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Developing and Implementing AI Expertise in Academic Libraries: Approachability, Education, and Reading the Room

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Abstract

Academic librarians may have a responsibility to answer the call for services, resources, and education surrounding artificial intelligence in higher education. Students and instructors struggle to balance ethical dilemmas with necessary skill-building, using AI in the classroom, as new tools are rapidly evolving. Libraries could be positioned in a supportive role for campus members who are optimistic about the impacts of artificial intelligence as well as those who have serious concerns. Companies in every industry will undoubtedly be looking for AI-competent graduates as ideal candidates for hire, which means colleges and universities must update their curriculum to address these skills. This essay identifies five areas in which academic librarians can establish and implement AI expertise: collaboration, approachability, new literacy development, tangible resources, and multi-disciplinary teaching. The author provides an overview of opportunities and concerns currently dominating artificial intelligence conversations, how academic librarians are well-suited to address these topics, and why coming to a consensus on appropriate AI use is nearly impossible.

Keywords: AI literacy, artificial intelligence, outreach, professional development

Introduction

Artificial intelligence, particularly text and image generators such as ChatGPT and Dall-E, could arguably be considered the biggest disruptor to higher education since the internet itself. Students and instructors alike are struggling to keep up with these rapidly regenerating and evolving tools. Outside the classroom, industry professionals are eagerly adapting AI to streamline production and decrease staffing needs, but inside the classroom is a different story. With issues such as cheating, data security, bias, and intellectual property still largely unresolved, many academic professionals find it difficult to encourage the use of AI for education. Early adopters likened ChatGPT and similar tools to a calculator or Google Search, arguing that artificial intelligence is merely another tool designed to get users from one place to another more efficiently and successfully. Skeptics countered that even calculators and spell-check are not typically allowed in school until students have mastered the basics, which has led to an ongoing discussion about the extent to which different artificial intelligence software should be permitted at different educational levels. Despite instructors' concerns about the loss of traditional learning, however, using AI tools effectively and ethically is clearly a skill set all its own. Since higher education's goal is to prepare students for the workforce, institutions are obliged to help develop those skills.

The big question is how. How can instructors equip future professionals with the tools necessary to succeed in their respective industries without sacrificing scholarly competencies such as reading and writing comprehension, research skills, and information literacy? Enter the academic librarian. Libraries have always been an essential source for developing new literacies and teaching new

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information concepts. From keyword searching to identifying credible publishers, librarians have helped students hone skills applicable to both academia and the real world. Therefore, they are perfectly positioned to contribute to artificial intelligence initiatives and conversations in higher education. This essay will establish contextual information surrounding a few major AI controversies, explain five ways in which academic librarians can help implement AI education in their institutions, and discuss why there can never be a true consensus on the value and ethical implications of artificial intelligence.

Background: "First" Impressions of Artificial Intelligence

Though generative AI emerged relatively recently, most of the technology-literate population have likely been using some form of artificial intelligence regularly for at least the last decade or two. Autofill and autocorrect, GPS, scheduling assistants, and photoshop are just a few examples of how artificial intelligence is not entirely new. What is new is its ability to accurately mimic human behavior – write essays, summarize literature, propose solutions, hold conversations – and teach itself how to improve those skills without direct human intervention. For this reason, AI has become significantly more useful in the last five years, particularly when it comes to daily administrative tasks.

Applicability in the Workplace

World Economic Forum's 2020 Future of Jobs report estimated half of employees will need to adapt their skills to new AI-driven trends, and over one-third of Deloitte's State of AI in the Enterprise 2022 report respondents indicated plans to increase AI-related investments (as cited in Ahramovich, 2023). According to Mercer's 2024 Global Talent Trends report, over fifty percent of executives predict a "10-30% productivity boost" through increased efficiency and higher-quality work as a result of artificial intelligence, intending to redesign work models around such augmentation (p. 7, 10). Business Insider has published several pieces on examples of AI use in the workplace:

- Writing and Editing Emails (Jackson, 2023)
- Fixing Code (Kim, 2023)
- Screening Job Applicants (Mattel, 2023)
- Fine-Tuning Resumes and Cover Letters (Nolan, 2022; Mok, 2023a)
- Generating Test Questions (Mok, 2023b)
- Writing Performance Reviews (Callahan, 2023)
- Drafting Marketing or Promotional Materials (Zinkula & Mok, 2024)

One article in particular argues that AI-competent job candidates are more likely to be hired because they "might be more productive, creative, and open to change than those without AI expertise" (Mok, 2023, sec. 2 para. 2). McKinsey Global Institute also released a report on AI in the workplace, predicting a significant increase in automation that will shift labor positions but not necessarily eliminate jobs outright, as long as hiring practices and professional development opportunities adapt to competency-based skill building rather than relying on traditional qualification and productivity models (Ellingrud et al., 2023).

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Questions and Concerns

To effectively implement artificial intelligence across industries, companies must rethink their hiring procedures and recruitment strategies. Similarly, if colleges and universities intend to produce desirable job candidates in these new areas, instructors must rethink how they measure intelligence and what they teach in their courses. This is a huge ask, especially because AI is by no means fool-proof. As with any new technology, there is much to be debated regarding appropriate use and reasonable boundaries.

Regarding Ethics

The biggest buzzword surrounding artificial intelligence and education is cheating. When tools such as ChatGPT proved their ability to write a passable essay, many institutions scrambled to create policies prohibiting the use of artificial intelligence and invested energy into detection software which were often unreliable (Fowler, 2023; Wiggers, 2023; University of Kansas, n.d.). Many scholarly journals do not allow for AI-generated text or image in author submissions, but the American Psychological Association (APA) published guidance on citing ChatGPT last spring, which indicates there may be an argument for using artificial intelligence in professional publications as long as the extent of its contributions is made clear (McAdoo, 2023).

However, that does not solve the issue of intellectual property. The Authors Guild (2023), which has spearheaded numerous lawsuits against OpenAI for using authors' works to train ChatGPT without their consent, argues that literature composed wholly or in part by artificial intelligence "threatens to crowd the market for human authored books" (para. 3). Some early demonstrations of text- and image-based artificial intelligence in higher education included a warning that any experimentation would inevitably be used to help the software improve itself. OpenAI includes a note about this when users sign up for ChatGPT, and a Data Controls FAQ page was recently updated with directions to disable model training for future conversations (para. 2). This raises significant concerns for higher education.

Regarding Privacy

One problem with AI detection that has nothing to do with its effectiveness or accuracy is its unwitting theft of student data. Regarding intellectual property, running a student's paper through any artificial intelligence tool essentially forfeits ownership of the work. The same goes for lesson plans, draft emails, data sets in need of cleaning, code for a start-up website, and exam questions. Any sensitive or identifying information included in artificial intelligence prompts becomes vulnerable. Earlier research on the impacts of advanced technologies lumped big data and artificial intelligence together when identifying emerging knowledge and skills needed in the workforce (Johnson et al., 2021). Though data literacy and AI literacy have each evolved into their own distinct competency areas, the link between data science skills and artificial intelligence skills is still helpful for understanding the privacy and security risks inherent when using tools like ChatGPT. Raw data can easily fall victim to misuse, misrepresentation, and misinterpretation. Data scientists must understand not only how to effectively analyze data, but also how to ethically collect and communicate it. Similarly, students must learn how to generate desired content with AI

through prompt engineering, but also when and how AI tools can be used without compromising intellectual property or sacrificing sensitive information.

Regarding Critical Thinking

Beyond creative or intellectual property and personal data loss, one argument against embedding artificial intelligence in higher education is that it could become a negative substitute for critical thinking skills. First-year writing instructors at some research institutions have encouraged AI use for only certain parts of an assignment, such as brainstorming with tools like Fermat and Elicit (Watkins, n.d.). Others have proposed using artificial intelligence to assist with textual analysis, discussion questions, and background information – with the caveat that there should be some guaranteed original component such as a handwritten diagram or comparative reflection (Harvard University, n.d.). One instructor permits AI use but holds students personally responsible for any incorrect or unethical information submitted, one tries to build trust and encourage good behavior by implementing flexible deadlines, and one uses AI chatbots to help students practice empathy (McMurtrie & Supiano, 2023). While these examples represent a careful balance between traditional learning and artificial intelligence, they also compromise parts of the research and writing process that still have value, such as close reading and communication.

Critical thinking is closely related to soft skills, which are defined by Forbes Advisor as "abilities that allow individuals to effectively interact with others in a professional setting"; examples include communication, creativity, and emotional intelligence (Danao, 2023, para. 3). Using AI tools such as ChatGPT to streamline workflows, speed up idea generation, and cut down on tedious administrative tasks such as responding to emails can go a long way toward increased productivity. However, replacing creative or interpersonal tasks on too large a scale may diminish critical thought processes. If the only way to combat this is to build in a fail-safe that relies on uber-traditional learning restrictions, such as blue-book exams or compare-and-contrast reflection essays, it is worth questioning how artificial intelligence could be better represented in those areas.

Libraries and Artificial Intelligence

As leading entities in finding and using information, academic libraries are perfectly positioned to provide services and resources geared toward artificial intelligence use. Even without mentioning AI in their strategic plans, many universities offer related coursework or programming, and yet their libraries did not appear to be significant contributors in an early environmental scan (Wheatley & Hervieux, 2019). Whether librarians explicitly support or oppose the use of artificial intelligence in higher education, it is impacting their profession as much as any other. In some ways, AI has the power to replace jobs entirely, but the most immediate changes to the workforce will involve a shift in current positions. Libraries are not exempt from this. Research has identified digital search and retrieval, cataloging, processing, and circulation services as areas most likely to be significantly affected by artificial intelligence (Rifqah et al., 2022). While individual librarians may have mixed views on the positive or negative nature of these anticipated changes, their role may be to provide AI services and resources that benefit students entering the workforce regardless of their personal views.

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Establishing AI Literacy: Strategies for Academic Librarians

It has been established that artificial intelligence can be a sensitive topic in higher education, and understandably so, but it is necessary to implement these technologies if students are to be adequately prepared for an increasingly automated workforce. Though libraries may not have been at the forefront of the artificial intelligence movement, they now have the opportunity to play a major role in AI literacy education. The following strategies may help academic librarians further artificial intelligence initiatives at their institutions.

Collaborate with Key Players

Academic librarians should identify and connect with other campus groups or individuals who are already implementing artificial intelligence in their respective fields. Attending professional development workshops, discussions, and presentations are great ways to become part of the AI community. Building related skills and expertise individually, in addition to communicating with other parties investing time and energy into artificial intelligence initiatives, may help librarians develop services and resources in accordance with campus community needs. Collaboration has also been known to benefit the scholarly community at large, though the question of whether research is fueling AI innovation or AI is demanding research catch up is still unclear. As Shao et al. (2020) explain, "collaboration and competition in the field of artificial intelligence progress its rapid development... [and] its rapid development calls for closer collaboration among research institutions" (p. 69735). Therefore, librarians must be mindful of how and where opportunities are coming from, but should seek to get involved, especially in cases where their existing expertise add value.

Libraries can identify potential partnerships across campus through teaching and learning centers, student success organizations, communities of practice, and student conduct offices. Subject librarians may also consider analyzing syllabi for artificial intelligence policies and assignments set by specific instructors or consulting with local businesses using AI in their workforce. For example, professors in the UK have looked at ways to apply artificial intelligence to preserve born-digital materials and expand access to digital archives, identifying trust and collaboration as key components in the process (Jaillant & Rees, 2023). By working with groups proactively using artificial intelligence tools, for a dedicated course or otherwise, librarians can offer more relevant guidance on privacy and ethics concerns. When instructors are more interested in limiting AI use, librarians can focus their efforts on balancing risks with necessary awareness, as well as provide alternative learning opportunities and materials for students. In either case, building relationships and trust with other campus groups may help academic librarians establish themselves as AI literacy experts, in addition to giving them a platform for promoting other services and resources.

Begin with the Basics

Perceptions of artificial intelligence and its applications in higher education vary wildly even within individual institutions. Therefore, academic librarians positioning themselves as AI resources should always be prepared to start with the simplest explanation for these tools. Plenty of instructors may still lack a basic understanding of what large language models are or how

machine learning works. Others may have knowledge of specific tools and applications within their field but fail to see the efficacy of AI in other industries. Offering a library introduction to artificial intelligence can be a great starting point for more in-depth conversations and allows librarians to make connections with instructors from all levels and disciplines, taking some mystery and trepidation out of AI-inclusive teaching. While it may be easy to assume students are way ahead of their professors when it comes to using artificial intelligence, their understanding may be limited as well. Hornberger et al.'s (2023) basic AI literacy test found that most students exhibited some understanding of artificial intelligence, but their study was likely limited by the fact that most of the participants were volunteers from technical programs and ChatGPT was released after the fact, meaning it is still not safe to assume prior knowledge.

A few key components of successful AI introductions are demystification, approachability, and compromise. Instructors should feel like the library is a trusted partner with a vested interest in helping their students succeed both in their classes and in their future careers. All new technology comes with skepticism, and many of the concerns surrounding artificial intelligence are valid, so it can be the academic librarian's job to make AI as transparent and empowering as possible. Librarians may point out how artificial intelligence is already being used in the workforce, give examples of AI technologies throughout history, and acknowledge primary classroom concerns along with possible solutions. This can be accomplished through open discussion, interactive games or polls, hands-on demonstrations, Q&A with active AI users, or simple lectures. The point is to find common ground with artificial intelligence tools and share knowledge beneficial to the campus community as a whole, not take sides or diminish instructors' perspectives. Librarians may correct misconceptions about AI and its applicability in higher education, positive or negative, but address concerns with compassion rather than condescension. In some cases, AI adoption will require baby steps – libraries should be mindful of this and plan education initiatives accordingly. In others, artificial intelligence may even be used to conduct its own teaching, as is demonstrated by Chen et al.'s experiment using a chatbot to teach AI basics in 2022. In the future, perhaps teaching students how to use artificial intelligence will become akin to teaching them how to find a physical book in the stacks.

Embrace Interconnectedness

Something that may help librarians exert their AI expertise and build meaningful instruction is the close relationship between AI literacy and other information concepts. Libraries are already hubs for digital, data, news, and media literacy. Though artificial intelligence made only limited appearances in related digital literacy frameworks as of 2022, according to Tiernan et al. (2023), librarians such as Gross and Rogers (2023) have presented compelling arguments for the translation of information literacy skills to AI literacy needs. Libraries provide resources on critical thinking, identifying appropriate sources, and conducting effective research every day. Artificial intelligence services and resources can fit into this fold very easily.

AI and Information Literacy

Information literacy is an important reference point when thinking about artificial intelligence because it is characterized by a series of interconnected skills. Artificial intelligence can also be a

key component of misinformation or disinformation, as an agent of misrepresentation (Tiernen et al., 2023). Information-literate students know how to find the information they are looking for, what to look for when accessing it, if it meets quality criteria, what it can be used for, and how they can communicate or redistribute it appropriately. AI-literate students will need to have a good grasp on prompt engineering, terms and conditions for software use, reliable tools, reasonable applications, and appropriate citation methods. The thought processes behind these skill sets go hand in hand. For introductory artificial intelligence sessions, librarians may consider adapting information literacy diagrams, calling back to instructors' previous assignments if applicable.

AI and Data Literacy

Researchers have previously linked artificial intelligence with data science, which gives librarians a good entry point when working with certain student and instructor populations. From a keyword mapping perspective, for example, big data and artificial intelligence are both directly tied to machine learning (Wang, 2020). Though definitions of data literacy are more varied than for information literacy, notable skills include: data visualization, data cleaning, data analysis, data preservation, data collection (Carlson et al., 2011; Wolff et al., 2016; Burress, 2022). Many text- and image-generative artificial intelligence call for a more simplified approach to these tasks. Knowing which tool to use and what kinds of descriptors to prioritize to generate acceptable results, for example, may be an extension of the decision-making required when choosing a graph to visualize data. Access models, stored chats, and ownership policies are similar factors to what must be considered when making a data preservation plan. Everyone can benefit from some sense of familiarity when learning a new concept, and librarians can capitalize on that when introducing AI literacy.

Provide Tangible Resources

Though face-to-face instruction and live sessions may be preferable for discussing new initiatives in higher education, building awareness and support for something as impactful as artificial intelligence may also include ready-reference materials that can be revisited by individuals at any time. Singh and Riedel (2016) emphasize the importance of textual descriptions and visual materials in particular, adding that students should be able to interact with AI materials in as seamlessly an environment as possible. Both digital and physical objects can serve as touch points for students or instructors struggling to use artificial intelligence effectively. Librarians have previously demonstrated instruction approaches combining face-to-face teaching with electronic supplements (Gross, 2023). No format will be perfect for all campus populations; libraries may try to develop different options for different audiences.

For Instructors

Brief tutorial videos – how to install and set up AI software, sample AI-generated lectures, interviews with AI professionals – may be good for instructors who can dedicate time to professional development. IBM, Google Cloud, DeepLearning.AI, Microsoft, and some individual universities provide educator-specific training modules on artificial intelligence (Coursera, 2024). Videos are beneficial because they can be kept on a shared drive, viewed asynchronously or as

needed, and paused to follow step-by-step instructions. Training materials such as these should be made available before the start of the semester, though, especially if they cover AI implementation in assignments or course sites. Instructors may also benefit from sample assignments using artificial intelligence tools. Examples may include things like think-pair-ChatGPT-pair-share (Finley-Croswhite, 2023; Montana State University) and AI image remixing or comparing (Wller, 2023; Yousufi, 2024). The goal of AI literacy implementation is not to create more work for instructors, so professional education materials should be as straightforward and practically applicable as possible.

For Students

Like instructors, students come from a range of backgrounds, and thus have varying experience levels with artificial intelligence. Libraries can provide materials catered to beginner, intermediate, and advanced understandings of AI. Druga et al. (2022) recommend developing artificial intelligence resources with cognizance of different students' prior knowledge levels and access to technology, including directions for use and societal contexts, and building in opportunities for feedback. Librarians can also consider tailoring educational materials to their individual liaison areas, particularly for creative disciplines, and partnering with other campus entities to host AI-related events. Take-home materials such as handouts, flyers, and best practice lists also have numerous benefits. Libraries may put up flyers featuring AI tools to promote a study session, upload a list of prompt editing tips to their website, or provide business cards for campus experts at the circulation and reference desks.

Adapt Instruction Across Disciplines

The most important thing to remember about AI instruction, particularly for academic librarians, is that no two disciplines have the same point of view. Different industries encourage, tolerate, or prohibit AI use for different reasons. Librarians should neither invalidate instructor concerns nor bolster instructor overconfidence. This is what separates AI literacy from other competencies such as information literacy – which has more widely accepted rules (American Library Association, 2015) – one community's cheating may be another's efficiency.

AI in Humanities – Creating is the Point

Reading- and writing-based disciplines are more likely to emphasize the finishing and polishing capabilities of artificial intelligence. For British literature students writing a paper on major themes in Jane Austen's works, for example, it is more appropriate to use ChatGPT to generate an outline based on their original ideas than to have it write a list of themes upfront. These students may also benefit from AI "when they search archives or take 'big data'-focused digital humanities courses" (Hutson et al., 2022, p. 3966). Art or creative writing instructors may prohibit AI in the first-draft or sketching stage but encourage students to use Fotor to replicate and compare subjects. Hutson et al. (2022) also note that designers now have an enhanced ability to search for stock images, edit photo or video materials, or experiment with the same subject in different styles. History, linguistics, gender studies, or psychology students may be asked to test the originality of their theses by using Elicit to search for or analyze existing research. Librarians should always be mindful of the instructor's priorities and intent of the assignment when working with these groups.

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In discussion-based disciplines, using artificial intelligence even for something as introductory as brainstorming or posing counterarguments might defeat the purpose of the course, if learning how to think is the main objective. Libraries can support these types of programs by teaching AI as an editing, promotional, or fine-tuning tool for existing ideas or research. AI literacy education in these areas may spend extensive time on ethics, creative or intellectual property, and copyright discussions.

AI in STEM – Priorities in Problem-Solving

STEM students may find value in AI-generated text, particularly for writing reports or summarizing findings for general audiences, as well as more technical AI capabilities such as fixing code. The interactive piece of artificial intelligence is particularly important in these disciplines, according to Hutson et al. (2022), because it can supplement traditional learning and provide additional feedback dependent on individual student interactions. Because these students complete practice-based projects, instructors may more frequently pull artificial intelligence tools and guidance from industry leaders. A first-year writing instructor may be horrified by students using Quillbot to generate comments for class discussion, but an upper-level science instructor may argue their ability to run an experiment correctly is more important than describing it. Students may spend months developing code, only to realize it has one minor flaw – AI can identify that fault without the group having to start over (CodeInterview, 2024). STEM students may value results and functionality over process and explanation. Librarians teaching AI literacy in these areas can embrace technical assistance tools, which typically require more user experience and knowledge. Students may also need an in-depth explanation of how their input can become public when running works through artificial intelligence.

AI in Human Services and Consumer Sciences – Efficiency Above All

Consumer sciences and applied human services such as education, health care, and social work interact closely with the general public. Therefore, these students need artificial intelligence that can increase productivity without sacrificing quality of care and simulate real-world environments, as well as provide useful feedback (Hutson et al., 2022). Much of the automation happening in these fields relates to administrative work – supply-chain management, inventory processing, web portal improvement, customer service chat bots (Burton, 2024) – so students may be asked to use their education in new ways upon entering the workforce. Design students may use Interior AI to visualize ideas for a project proposal, social work students may use Lingostar to practice conflict resolution through therapy role-play, and nursing students may use Limbiks to generate flash cards while studying for final exams. Because applied and consumer sciences include many different types of majors, librarians may need to be well-versed in a variety of AI tools and willing to expand their expertise on an as-needed basis. Many of these disciplines also have a business component, which means artificial intelligence can play a role in client relations and consumer education materials, so libraries serving these populations should remain vigilant in AI privacy and security instruction as well.

Discussion: Challenges in Inconclusiveness

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Not every librarian will have reason to develop extensive AI expertise over the course of their career, even in academia. However, artificial intelligence is at work in information sciences as much as any other industry, so there is a responsibility to at least be aware of its capabilities. This is difficult, because new technologies have proven to be rapidly evolving and expanding, so keeping up with AI will likely prove to be an impossible task. Free tools assigned by instructors for certain classes may disappear from one semester to the next, replaced by a different model or regenerated behind a paywall. New detection methods may emerge, then be labeled inadequate. Students may come to higher education with the idea that generative artificial intelligence is today's technological miracle or the next great evil. Academic librarians may need to be prepared to address problems and concerns as well as provide services and resources guiding proper use. This task is not wholly new to libraries; emerging literacies have been a staple of the profession for years.

What is unique about artificial intelligence in higher education, from an academic library perspective, is the inability to decisively argue for or against it. Some industries are using AI extensively, and therefore expect graduates to come in with those skills. Others are warring with AI software companies for rights to creative and intellectual property, encouraging users to reject artificially generated content. Both types of students are present in colleges and universities. Both communities can benefit from AI literacy. Librarians' personal views may be influenced by their educational backgrounds or work experiences, but their instructional support can be informed by disciplinary contexts and adapt to evolving trends.

Conclusion

Academic librarians can support artificial intelligence initiatives through collaboration, education, concept mapping, supplementary materials, and adaptation. Connecting with other campus partners to expand services and resources will ensure the library is at the forefront of innovation. Making AI concepts user-friendly for students and instructors at all levels will create a culture of shared learning that does not alienate less experienced users. Information and data literacy concepts offer a familiar foundation from which to teach AI literacy. Providing easy-to-use resources that can be accessed independently will enable continued learning and improvement as new technologies continue to evolve. Finally, tailoring content to disciplinary needs and being open-minded about different attitudes regarding AI use will allow libraries to effectively serve the maximum amount of current and future professionals. Ethical considerations, career opportunities, and critical thinking should be at the forefront of all AI literacy services and resources. Artificial intelligence is an awe-inspiring tool with infinite possibilities, but it can fall victim to misuse like any other resource.

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