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Transforming academic librarianship through AI reskilling: Insights from the GPT-4 exploration program

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ABSTRACT

The emergence of Artificial Intelligence (AI) in academic librarianship necessitates a corresponding evolution in librarians' competencies. This case study examines the GPT-4 Exploration Program at the University of New Mexico's College of University Libraries and Learning Sciences, which aimed to foster a culture of continuous learning and innovation by providing hands-on experience with advanced AI technology. Drawing on Malcolm Knowles' Adult Learning Principles, the program's structure and implementation are analyzed, highlighting the diverse range of projects undertaken by participants. The study reveals that effective AI reskilling involves cultivating a culture of continuous learning, adaptability, and collaborative exploration, anchored in a practical, hands-on approach. Participants reported significant improvements in AI literacy and confidence in applying AI tools to their work. The program's success demonstrates the potential of well-structured reskilling initiatives in empowering library professionals to navigate the evolving landscape of AI in academic libraries. The case study offers insights and strategies for other academic libraries seeking to develop AI reskilling initiatives, emphasizing the importance of fostering a supportive learning environment, addressing technical and ethical challenges, and ensuring the long-term sustainability of such programs. The GPT-4 Exploration Program serves as a blueprint for integrating AI into library services and operations.

Introduction

The emergence of Artificial Intelligence (AI) in academic librarianship represents a paradigm shift, set to profoundly influence information management, dissemination processes, and library operations (Cox & Tzoc, 2023). This transformation necessitates a corresponding evolution in librarians' competencies, making it crucial for professionals in this field to engage in continual reskilling to maintain relevance and efficacy in an increasingly AI-driven work environment.

In the modern professional landscape, reskilling goes beyond the mere acquisition of new technical skills. It encompasses a holistic approach to learning, involving the development of digital literacy, problem-solving abilities, and the adaptive mindset needed to navigate the rapidly changing technological environment (Baporikar, 2020; Gorski et al., 2023; Jaiswal et al., 2021). For academic libraries, this is more than just about keeping pace with new tools and systems; it is about reimagining the role of librarians and library services in an increasingly AI-driven educational ecosystem. The urgency for reskilling is further underscored by the expanding scope of library services, which now include data management, digital scholarship, and user experience design, all areas deeply intertwined with AI technologies.

In response to the pressing need for librarians to develop proficiency in AI applications, the GPT-4 Exploration Program was conceived at the College of University Libraries and Learning Sciences, University of New Mexico. The key difference between the free ChatGPT and the paid version, GPT-4, lies in their underlying language models. ChatGPT is based on GPT-3.5, which is a powerful AI language model but has limitations in terms of its knowledge cutoff date and reasoning capabilities. On the other hand, GPT-4 is a more advanced language model that offers improved performance, enhanced language understanding, and the ability to handle more complex tasks. GPT-4 has a significantly larger knowledge base, allowing it to provide more accurate and informative responses across a wider range of topics. Additionally, GPT-4 can process and generate longer text passages, enabling more in-depth conversations and detailed outputs. GPT-4's advanced capabilities make it a more powerful tool for users who require higher levels of accuracy, consistency, and depth in their AI-assisted tasks. The program sought to explore the practical applications of GPT-4 in library settings, offering a unique opportunity for library professionals to engage with, learn from, and adapt AI technologies to their work contexts.

A study on AI literacy among academic library employees conducted in 2023 (Lo, 2024) revealed that less than 7 % of respondents paid for the premium version of any generative AI tools, and those who paid for the premium version had higher levels of AI literacy than those who did not.

Therefore. the GPT-4 Exploration Program was a concerted effort to

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provide the opportunity for faculty and staff to try the more sophisticated version of the tool, and aimed to foster a culture of continuous learning and innovation within the college. Emphasizing hands-on experimentation, collaborative problem-solving, and reflective practice, the program aligned with the broader objective of equipping library professionals with the tools and mindsets necessary to lead in the AI era. By examining this case study, we aim to provide insights into the process, challenges, and outcomes of the program, offering valuable lessons for other academic institutions looking to embark on similar reskilling initiatives.

This case study will explain the theoretical framework underpinning the program, drawing on Malcolm Knowles' Adult Learning Principles to understand the design and implementation of the reskilling initiative. It will also explore the program's structure, participant experiences, and the strategies employed to facilitate effective AI reskilling. Furthermore, the study will discuss the challenges encountered during the program and the strategies used to overcome them. Finally, it will consider the limitations of the case study, the long-term impact of AI reskilling initiatives, and the ethical considerations surrounding AI adoption in academic libraries looking to embark on similar reskilling initiatives.

The imperative for AI reskilling in academic libraries

The need for continuous skill development among library professionals has never been more pressing. AI technologies, while offering a plethora of benefits, also present new challenges and require a different set of competencies (Cox, 2022). Librarians should possess a skill set that combines traditional library science with digital literacy, including an understanding of AI and its applications (Cox & Mazumdar, 2022). Additionally, academic librarians play a crucial role in developing ethical AI policies, benefiting from their expertise in information ethics and privacy, and addressing challenges like limited awareness and institutional resistance (Michalak, 2023).

In the first large-scale study on AI literacy among academic library employees (n = 760), Lo (2024) found that respondents only had a modest level of AI literacy overall. However, they showed a strong appetite for professional development and training to improve their literacy level and confidence. This gap between the recognition of AI's importance and the readiness to implement it underscores the imperative for AI-focused reskilling in the library sector.

Reskilling initiatives need to focus not only on the technical aspects of AI but also on its ethical, legal, and social implications (Lo, 2024). For example, understanding data privacy concerns and the ethical use of AI in information management is as crucial as technical proficiency. Moreover, the pace of technological change necessitates that reskilling is not a one-time effort but a continuous process. Library professionals must be equipped to adapt to ongoing advancements in AI, which can be facilitated through professional development programs, workshops, webinars, and collaborative learning environments (Andersdotter, 2023; Weiler, 2018).

The benefits of AI reskilling are manifold. Proficiency in AI allows library professionals to automate routine tasks, freeing up time for more complex and creative work. It enables libraries to offer more personalized services to users, such as AI-powered recommendation systems or virtual assistants for research support (Cox & Tzoc, 2023). Furthermore, it positions libraries as hubs of digital literacy and innovation, playing a pivotal role in educating users about the potential and challenges of AI.

However, the path to achieving this proficiency is not without challenges. Library professionals come from diverse backgrounds, with varying levels of comfort and experience with digital technologies. Tailored reskilling programs that account for these differences are essential. The rapid integration of AI into library services and operations creates a new need for reskilling in the sector.

The structure of the GPT-4 Exploration Program at UNM

The GPT-4 Exploration Program was designed by the author to provide academic librarians and staff with the opportunity to explore, experiment with, and learn how to use GPT-4 for various academic and research purposes. The program's primary objective was to enhance the university's capabilities as an organization by fostering a culture of innovation and collaboration among its librarians. The three-month program was carefully structured to align with Knowles' Adult Learning Principles, ensuring that participants were engaged, motivated, and equipped with the necessary skills to effectively integrate AI into their work.

To create a diverse and inclusive learning environment, the author, who is the Dean of the College of University Libraries and Learning Sciences, initiated a call for ten volunteers interested in exploring GPT-4 for their work. The college would pay for their subscription fees ($20/month) of this premium version of ChatGPT. From the 14 applicants received, 10 participants were selected from various backgrounds, departments, and levels of AI experience, reflecting Knowles' emphasis on the importance of a diverse learning community. This approach aimed to facilitate peer learning and the sharing of unique perspectives throughout the program.

The program was conducted between June and September 2023, and was divided into three distinct phases (Appendix A), each designed to address specific adult learning principles. The two-week Introductory Phase focused on providing participants with foundational knowledge of AI basics and GPT-4 functionalities through video and in-person tutorials and workshops. During this phase, participants were encouraged to develop their individual projects, which they would work on throughout the program. This initial phase allowed participants to understand the relevance of AI skills in their work and align their learning objectives with their professional goals.

The eight-week Exploratory Phase was characterized by hands-on, project-based learning, where librarians developed and implemented their AI projects. Participants were assigned to work on individual or collaborative projects, utilizing GPT-4 to address challenges or explore opportunities in their respective fields. Bi-weekly group meetings were scheduled to facilitate the sharing of progress, discussion of challenges, and seeking support from peers. Throughout this phase, participants were encouraged to document their experiences, including successes, failures, and insights gained from using GPT-4. This approach fostered a collaborative learning environment and allowed participants to learn from each other's experiences.

During this period, the author, who facilitated the bi-weekly discussion sessions, organized a discussion meeting with librarians from the University of Oregon libraries who were also interested in learning more about generative AI uses. The sharing of tips, experiences, lessons learned proved to be a stimulating session.

The program concluded with a two-week Evaluation and Sharing Phase, which provided participants with the opportunity to reflect on their learning journey, internalize their experiences, and share insights with colleagues. Participants presented their projects and findings to the group and the college, focusing on the impact of GPT-4 on their work and potential applications within the university. Feedback was collected from participants to evaluate the program's effectiveness and identify areas for improvement. To further disseminate the knowledge gained, a presentation at the All-College Meeting was organized, inviting all faculty and staff to attend, where participants shared their learnings and demonstrated the potential of GPT-4 in various academic and research settings.

The evaluation of the program involved assessing the quality and relevance of the projects completed by participants, measuring the degree to which GPT-4 contributed to the project's success, and evaluating participant engagement and satisfaction with the program.

Theoretical framework: applying Knowles' adult learning principles to the GPT-4 Exploration Program

The GPT-4 Exploration Program at the University of New Mexico was developed by incorporating Malcolm Knowles' Adult Learning Principles (Knowles, Holton III and Swanson, 2014):

1. Self-Directed Learning

Knowles' principle of self-directed learning recognizes that adults have a deep psychological need to be perceived by others and treated by others as capable of self-direction. In the context of the GPT-4 program, participants were given the autonomy to explore AI applications based on their individual interests and professional needs. They were encouraged to take ownership of their learning process, setting personal goals and determining the pace and depth of their engagement with the AI tools. This self-directed approach allowed participants to tailor their learning experiences to their specific roles and responsibilities within the library, making the learning process more relevant and meaningful.

2. Leveraging Learners' Experiences

Knowles emphasizes that adults come to the learning process with a wealth of life experiences that serve as a rich resource for learning. The GPT-4 program actively leveraged this principle by bringing together participants from various departments, each with their unique perspectives and expertise. Through group discussions, collaborative projects, and peer-to-peer learning sessions, participants were able to share their experiences, insights, and challenges related to AI implementation in their specific areas of work. This exchange of knowledge and ideas not only enriched the individual learning experiences but also fostered a sense of community and mutual support among the participants.

3. Readiness to Learn

According to Knowles, adults become ready to learn when they experience a need to know or do something in order to cope more effectively with real-life tasks or problems. The GPT-4 program tapped into this readiness by directly linking the learning objectives to the participants' professional responsibilities and aspirations. By highlighting the relevance of AI skills in the rapidly evolving landscape of academic librarianship, the program created a sense of urgency and motivation among the participants to engage in the learning process. The program content was designed to address the immediate challenges faced by librarians in their daily work, such as data management, information retrieval, and user engagement, making the learning experience more practical and applicable.

4. Problem-Centered Orientation

Knowles argues that adults are problem-centered in their orientation to learning, meaning they are motivated to learn to the extent that they perceive the learning will help them solve problems or deal with situations they confront in their lives. The GPT-4 program embraced this principle by focusing on the practical applications of AI in library settings. Participants were encouraged to identify real-world challenges in their work and explore how AI tools like GPT-4 could be used to address these challenges. Through hands-on projects and case studies, participants were able to experience the tangible benefits of AI in enhancing library services, streamlining workflows, and improving user experiences. This problem-centered approach made the learning process more engaging and relevant to the participants' professional context.

5. Internal Motivation

Knowles posits that while adults are responsive to some external motivators (such as better jobs, promotions, and higher salaries), the most potent motivators are internal pressures (such as the desire for increased job satisfaction, self-esteem, and quality of life). The GPT-4 program tapped into this internal motivation by emphasizing the personal and professional growth opportunities associated with AI skills development. Participants were encouraged to see AI not just as a tool to improve services but also as a means to enhance their own competencies, creativity, and problem-solving abilities. By framing AI learning as a pathway to greater job satisfaction, intellectual stimulation, and career advancement, the program fostered a sense of intrinsic motivation among the participants.

6. Understanding the Reason for Learning

Knowles emphasizes that adults need to know the reason for learning something before undertaking to learn it. The GPT-4 program addressed this principle through its introductory workshops and seminars, which provided participants with a clear understanding of the significance of AI in the context of academic librarianship. By highlighting the transformative potential of AI in reshaping library services, research support, and user engagement, the program helped participants grasp the “why” behind the learning process. This understanding of the broader context and implications of AI not only motivated participants to engage in the learning process but also helped them align their learning goals with the strategic objectives of their libraries and institutions.

By incorporating these adult learning principles into the design and delivery of the GPT-4 Exploration Program, the University of New Mexico created a learning environment that was responsive to the unique needs, motivations, and experiences of academic librarians and staff. This theoretical framework enhanced the effectiveness of the program and provided a model for other institutions seeking to develop AI reskilling initiatives that are grounded in the principles of adult learning.

GPT-4 Exploration Program projects

The GPT-4 Exploration Program provided participants with the opportunity to experiment with the practical applications of AI in various library contexts. The following case studies highlight the diverse range of projects undertaken by the program participants, showcasing the potential of AI to transform library services, workflows, and educational initiatives.

1. Exploring AI Applications in Publishing: A University Press staff's project experimented with various functions of the tool, such as generating alt text for images, drafting correspondence, editing bibliographies, and creating promotional copy. The aim was to assess GPT's ability to streamline workflows and enhance the quality of outputs in the publishing process. The project also explored the potential of AI in generating book titles, demonstrating the tool's creative capabilities.
2. Developing a Machine-Readable Data Management Plan: the Director of Research Data Services' project, ChatDMP, aimed to explore the use of the ChatGPT API through a Python programming model to generate draft data management plans (DMPs) based on machine-readable prompt components. By identifying key prompt elements and iterating on the suite of prompt components, the project sought to create a standardized, machine-readable format for capturing DMP content, enabling more efficient extraction of information from large collections of DMPs.
3. Facilitating Staff/Patron Interaction with AI: A library staff's project focused on using GPT-4 to produce templates for communicating with patrons electronically, such as through email notifications, FAQ content, and general reference question workshopping. The project aimed to explore how AI can be leveraged to enhance staff/patron

interactions and improve the efficiency of communication processes within the library.

4. AI-Assisted Cataloging and Metadata Management: A Technical Services staff's project investigated the potential of GPT-4 and similar Large Language Processing Models (LLMs) to provide solutions to common and complex cataloging issues. The project aimed to enable catalogers and archivists to produce higher-quality outputs with greater speed and ease, addressing major schema shifts and turnover in the field, such as the translation of standards and practices into the new cataloging framework and language of RDA (Resource Description and Access).
5. Integrating AI into Information Studies Education: A Learning Services librarian's project focused on developing generative AI modules for the course IADL 1110: An Introduction to Information Studies. The project aimed to provide students with hands-on experience using GPT-4 or similar tools, while also exploring the ethical dimensions of AI use through discussions and reflections. By integrating AI content throughout the course, the librarian sought to enhance student understanding of AI in the context of information studies and contribute to broader conversations about the role of AI in education.
6. Enhancing Technical Documentation and Job Support with AI: the Dean's assistant's project focused on exploring the application of natural language processing techniques, specifically leveraging GPT-4, to enhance technical documentation for educational and administrative purposes. For administrative purposes, the project aimed to automate the creation or summarization of documents, generate meeting minutes or reports, and extract key information from emails or documents. For academic purposes, the project investigated how GPT-4 can assist in automating the creation or summarization of technical documentation, such as textbooks, research papers, or manuals. Brown also explored the boundary between utilizing GPT-4 as an assistive tool and crossing into plagiarism, seeking to find the correct language to ensure GPT-4 is used in a way that is not considered academic dishonesty.
7. Investigating ChatGPT Hallucinations: the Director of Learning and Outreach Services' project examined the phenomenon of "hallucinations" in GPT-4, which occur when the AI generates false or misleading information. The project aimed to learn more about when and how often these hallucinations happen by asking GPT-4 a series of in-depth reference questions. The director encountered instances where GPT-4 provided information about non-existent books or made errors in identifying individuals' professions. The project also involved developing lesson plans to help students understand how to critically evaluate information from GPT-4 and verify facts in an AI-generated world. Jackson collaborated with colleagues to create a LibGuide on the topic and developed a lesson plan that included activities for students to fact-check AI-generated information using reliable sources

These case studies demonstrate the wide-ranging applications of AI in academic libraries, from streamlining workflows and improving communication to enhancing cataloging practices and enriching educational experiences. The GPT-4 Exploration Program provided participants with the opportunity to gain practical experience with AI tools and helped foster a culture of innovation and experimentation within the library community. As these projects continue to evolve and expand, they will undoubtedly contribute to the growing body of knowledge on AI in academic libraries and inspire further exploration of the transformative potential of these technologies.

Program outcomes and participant experiences

Methodology

To assess the impact of the GPT-4 Exploration Program, a mixed-methods approach was employed, combining pre- and post-program surveys (Appendices B and C) with qualitative data gathered from participant documentation. This methodology allowed for a comprehensive evaluation of the program's outcomes, capturing both quantitative improvements in AI-related skills and the rich, subjective experiences of the participants.

Skill improvements and confidence gains

The program's efficacy was evident in the marked improvement of participants' AI-related skills. Pre-program assessments revealed a modest level of familiarity with generative AI tools, with an average rating of 2.36 out of 5, which was lower than the 2.71 average score in Lo's study (2024). However, by the program's conclusion, this average had risen significantly to 3.63, indicating a substantial increase in participants' comfort and proficiency with AI technologies. Beyond these quantitative measures, participants reported heightened confidence in their ability to integrate and leverage AI tools within their daily work processes. This confidence was rooted in the hands-on experiences and practical skill applications facilitated by the program.

Participant feedback

The program's success was further substantiated by the overwhelmingly positive feedback from participants. Many emphasized the value of the program's hands-on learning approach, noting that the opportunity to directly apply AI tools to real-world library scenarios was instrumental in fostering a deep understanding and appreciation of the technology's potential. As one participant succinctly put it, "The program transformed my view of AI from a vague concept to a tangible tool that I now use daily in my work."

Participants also consistently highlighted the significance of the community of practice established during the program. This collaborative environment not only provided a supportive and encouraging space for learning but also facilitated a culture of shared knowledge and innovation. One participant remarked, "Learning from my peers was as valuable as the formal training sessions. It was enlightening to see the diverse applications of AI across different library departments." This sentiment underscores the program's success in fostering a sense of collective growth and exploration.

Impact on work practices and efficiency

The impact of the GPT-4 Exploration Program extended beyond individual skill development, effecting a broader transformation in work practices and overall efficiency. Participants experienced a notable shift in their approach to work, leveraging AI technology to enhance productivity and service quality more dynamically. Furthermore, the integration of AI tools streamlined workflows across several library functions, as evidenced by participants' feedback from the post-program surveys. One participant expressed, "ChatGPT helped me in many ways, both as a student and an admin assistant, from summarizing documents to creating meeting minutes." Another noted, "I think I am much better able to utilize Chat-GPT than I was at the start of the program, and I can see valuable immediate applications within my work."

These testimonials underscore the practical benefits and the impactful learning experiences facilitated by the program, further demonstrating its effectiveness in fostering an adaptive and innovative educational environment. These findings revealed heightened confidence in using AI, with participants noting specific instances where AI assisted in their daily tasks and projects. Because of the positive results, the author has begun funding 60 GPT-4 subscriptions for the staff and faculty of the college.

Extending the model: reskilling strategies for broader applications

The GPT-4 Exploration Program provides a flexible and adaptable model for AI reskilling in academic libraries. The scalability and adaptability of this model make it suitable for a wide range of library contexts, from small institutions with limited resources to large consortia seeking to foster inter-library collaboration. In fact, by sharing the findings and methodologies of the program with other units on campus, has led to a new partnership with the Center for Teaching and Learning to facilitate two new cohorts specifically designed for instructors and faculty outside of the college. These initiatives aim to replicate and adapt the successful strategies of the GPT-4 Exploration Program, extending its benefits to a broader academic audience.

This section explores the key insights to adapt this model to other libraries and organizations.

Scalability and adaptability of the program model

The core structure of the program, which includes an introductory phase, a hands-on exploration phase, and a conclusion with assessment and sharing, is designed to be both scalable and adaptable. This framework can be tailored to accommodate the specific needs and constraints of different libraries, taking into account factors such as the size of the institution, the existing level of AI expertise among staff, and the unique goals and priorities of each library.

For smaller libraries with limited resources, the model can be scaled down to focus on the AI applications that are most relevant and impactful for their specific operations. On the other hand, larger institutions or consortia may choose to expand the model to encompass a broader range of AI tools and applications, leveraging their resources to create more comprehensive and collaborative learning experiences. The adaptability of the program also allows for the incorporation of new and emerging AI technologies, ensuring that the reskilling initiative remains relevant and up-to-date.

Strategies for implementation in other academic libraries

To successfully implement an AI reskilling program based on the GPT-4 Exploration Program model, academic libraries should consider the following strategies:

1. Conduct a needs assessment to identify the specific AI training requirements of the library staff and establish clear goals for the reskilling program.
2. Develop a customized curriculum that addresses the identified skill gaps and aligns with the library's strategic objectives, incorporating a mix of foundational AI concepts, hands-on tool training, and practical applications in library-specific contexts.
3. Adopt inclusive participant selection criteria to ensure a diverse mix of library staff, and actively engage participants in the goal-setting and curriculum development processes to foster a sense of ownership and ensure the program's relevance and effectiveness.
4. Foster a supportive community of practice among participants, encouraging collaboration, knowledge sharing, and peer learning through regular discussion forums, mentorship opportunities, and access to online resources.
5. Leverage partnerships with educational institutions, technology companies, and other libraries to access a wider range of resources, expertise, and learning opportunities, such as guest lectures, tool demonstrations, and shared online platforms.
6. Emphasize hands-on, experiential learning through project-based approaches that encourage participants to apply AI tools to real-world challenges in their library settings.
7. Implement a continuous evaluation mechanism to assess the program's effectiveness, gather participant feedback, and make iterative improvements to ensure the program remains responsive to evolving needs and technologies.
8. Disseminate learnings and best practices both within the library and to the broader library community through reports, presentations, publications, and workshops, contributing to the collective knowledge base on AI reskilling in academic libraries.
9. Ensure the sustainability of the program by providing ongoing support, refresher sessions, and updates on new AI developments, fostering a culture of continuous learning and improvement.

By adopting and adapting the GPT-4 Exploration Program model and implementing these strategies, academic libraries can equip their staff with the necessary skills to navigate the evolving landscape of AI in librarianship, fostering a culture of innovation and continuous professional growth. As AI technologies continue to advance and shape the future of libraries, investing in comprehensive and adaptable reskilling initiatives will be crucial for ensuring that academic libraries remain at the forefront of knowledge dissemination and discovery.

Navigating challenges in AI reskilling initiatives

Navigating the complexities of implementing AI reskilling initiatives, such as the GPT-4 Exploration Program, can be a daunting task. These programs often encounter a myriad of challenges, ranging from the technical intricacies of AI tools to the varying skill levels of participants and the inherent resistance to change that often accompanies the introduction of new technologies. Effectively addressing these hurdles is paramount to ensuring the success and long-term viability of any AI reskilling endeavor.

During the GPT-4 Exploration Program, participants grappled with the technical complexity of AI algorithms and the challenges of seamlessly integrating these tools into their existing workflows. The diverse backgrounds and skill levels of the participants added another layer of complexity, with some individuals quickly grasping AI concepts while others required more foundational training. Furthermore, participants often struggled to find a balance between dedicating time to AI training and experimentation and fulfilling their regular job duties, leading to time constraints that hindered their progress. Resistance to change also emerged as a significant obstacle, with some staff in the college expressing apprehension about embracing new technologies, largely due to concerns regarding job security and the potential impact of AI on the nature of their work. Assessing the effectiveness of the reskilling program in real-time and adapting it to meet evolving learning needs also proved to be a challenging task.

To successfully navigate these challenges and ensure the effectiveness of AI reskilling initiatives, academic libraries must employ a multifaceted approach that addresses the technical, educational, and emotional aspects of adopting new technologies. One effective strategy is to implement a tiered training approach that caters to the varied skill levels of participants. By beginning with basic AI literacy for all participants and then offering advanced modules for those who require or desire more in-depth knowledge, libraries can ensure that each individual receives the appropriate level of training and support. Integrating learning into the flow of work, such as allowing staff to apply AI tools to their regular tasks or projects, can also help alleviate time constraints and provide a practical training method that doesn't consume additional resources.

Addressing resistance to change is crucial for the success of any AI reskilling initiative. Implementing effective change management strategies, including clear communication about the goals and benefits of AI, addressing concerns about job security, and demonstrating how AI can augment rather than replace human expertise, can help mitigate apprehension and foster a more receptive environment for technology adoption. Encouraging hands-on, project-based learning that directly relates to participants' work can also help bridge the gap between theoretical knowledge and practical application, enabling participants

to better understand the relevance and potential of AI tools in their specific roles.

Establishing mechanisms for continuous feedback and iteration is another key strategy for overcoming the challenges associated with AI reskilling. By regularly assessing participant progress, gathering feedback, and adjusting the training accordingly, libraries can ensure that the program remains responsive to the evolving needs and skill levels of the participants. Providing ongoing mentorship and support systems, such as pairing less experienced participants with AI-savvy mentors, can create a supportive learning environment that fosters growth and collaboration.

Cultivating a culture of continuous learning and professional development is perhaps the most critical factor in the long-term success of AI reskilling initiatives. By promoting an environment that values and encourages ongoing learning, libraries can help mitigate resistance to change and foster a more proactive approach to technology adoption. Highlighting successful AI implementations and their positive impact on work processes and service delivery can further encourage engagement and buy-in from participants.

Finally, developing clear metrics to measure the impact of AI reskilling initiatives is essential for demonstrating their value and ensuring their continued support. These metrics may include participant skill assessments, feedback on AI tool implementation, and quantifiable improvements in work processes and efficiency. By tracking and communicating the tangible benefits of AI reskilling, libraries can build a strong case for ongoing investment in these programs and secure the necessary resources to sustain them over time.

Limitations

While the GPT-4 Exploration Program offers valuable insights into AI reskilling in academic libraries, it is important to acknowledge the limitations of this case study. Firstly, the program was conducted within the specific context of the University of New Mexico's College of University Libraries and Learning Sciences. The unique characteristics of this institution, such as its size, resources, and organizational culture, may limit the generalizability of the findings to other academic libraries. Additionally, the program's focus on GPT-4 may not fully represent the diverse range of AI technologies and their applications in different library settings. Future research could explore the implementation of similar programs across a broader spectrum of academic libraries to validate and expand upon the findings presented in this case study.

Long-term impact

As AI technologies continue to advance at a rapid pace, it is crucial to consider the long-term impact of AI reskilling initiatives like the GPT-4 Exploration Program. While the program has demonstrated short-term benefits in terms of skill development and improved work practices, its true value will be determined by its ability to create a sustainable culture of continuous learning and adaptation within the library.

To ensure the long-term success of AI reskilling efforts, academic libraries must develop strategies that go beyond one-time training programs. This may involve establishing a regular schedule of AI workshops and seminars to keep staff updated on the latest developments and applications. Libraries should also consider incorporating AI skills into their hiring and professional development criteria, ensuring that all staff members have a baseline understanding of AI and its potential impact on their work.

Furthermore, libraries must allocate sufficient resources to support ongoing AI reskilling initiatives. This includes investing in the necessary technology infrastructure, such as access to AI tools and platforms, as well as providing dedicated time and funding for staff to engage in AI-related learning and experimentation. By making AI reskilling a budgetary and strategic priority, libraries can demonstrate their commitment to staying ahead of the curve in an increasingly AI-driven landscape.

Another key factor in ensuring the long-term impact of AI reskilling is fostering a culture of innovation and continuous improvement within the library. This involves encouraging staff to take risks, experiment with new ideas, and share their learnings with colleagues. Libraries can facilitate this by creating opportunities for cross-functional collaboration, such as AI-focused working groups or hackathons, and by recognizing and rewarding staff who demonstrate exceptional initiative and leadership in AI adoption.

Finally, academic libraries must engage in ongoing research and collaboration with the wider AI community to stay abreast of emerging trends and best practices. This may involve partnering with computer science departments, data science institutes, or industry experts to explore new applications of AI in library services and operations. By actively contributing to the broader conversation around AI in higher education, libraries can help shape the future direction of AI development and ensure that it aligns with the values and mission of academic librarianship.

Ethical considerations

The integration of AI technologies in academic libraries raises a host of ethical considerations that must be carefully addressed in AI reskilling initiatives. As librarians gain the skills to develop and implement AI-powered tools and services, they must also be equipped to navigate the complex ethical terrain of AI adoption.

One of the primary ethical challenges is ensuring that AI is used in a fair, unbiased, and transparent manner. Libraries must be vigilant in identifying and mitigating potential biases in AI algorithms that could lead to discriminatory outcomes for certain groups of users. This requires a deep understanding of how AI systems are trained and deployed, as well as a commitment to regularly auditing and testing these systems for unintended biases.

Another key ethical consideration is protecting user privacy and data security in an AI-driven library environment. As AI tools become more sophisticated in their ability to collect, analyze, and utilize user data, libraries must ensure that they have robust policies and protocols in place to safeguard sensitive information. This includes providing clear and concise privacy notices, obtaining informed consent from users, and implementing strong data encryption and access controls.

AI reskilling initiatives must also grapple with the potential impact of automation on the library workforce. As certain tasks and processes become automated, there may be concerns about job displacement and the changing nature of library work. It is essential that libraries approach AI adoption as an opportunity to augment and enhance human expertise, rather than replace it entirely. This requires a proactive approach to reskilling that emphasizes the development of uniquely human skills, such as critical thinking, creativity, and emotional intelligence, alongside technical AI competencies.

Furthermore, academic libraries have a responsibility to promote AI literacy and ethical awareness among their users. This involves developing educational resources and programming that help students, faculty, and researchers understand the potential benefits and risks of AI, as well as how to use AI tools in an ethical and responsible manner. Libraries can play a crucial role in fostering a campus-wide dialogue around the societal implications of AI and in advocating for the development of ethical guidelines and standards for AI research and application.

Ultimately, the ethical considerations surrounding AI adoption in academic libraries are complex and multifaceted. AI reskilling initiatives must not only equip librarians with the technical skills to work with AI but also the ethical frameworks and critical thinking abilities to navigate this rapidly evolving landscape. By proactively addressing these ethical challenges and engaging in ongoing dialogue and collaboration with the wider AI ethics community, academic libraries can help ensure that the benefits of AI are realized in a way that is consistent with the values of

librarianship and the mission of higher education.

Conclusion

The journey of the GPT-4 Exploration Program at the University of New Mexico's College of University Libraries and Learning Sciences underscores the importance of AI reskilling. Key insights from the program reveal that effective AI reskilling involves more than technical training; it requires cultivating a culture of continuous learning, adaptability, and collaborative exploration. The program's success was anchored in its practical, hands-on approach, coupled with a supportive learning environment that encouraged experimentation and shared growth. The significant improvements in AI literacy and application among participants demonstrate the potential of well-structured reskilling initiatives in empowering library professionals.

Looking forward, it is necessary for academic libraries to adopt proactive approaches to reskilling. This involves staying abreast of emerging technologies, understanding their implications for library services, and developing strategic training programs that are inclusive, flexible, and responsive to the evolving digital landscape. Libraries should foster a culture that not only adapts to change but anticipates and shapes it. The GPT-4 Exploration Program serves as a blueprint, offering valuable lessons on integrating AI into library services and operations, ultimately ensuring that libraries continue to be indispensable centers of knowledge, learning, and innovation in the digital age.

CRediT authorship contribution statement

Leo S. Lo: Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.acalib.2024.102883.

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