of reference, nine out of 10 of the students participating in PIL research projects, where college students were subjects, were between the ages of 18-25 and only one in 10 were 25 or older.
6. This dataset is publicly available and may be of use to researchers both as a model for research on impact and for studies on long term trends in information literacy research. For more information, see <https://projectinfolit.org/publications/retrospective>.
7. Personal communication, August 5, 2022.
8. See for example this syllabus by Phil Sheail and Michael Gallagher at the University of Edinburgh for Information Literacies in Digital Education, <https://digital.education.ed.ac.uk/course/information-literacies-digital-education>
9. See for example Oklahoma State University’s Information Literacy Skills in the Workplace, <https://library.okstate.edu/tutorials/help-me-find-sources/information-literacy-skills-in-the-workplace>
10. See for example Understanding the Research Needs of Reed College Students, <https://www.reed.edu/e2s/goals/needs-assessment-report.html>

11. “What’s next for Project Information Literacy: Interview with Alison Head,” Steven Bell: From the Bell Tower, *Library Journal*, Dec. 4, 2013, <https://www.libraryjournal.com/story/whats-next-for-project-information-literacy-interview-with-alison-head-from-the-bell-tower>
12. PIL initially had an association with the University of Washington’s iSchool, and in 2013 incorporated as an independent nonprofit research institute, registered as a 501(c)(3), shortly after Dr. Alison Head, PIL’s Director, became a Research Fellow at the Berkman Klein Center for Internet and Society at Harvard University. In 2015, Head joined the [metaLAB \(at\) Harvard](#) as a Senior Researcher, a position she still holds along with running PIL.
13. Jenny S. Bossaller and Heather Moulaison Sandy, “Documenting the conversation: A systematic review of library discovery layers,” *College and Research Libraries* 78(5), 2017: 602-619, <https://crl.acrl.org/index.php/crl/article/view/16714>
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