



Generative artificial intelligence in the activities of academic libraries of public universities in Poland

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ABSTRACT

The article presents the results of a study conducted, using both survey and content analysis (of the websites and fan pages) of all the libraries of the public universities in Poland to establish their use of generative artificial intelligence. The general findings showed that not all libraries were active in promoting artificial intelligence solutions. Most (57 %) of the libraries supported the inclusion of GAI in the repertoire of library tools, although only 39.3 % dealt with GAI issues. 46 % actively used them despite 50 % of the libraries creating conditions favorable for the use of GAI. Interestingly, 43 % of libraries indicated that they did not think there was a need to use GAI tools with the main reasons given including a lack of staff competencies and the appropriate regulations in the area. For those libraries using GAI or AI, 47 % of them had information about this published on their home pages and 39 % on their fan pages. The most common information found was about the promotion of AI tools, the resources available in the library, organized events (49,67 % of all information) and documents on the subject (36,77 % of the published information).

Introduction

In recent years, the potential use of artificial intelligence has been explored in several areas, such as science, engineering, business, medicine (Pannu, 2015, p. 79). Libraries, especially academic ones, have also been increasingly a part of this discussion about the application of AI due to its ability to improve the management of scholarly resources and to speed up access to the information they contain. As with most innovations like AI, ethical issues regarding its use are bound to arise and must be dealt with by educators, librarians, and other professionals. Therefore, there is a need for more research on the subject to assist in resolving some of these ethical dilemmas (Marshall & DuBose, 2024, p. 152).

For the purposes of this discussion, we adopt the definition of artificial intelligence published on November 8, 2023 by the Organization for Economic Co-operation and Development (OECD) AI Policy Observatory. According to this definition, 'An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content,

recommendations or decisions that can influence physical or virtual environments. Different AI systems vary on their levels of autonomy and adaptiveness after deployment' (OECD. AI Policy Observatory, 2024). It is worth noting that the term "generative AI" (GAI) is increasingly used in the literature. It refers to AI systems whose primary function is to generate content and provide new possibilities for users. GAI is a subset of AI that includes large language models (LLMs) capable of generating text, images, code, and sound (Toner, 2023). GAI is also mentioned in the context of video generation (Alto, 2024, p. 24). Examples of LLMs include tools such as ChatGPT (OpenAI) and Gemini (Google) (Manyika & Hsiao, 2024).

Literature review

Noticeably, in the last two years, there has been a marked increase in publications on the use of AI and generative artificial intelligence in academic libraries.¹ Many of these articles are about the practical use of the technology (e.g. Marshall & DuBose, 2024, p. 152–153; Zondi et al., 2024; Pawar, 2024, p. 2748).

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¹ This phenomenon is best illustrated by searches conducted in the SCOPUS database. Publications on AI in academic libraries were searched for. The number of published papers in 2024 was 86, in 2023 it was 63, in 2022 it was 24 and in 2021 it was only 14. The search was conducted on 14 October 2024. A search in the Web of science database yielded similar results 53 publications were found from 2024, in 2023–27, in 2022–19, and in 2021 only 9.

Undoubtedly, this is currently one of the biggest challenges facing libraries and for which meaningful solutions are being sought as to how to improve information management practices in academic libraries and user experience as well as optimizing the use of resources. This demand has resulted mainly from the technological revolution involving, among other things, the introduction of digital documents and the development of various types of electronic repositories. Added to these are the implementation of advanced platforms for library services, the introduction of changes resulting from the use of Web 2.0 tools, and the emergence of mobile devices, applications and resources.

After this, we are currently witnessing the development of this latest phenomenon, artificial intelligence, and its potential use as a tool for a more effective delivery and use of library services. In attempting to define the role of AI regarding libraries, some professionals accurately state that *'libraries have a unique role in facilitating informed and responsible use of generative AI, as well as safeguarding and promoting the values of access, privacy, and intellectual freedom'* (Bridges et al., 2024). Two of the possibilities for applying artificial intelligence in academic libraries include improved information retrieval (with advanced natural language processing applications and personalized recommendations) and the ability of this technology to analyze huge data sets. This not only speeds up the research process, but also enables librarians to create more targeted and relevant collections (Pacific University Libraries, 2023). In addition, AI technology can be effectively used for automating the process of the creation of short summaries of research documents that allow users to quickly assess if a publication is useful to them.² Another example is the use of optical character recognition (OCR) tools, which enable the librarian to automatically convert not only printed texts but also handwritten documents into digital forms (Pawar, 2024, p. 2748).

The use of AI mechanisms can furthermore improve cataloguing processes, enrich metadata and enhance categorization, indexing and management of library resources (Mojjada & Krishna, 2024, p. 162; Kamble, 2023, p. 16). Although there is some controversy about the accuracy of AI when it comes to cataloguing. As Derek Marshall and Joy DuBose note, *'until more concrete solutions surrounding this controversy are discussed, this area of librarianship may be one of the last to embrace AI'* (Marshall & DuBose, 2024, p. 153).

Among the opportunities for the use of AI and GAI in academic libraries are those for employing chatbots and virtual assistants as solutions for handling enquiries, especially in the context of answering frequently asked questions, helping to locate resources, and providing information about library services. These have already been recognized as invaluable tools that have revolutionized the way library services are being provided. One of the main advantages of these tools is that they are available 24/7 and present answers immediately, thus eliminating time constraints. Furthermore, AI can be used to translate library materials into different languages and to convert texts into speech, for example, it can generate information in different formats to help disabled library users. It can also be used to assess the impact of library activities on users and anticipate their future needs.

In addition, libraries might be even more strongly motivated to adopt AI because of its ability to offer highly personalized recommendations of resources for use, thus making the information search process more efficient for the patrons (Kamble, 2023, p. 15). Importantly, along with the ability of AI to highly personalize the client's search, AI-based systems can analyze users' behaviors, preferences and historical interactions with library resources and services to deliver a better quality service. These types of customized services will significantly assist students and researchers to more precisely identify resources relevant to their needs (Pacific University Libraries, 2023), thereby revolutionizing the nature of the library service to which patrons have been accustomed

until recently (Kamble, 2023, p. 18).

It should be noted that the majority of AI and GAI applications that are currently used in libraries come from solutions developed for the business world (Duncan, 2022), and hopefully, shortly, we may see an increasing number of library-oriented solutions. However, the use of AI in libraries requires significant investments in infrastructure, funding, and training (Gürsen et al., 2023, p. 87), the cost of which could be a significant barrier to the implementation of such solutions (Lo, 2023).

The next issue for consideration is the negative consequences of using artificial intelligence in libraries and the concerns of the staff of these institutions. First, there is the matter of the privacy of users and their personal data, especially since protecting sensitive information has always been one of the fundamental tenets of libraries. Another important concern is ownership of the content generated by GAI tools. In light of such matters, the statement by Claudio Novelli, Mariarosaria Taddeo and Luciano Floridi that *'accountability is a cornerstone of the governance of artificial intelligence'* (AI) is a valid one. However, as some argue, *'it is often defined too imprecisely because of its multifaceted nature and the sociotechnical structure of AI systems implies a variety of values, practices, and measures to which accountability in AI can refer'* (Novelli et al., 2022).

It should also be emphasized that over-reliance on AI tools can be a threat to the users' critical thinking skills and their information literacy development (Pacific University Libraries, 2023), hence, the need to strike a balance in this regard. One of the essential roles of libraries, in this case, is to educate their users about the principles for the effective, but also ethical, use of AI. This should include information on the many advantages of its use as well as the challenges it poses relative to privacy or misinformation and how to deal with these issues (University of North Carolina, 2024). At present, AI is one of the most powerful tools for accessing and generating content, therefore, it is essential for librarians to point out ethical ways of using it (Marshall & DuBose, 2024, p. 152).

It follows then that the next concern should relate to the approaches academic libraries should adopt for promote AI use and to educate their users and staff about the capabilities and benefits of the various tools involved. For staff, several possibilities exist, such as training courses organized by external institutions (e.g., manufacturers of AI-based tools) or the library's own development of in-house training programs, which some advocate should be prioritized (Sambo & Oyovwe-Tinuoye, 2023, p. 32). One of the current challenges facing librarians today is the need for continuous education for the development of staff skills to effectively use AI and GAI tools. This is directly related to the need for libraries to also introduce these innovative services to their patrons (Echedom & Okuonghae, 2021, p. 253–254) which can only take place if the staff are first educated on the topic. Library staff have always accepted it as their responsibility to teach their clients how to search, find, and use the resources of which artificial intelligence technology is now a part. Consequently, it is expected that these institutions will rise to the occasion and fulfil this role not only for their staff but also their users.

The publication of articles in the professional literature, as well as attending conferences and seminars, are some of the ways library staff can be educated about AI and the latest trends and solutions in this field. For users, websites and social media fan pages of these institutions are good places to post practical information about AI, especially fan pages, as they are very popular with Generation Z (Statista, 2024). Furthermore, it is advisable for academic libraries to collaborate with the providers and manufacturers of AI tools as academic staff and students can assist in testing the various AI tools being developed and offer valuable feedback to the manufacturers. This is happening already to a large extent today.³

² Such purposes include the SciSummary tool that uses GPT-3.5 and GPT-4 models to create abstracts of scientific articles and research papers. See <http://scisummary.com/>.

³ An example is the test sharing of AI tools prepared by large publishers of scientific publications (e.g. Scopus AI provided by Elsevier).

Study objectives and method

The study aimed to investigate the extent to which generative artificial intelligence was being used in academic libraries of public universities in Poland. A mix of quantitative and qualitative methods was used and consisted of a survey followed by content analysis. The study was conducted to address the following six research questions:

Q1. Do academic libraries of public universities in Poland deal with the issue of GAI in any way?

Q2. Are conditions conducive to the use of GAI created in academic libraries of public universities in Poland?

Q3. Do academic libraries of public universities in Poland use GAI?

Q4. Do academic libraries of public universities in Poland want to implement GAI?

Q5. Do the homepages and fan pages of academic libraries of public universities in Poland publish information on GAI or AI in general?

Q6. What is the nature of the content relating to GAI or AI published on homepages and fan pages of academic libraries of public universities in Poland?

To answer these questions, the study was divided into two parts with the first being a survey that sought to answer the first four research questions. This was then followed by a content analysis of the home pages and fan pages of the participating libraries to address the last two queries. The sampling frame for the libraries for the study came from the official *List of public universities supervised by the minister responsible for higher education and science – public academic universities* (MNiSW, 2024). On July 16, 2024, e-mails were sent to the management of all the libraries (65) with a request for their participation in the study and after approval was received, the survey was conducted using Google Forms between July 16–18, 2024. Ultimately, 28 libraries (43 %) out of a total of 65 participated in the survey. The cover email indicated that the survey was anonymous, contained six questions, and took approximately a minute to complete. It also explained that participation was requested of all public university libraries in Poland identified in the list of universities provided by the Minister of Higher Education and Science.

In order to address the remaining two research questions and to confirm the responses obtained from the survey, the second part of the study in the form of the analysis of the content of the home pages and fan pages of academic libraries of public universities in Poland was conducted between October 14–16, 2024. For the content analysis, the Google search engine and the search command 'site:' were used for carrying out the searches of the websites of the individual libraries. The search period was restricted to 2023 and 2024 due to the huge volume of information available because of the growing popularity of the use of AI and GAI in the last two years.

To increase the likelihood of finding as many variants of the term notations, search term masking was used. For social media, all fan pages reported by libraries on their websites were considered, resulting in a total of 118 fan pages being identified on the social media sites Facebook, Instagram, Twitter (X), YouTube, TikTok and Pinterest. The publicly available data for analysis was collected using the Fanpage Karma tool (Fanpage Karma, 2024), a web service for monitoring social network activity and content shared on fan pages. The tool also allows the filtering of published posts for the occurrence of a particular word or phrase. During the course of the research, this option was used. Posts with the Polish phrase 'artificial intelligence' or 'generative artificial intelligence' in their content were searched. The search period for the fan pages, as with the websites, was confined to 2023 and 2024.

This research should be of value to the field because it is also the first such study conducted on the subject in academic libraries of public universities in Poland. Further, the results should be of particular interest to academic library staff who are currently using or want to use AI (and GAI) tools in their daily work.

Results

The findings from the study are presented in three sections, with the survey data appearing first, followed by those for the content analysis of the academic libraries' websites, and those for the analysis of the posts published on the libraries' social media fan pages.

The survey results

The responses obtained, alongside the survey questions, are presented below. The answers have been sorted, starting with those with the most responses. Only those libraries that answered "yes" to the previous questions (S1 and S3, respectively) answered questions S2 and S4.

The first question (S1) aimed to find out whether GAI issues were of interest to libraries and 39.3 % of all the participating libraries answered in the positive. The second question (S2) was a follow-up for these responding institutions, with 32 % of all the participating libraries of these libraries stating that they encouraged their employees to use GAI tools. However, only 7.1 % created appropriate regulations or developed guidelines for their libraries' use of GAI and 10.7 % did not create appropriate regulations. Further, 21 % of these libraries collected information on GAI and 17.8 % organized various training in this field and informed users about GAI.

For question 3, a little less than half (46.4 %) of the libraries used GAI tools, while another 42.9 % did not use them at all (S3). The libraries reported that they actively used GAI (S4) to generate texts for use in various tasks (35.7 %), to complete tasks faster (28.5 %), to carry out professional tasks (25 %), and for scientific work (17.8 %). Much fewer (10.7 %) used it to search for information, and only 7 % used it to acquire new knowledge and learning.

Regarding the need to include GAI tools in library work (S5), 57.1 % supported this idea, and when asked about the main obstacles hindering the inclusion of GAI technologies in the libraries' repertoire (S6) a lack of competencies to work with GAI was cited by 77.8 % and the absence of regulations specifying how to work with them by 70.4 %. Interestingly, 43.9 % of libraries indicated having no opinion on their possible need to include GAI in library work (S5).

Content analysis of Polish public university library websites

All Polish university libraries have more or less developed websites and, in some cases, their website is a subpage of the university, which contains basic information about the functioning of the institution and links to digital resources. A good example of such a situation was the Library of The Nicolaus Copernicus Superior School (www.sgmk.edu.pl/library). In most cases, however, the libraries' websites were created independently with their own sections on news about library events and activities and those of the university, new publications, and opportunities to use test access to databases, among other things.

Using the Google search engine, the researcher found 154 links to websites where artificial intelligence or generative artificial intelligence was mentioned. In the latter case, there were 20 such links. Information related to these topics was present on 31 of the libraries' pages and not found on 34. As was expected, most of the published information did not distinguish between AI and GAI, which gives rise to the assumption that from the point of view of those publishing this information, such a distinction was not seen as significant. Nevertheless, considering the functionality of the different tools, it seems important to distinguish between AI and GAI-based IT solutions. Therefore, Table 2 presents examples of tools and their applications in libraries in the context of both AI and GAI. This distinction is particularly important for library staff who are beginning to work with AI- and GAI-based solutions. These technologies are expected to play an increasingly important role in the evolution of libraries, extending beyond academic institutions. However, fundamental differences exist in the applications of AI and GAI, as

well as their impact on various library services. This distinction is crucial for librarians to understand the roles and benefits of these technologies.

As previously noted, GAI is a subset of AI. GAI includes tools that, based on the use of training data, can generate new content, including images, music, text, and other forms of media. As [Ranjith \(2025\)](#) explains, “*Rather than analyzing or processing data, GAI learns from existing data to generate new data that is consistent with the original dataset.*” In contrast, conventional AI tends to be used for data processing and retrieval, without focusing on generating or interacting with new content.

Returning to the characterization of the analysis results, [Table 3](#) categorizes the topics that arose during the course of this analysis and shows the relative frequency of the occurrence of each.

Organization of webinars for librarians and presentation of AI tools

Articles and announcements concerning online training available to librarians, most of which were webinars on GAI and AI tools provided by external institutions, comprised the bulk of pertinent online postings on AI. There were 90 websites with such information, amounting to 58,44 % of all sites found. These were mostly public webinars that presented tools using AI. This was the case for a training session organized in 2024 on the release of the generative AI-based Web of Science research assistant - Research Assistant (<https://tinyurl.com/mrx6waa6>). These functionalities were also presented at one of the training sessions on this tool in September 2024 when Elsevier Research Intelligence customer consultants analyzed the combination of advanced artificial intelligence models and a database (<https://tinyurl.com/aprme4j5>).

Information about training sessions organized in libraries also related to the test release of the Scopus AI tool. In Spring 2024, there was an opportunity to test this IT solution for free in Polish university libraries. The published announcements were accompanied by information about webinars and Q&A sessions with an expert. Interestingly, information about a training session on the use of modern solutions from Elsevier Publishing, based on artificial intelligence, appeared on the website of the Poznan University of Technology Library as early as 2023. During this webinar, the presenters introduced the latest developments in the databases and tools offered by this publisher and among the issues discussed were those relating to future applications of artificial intelligence in the context of Scopus (<https://tinyurl.com/2j8njyjf>).

Another tool presented as part of webinars promoted by the libraries of Polish higher education institutions was Scite AI. One such place where this occurred was the University Library in Poznan, which invited users to test the tool in April and May 2024 (<https://tinyurl.com/2fh2v9nc>). Similarly, the Main Library of the University of Life Sciences in Lublin encouraged users to use Writefull, a tool using language models based on artificial intelligence for proofreading scientific texts in English (<https://tinyurl.com/y2bna9e7>). The Library of the University of Opole invited users to participate via online training on ClinicalKey AI, an integrated medical information platform provided by Elsevier in October 2024 (<https://tinyurl.com/3j4u8ezt>). The Wladyslaw Grabski's Main Library Warsaw University of Life Sciences (SGGW) published an announcement about the webinar ‘IEEE Authorship and Open Access Symposium: Tips and Best Practices to Get Published from IEEE’. One of the items discussed at the webinar was guidelines for authors on the use of texts generated by artificial intelligence (<https://tinyurl.com/8kdn6jjz>).

In spring of 2024, the website of the Gdansk Tech Library reported on a webinar on the Total Materia Predictor database, which used material learning and artificial intelligence to supplement the knowledge of material properties (<https://tinyurl.com/589nx6dd>). At the same time, this library published an announcement about a training course on the use of the Applied Science & Technology Source Ultimate database, which contained, among other things, documents on the social implications of implementing new technologies, including artificial intelligence (<https://tinyurl.com/rsxyt44r>). The Lodz University of

Technology Library offered a two-day training course on AI and machine learning in chip design in October 2024, led by Professor Andrew B. Kahng of the University of California, San Diego (<https://tinyurl.com/2t3w84d3>).

Similarly, in October this year, the Lodz University of Technology Library published information via its e-platform about an upcoming training course organized by Santander for 2025. During the training, users will explore topics related to the world of generative artificial intelligence, such as creating effective queries (prompts), generating realistic images and animations, creating texts, and analyzing data using AI (<https://tinyurl.com/372cf6j5>). It is worth noting that the information on this training is one of the few examples of content provided when the library reports on tools for generative artificial intelligence (GAI). Based on the current analysis of the data, the information published by libraries tended to mention the general term ‘artificial intelligence’ without distinguishing its many forms.

Publications on AI

A significant number of the libraries issued information about new publications available in their collections or web services presenting digital documents (e.g., the Polish online reading service ebookPoint Biblio or the online reading service IBUK Libra). Twenty-eight (18,18 %) such websites were identified. There were also cases of the publication of lists of books recommended by library staff, which included items on artificial intelligence, e.g., at the Gdansk Tech Library (<https://tinyurl.com/yw7k2xyn>).

It is also worth mentioning an important book-related event that was presented as part of the regular meetings of the Academic Book Club, which took place at the Wladyslaw Grabski's Main Library Warsaw University of Life Sciences. This happened on 28 November 2023, when the participants discussed the book ‘Klara and the Sun’ by British Nobel Prize winner Kazuo Ishiguro. This was done because, among other things, the novel addresses the issue of artificial intelligence. A short report and a photo gallery of the meeting are available on the Library's website (<https://tinyurl.com/j8svz43v>). In keeping with this book-related idea, in August 2024, the staff of this same library released information about a new book entitled, ‘Trust and Artificial Intelligence: Development and Application of AI Technology’ edited and co-authored by Joanna Paliszewicz, a researcher at the Warsaw University of Life Sciences (<https://tinyurl.com/yakr5jju>).

Library-hosted events

Events organized by library staff ranged from conferences, symposiums, and training courses to presentations on select GAI and AI tools. Sixteen posts about such events were identified, with 10.38 % of all sites covered providing such information. These included posts about seven exhibitions on artificial intelligence prepared and presented in the library building itself, which appeared on 4.54 % of all sites covered. In general, libraries recognize the need to organize various types of events on the role of AI in science and the opportunities available for using particular AI tools in research activities (e.g., training courses, conferences, seminars, lectures, and exhibitions). However, the analysis revealed a notable lack of events dedicated to use of AI and GAI by librarians themselves in the course of their own daily work.

What events did the libraries organize? Libraries reported organizing seminars, webinars, lectures or training on the use of artificial intelligence in science for their users. For example, at the beginning of 2024, the website of the Main Library of AGH University of Science and Technology in Krakow announced a webinar on the use of ChatGPT and other AI tools in education. Case studies on the use of AI in teaching and learning were also used, including its being employed to support creative and analytical tasks such as programming, essay writing, and interface design (<https://tinyurl.com/2s3sp386>). In February, the staff of the Wladyslaw Grabski's Main Library Warsaw University of Life

Sciences (SGGW) informed its users about the upcoming symposium, 'AI technologies in strategy, science and teaching at SGGW' on 13 March 2024. The objective of the symposium was to share experience and expertise in the use of AI in science for teaching. Among other things, it addressed the problems of plagiarism and the protection of intellectual property rights arising from the use of generative AI (<https://tinyurl.com/yecsb96b>).

The Library of the University of Gdansk also collaborated with its parent university in June 2023 to promote the Viva Dydaktyka, which was organized by the Centre for Didactic Improvement and Tutoring team at the university. Topics of discussion included artificial intelligence in education and its use in language teaching and learning (<https://tinyurl.com/mvfcpk3s>). Moreover, the website of this library featured a report on the Omega-PSIR System User Days, which took place there on 13–14 May 2024. A representative from Sages spoke about the use of artificial intelligence in processing documents to make them more accessible to people with disabilities (<https://tinyurl.com/mwkw5tn9>).

Included on the websites were many individual events to promote libraries, which were organized in Poland as part of the annual Library Week for 2024. For example, the Main Library of the Maria Grzegorzewska University reported its lecture delivered by Professor Sergo Kurulishwili on 'Artificial Intelligence as a tool to support the work of librarians and researchers' (<https://tinyurl.com/2uvc6yk3>). During the same period, the University Library in Poznan presented a lecture entitled 'Generative Artificial Intelligence - what is it and how does it work?' (<https://tinyurl.com/3rayt4xj>) while the Library of the University of Zielona Gora invited its users to participate in a Q&A meeting about the Scopus AI tool and its test release to users (<https://tinyurl.com/4pwxcxku>).

From among the other information published on the libraries' websites, the Poznan University of Technology Library announced its exhibition of books on artificial intelligence (<https://tinyurl.com/mkx3j2c3>). The Scientific Information Centre and the Academic Library (CINiBA), as a part of the event Numbers Week in the City of Science (11–17 March 2024), organized an exhibition of images generated by artificial intelligence (<https://tinyurl.com/ydcw6b9a>). The Main Library of Opole University of Technology organized an art competition entitled 'Artificial intelligence in my home and everyday life' for the children. They could submit an artwork of their own creation on the application of artificial intelligence in their own home or everyday life. The results of the competition were published on the Library's website, together with a short film presenting the winning works (the Main Library of Opole University of Technology, 2024).

In addition, as part of the 16th Young Librarians' Forum in Toruń (12–13 September 2024), technological advances and artificial intelligence were discussed (<https://tinyurl.com/2u4e75dn>). The Main Library of the University of Opole informed its users about a scientific conference it co-organized titled 'Copyright in the activities of an academic library' (8 December 2023). The aim was to discuss selected issues concerning the Copyright and Related Rights Act in the area of academic library operations along with issues relative to artificial intelligence and its use in library activities (e.g., of topic: *Artificial intelligence in library activities - legal aspects*) (<https://tinyurl.com/yes6ya4e>).

Other published information, including university event announcements

The websites of the participating libraries provide information on individual events held on the campus of the parent university, as well as in the city where the university is located and operates. Such information was admittedly scarce, with only nine occurrences identified (5.84 % of all sites covered). Albeit relatively infrequent, this does nevertheless demonstrate that at least some libraries promote initiatives relating to the development and use of artificial intelligence that occur in the broader local community. For example, discussions on artificial intelligence and its use were held as a part of the Poznan Festival of Science

and Art (15–20 April 2024). This event was promoted by the University Library in Poznan (Poznan University Library, 2024).

Librarians' conference participation

The initiatives undertaken by university library staff to promote use of AI in science are worth mentioning. Although only four cases were identified of library staff actively participating in conferences or seminars, such involvement is certainly growing, as is evident from increasing participation in the last two years by academic librarians in events aimed at popularizing the application of AI in scientific research activities. Academic librarians are also involved in discussions on this topic in the context of organized scientific conferences, not only in Poland but also elsewhere. For instance, the Main Library of Warsaw University of Technology reported on the participation of two employees of the institution in the IATUL Fall Seminar 2023 - Libraries as Transformers (October 2023). It was organized by the Izmir Institute of Technology (IZTECH). International speakers representing libraries, publishers and the research community discussed, among other topics, artificial intelligence and the use of chatbots (<https://tinyurl.com/54zn4cu2>). The 2023 report published on the University of Gdansk Library's website, in the section on the conference, included information on a paper delivered by a member of the library staff entitled 'Will artificial intelligence replace data stewards'. The paper was presented at the VII Seminar 'Opening Science: Practice and Perspectives: 10-11.10.2023' (<https://tinyurl.com/43u5v8uc>).

Analysis of social media fan pages of Polish public university libraries

The content analysis of the social media fan pages was conducted by searching for the phrase 'generative artificial intelligence'. Only eight posts were found (three were posted on Facebook, one on Instagram, four on Twitter, or service X), with five coming from 2024 and three from 2023. Four posts on Facebook, Instagram and service X were about a lecture organized as part of Library Week in May 2024 at the University Library in Poznan (e.g., <https://tinyurl.com/mpmca9j5>). The lecture was given by Professor Michał Banaszak (lecture topic 'Generative artificial intelligence - what is it and how does it work?'). In June 2024, the Main Library of the Wrocław University of Economics and Business promoted on its Facebook fan page Valentina Alto's new book entitled, 'Modern Generative AI with ChatGPT and OpenAI Models' (<https://tinyurl.com/3nsdvsd5>). In the book, the author presented, among other examples of creating prompts, creating Python code to work with generative AI, including its use for scientific research.

On the other hand, in October 2023, the Library of the University of Lodz, on its Twitter fan page (X), invited people to watch a film as part of the series 'Science Inspires' (<https://tinyurl.com/yn7k2adz>). The film answered questions such as: How artificial intelligence affects people and businesses? What is generative AI and what skills does AI possess? And how fast it learns? In August 2023, the Main Library – University of Szczecin posted on Twitter (X) about a scam involving generative AI mechanisms impersonating real book authors (<https://tinyurl.com/2dfr65xx>). In the same month, the library encouraged people to read an article about GAI writing books, painting pictures, and creating music (<https://tinyurl.com/yc72myk2>).

By using the hashtag #artificialintelligence, 88 posts were received. Significantly, they accounted for a large proportion of the posts searched using the phrase 'artificial intelligence'. It should be noted that searches with this phrase were the most effective. Posts numbering 156 from 46 fan pages (39 % of all the fan pages) were obtained in this way. In general, the posts found were published on three social networks: Facebook, Instagram, and Twitter, with not a single post from TikTok, YouTube or Pinterest. It should be added that the ten posts with the highest number of user interactions were those published on Instagram (8 posts) and Facebook (2 posts).

The most popular post was about the participation of an employee of

the University Library University of Warmia and Mazury in Olsztyn (Dr Katarzyna Bikowska) in the Medical Libraries Problem Conference in Szczecin in September 2024. The library staff member presented a paper entitled 'Artificial Intelligence (AI)' as part of the conference. 'Artificial intelligence (SI/AI) a tool in library promotion strategies' and won first place in the poster session with one entitled "Motivational song for librarians" (<https://tinyurl.com/zc58kdmnd>).

The second most popular post among users was the one promoting Toby Walsh's book 'It's Alive!: Artificial Intelligence from the Logic Piano to Killer Robots'. The post was published on Instagram in July 2023 by the Library of the Christian Theological Academy in Warsaw (ChAT) (<https://tinyurl.com/hr4hsusj>). The third most popular post featured a quote by Garri Kasparov from his book 'Deep Thinking. Where Machine Intelligence Ends and Human Creativity Begins'. The post was published on Instagram by the ChAT Library on World Water Day in March 2023 (<https://tinyurl.com/vmhrnjwf>). It also included a generated image of floating books in the library.

The results of this analysis are summarized in Table 4, which shows the frequency with which relevant topics are published on fan pages by the participating libraries.

The information published by libraries on social media platforms was very similar to that appearing on their official websites. In the case of fan pages, however, it is noteworthy that by far the largest proportion of posted information pertained to publications about AI, such as books and articles. Posts about webinars, library events, and other information appeared much less frequently. This is the essential difference between library websites and social media. Also worth noting is that the latter posts featured an additional subject category, namely graphics generated by librarians, which was not present on libraries' mainstream sites.

Posts on AI books and articles from external websites

Among the posts identified, a significant number included information about new publications available in libraries and online reading rooms (30,12 % - 47 websites). For example, there were many kinds of book exhibitions, such as offers of foreign books by the Kraina Książek bookshop in May 2024 at the Władysław Grabski's Main Library Warsaw University of Life Sciences (<https://tinyurl.com/2pyzb86v>) or a book exhibition on artificial intelligence organized in June 2023 at the Poznan University of Technology Library (<https://tinyurl.com/358w7y8m>). There were presentations of books thematically related to the use of artificial intelligence. One example was the ChAT Library, which on Instagram encouraged people to read books about AI (e.g. <https://tinyurl.com/ykbra3vf>), and this was done in an interesting way, such as using graphics and posing intriguing questions to users. There were 5 posts related to World Library Day with graphics created by librarians using AI tools (<https://tinyurl.com/58m9zbjk>).

Of note were also the activities undertaken by the staff of the Main Library – University of Szczecin on their Twitter fan page (X) (<https://x.com/BibliotekaUS>). During almost 40 tweets, the library presented quotes from articles available on the web, thematically related to the use of artificial intelligence. It sometimes provided quotes that many people may find controversial, such as the words from an article by Jerzy Stepien on the use of Chat GPT in education: '...communicating with it is akin to communicating with an intelligent being that understands not only what we say, but also what we mean' (<https://tinyurl.com/2b2826dt>) or a question from Maciej Gajewski's article 'Must there be a human behind the music at all?' (<https://tinyurl.com/mduk3ey4>). In the body of the tweets, the library provided links to the full text from which the presented quotes were taken. Another example was observed in July 2023 as this library's staff informed patrons about their creation of a website on artificial intelligence specifically for them (<https://tinyurl.com/69nn38df>). However, this way of presenting up-to-date information on AI is rare in Polish academic libraries.

Other AI and GAI initiatives by university libraries and librarians

There were posts promoting selected GAI and AI tools and events organized in the libraries (16,28 % - 41 posts in total). Individual published information was complemented by extended photo galleries of the event, e.g. the Young Librarians' Forum organized at the Nicolaus Copernicus University Library in Torun in September 2024 (<https://tinyurl.com/yckasn2h>).

There was information about events organized in libraries amounting to 17 posts (10,89 %), while there were 7 referring to the librarians participating in various external conferences or seminars (4,48 %). For example, several posts referred to the Medical Libraries Problem Solving Conference organized in September 2024 in the library in Szczecin. It was entitled 'Artificial intelligence and medical libraries - are we on the threshold of transformation?' (e.g. <https://tinyurl.com/3ywp9cma>). Another of the issues also addressed was a paper on 'Artificial intelligence in the development of bibliographic databases' (<https://tinyurl.com/35xpf48k>). In addition, several posts were about the Good Practice Forum - Beyond the Event Horizon - Libraries at the Intersection of Artificial Intelligence - which took place at the Main Library of the Wrocław University of Economics and Business in 2024 (e.g., <https://tinyurl.com/4scp8x56>).

Other events promoted on the social media fan pages included, for example, the webinar 'Artificial Intelligence as a partner in academic education: opportunities and challenges', which appeared on Facebook by the Main Library of AGH University of Science and Technology in Krakow in April 2024. During the meeting, the presenters discussed the possibilities of using ChatGPT and other AI tools in education (<https://tinyurl.com/yh5e6xkj>). The same library, but on a fan page on Instagram, in May 2024, invited its users to a lecture entitled 'AI development - challenges for standardization and legislation' (<https://tinyurl.com/3rfrd2ea>). In June 2023, the Main Library – University of Szczecin promoted a lecture on the use of AI in academia, which was also broadcast on YouTube (<https://tinyurl.com/5299fjp8>).

The libraries also promoted events in which users could participate. For example, in May 2023, in an Instagram post, the libraries of the Main Library, Poznan University of Economics and Business invited users to participate in a debate entitled 'Artificial intelligence in the economy' (<https://tinyurl.com/4hx4uyhk>). There was also information about the possibility of attending webinars on AI-based tools for science, as seen in the Main Library, Poznan University of Economics and Business post in September 2023, which informed its users on Facebook about an open webinar by Elsevier on the combination of advanced AI models and the Scopus database (<https://tinyurl.com/sbfch2mu>). In October 2023, the Main Library – University of Szczecin announced a webinar organized by scite.ai on 'How research publications & citations can provide quality control to ChatGPT' (<https://tinyurl.com/murpzm7m>), and in Spring 2024, the library's fan pages published posts about the previously mentioned nationwide webinars on the Scopus AI tool and the generative AI-based Web of Science research assistant (Research Assistant).

Events promoted by libraries in the context of the dangers of using AI in science are worth mentioning, and an example of this is the post of 16 February 2024 from the University Library in Poznan about the anti-plagiarism system used in Polish universities. The Information Processing Centre, which created the post, added a new function to make it easier to check whether a thesis was written using artificial intelligence. This was an attempt to more effectively combat plagiarism (<https://tinyurl.com/4jvscj6r>).

Discussion

To increase future response rates, the survey process will be modified in several ways. First, the purpose of the survey will be better clarified, emphasizing why high participation levels are crucial and encouraging participation by explaining how the survey will contribute to improvements in the area being studied (Brosnan et al., 2021). A short and

simple introduction to attract potential participants' attention may be developed for this purpose (Brosnan et al., 2021). Second, the survey duration will be extended to maximize participation levels, and its administration will take place entirely outside the summer recess period. Although response rates tend to increase as a study remains open, "there is tentative evidence that the more generous the deadline, the smaller the retention rate, and clear evidence that response completeness is lower" (Göritz & Stieger, 2009). Therefore, surveys should not remain open for too long. In Poland, universities begin the summer break around mid-July, and in the first round of the survey, several automated leave notifications were received from potential respondents who were on summer leave. It is also important to avoid extending the originally set survey deadline, because this does not increase participation at all (Décieux & Heinz, 2022). Finally, participation may also be increased by personalizing invitations (Heerwegh et al., 2005). Another factor that may influence participation rates is the promise to share the research results. One respondent requested access to the results and explained that he participated despite the absence of such an assurance. However, this aspect would require separate examination, because it is not widely supported by available research.

At the same time, scientific discourse has identified several drivers that influence the willingness to participate in surveys. These include incentive payments, speed and ease of completion, topic interest, software functionality, benefit to others, topic knowledge, perceived impact, relationship with the brand or organization, and respondents feeling that their opinions are valued (Brosnan et al., 2021). The most fundamental factor is participants' knowledge of the survey topic (Brosnan et al., 2021). If a respondent is unfamiliar with the subject, they will be less inclined to participate. In the case of research on a new area, such as the use of AI and GAI in academic libraries in Poland, this factor may have been the main reason for obtaining a smaller number of responses.

It is clear from the analysis presented here that the libraries of Polish higher education institutions rely heavily for their content on announcements about events organized by external organizations and companies. Most messages published on library websites fell into this category. This is hardly surprising, as companies that provide technological solutions for academic libraries are increasingly offering tools based on AI and GAI. The current market is both dynamic and competitive, resulting in a growing number of such products and burgeoning efforts to showcase these via webinars promoted on library websites. Nonetheless, the impression remains that the AI and GAI revolution witnessed in recent years is perhaps insufficiently reflected in the communications of individual institutions. Indeed, more than half of the library websites contained no information at all on the use of AI or GAI. This may come as a surprise not only to researchers conducting analyses of institutions' websites, but also to the students and faculty who are serviced by these libraries.

A further significant finding is that the websites of the participating university libraries lacked aggregated information on the availability and use of various AI tools. An exception was the website of the Wrocław University of Health and Sport Sciences. Main Library and Science Information Centre. The institution provided a list of tools and search engines (67 in all) using artificial intelligence that could be useful in the work of students and academics. Significantly, attention was drawn to the increasing integration of AI into the learning and academic research process, which, according to library staff, facilitated the research process, work organization and, perhaps surprisingly, the development of writing skills. AI also allowed, according to them, better time and data management, which in turn translated into greater work efficiency (<https://tinyurl.com/4hh2pt8r>). The information quoted here is an exception. Most websites provide neither practical information nor specific examples of tools. This was confirmed by the survey. In question S6, which prompted respondents to identify obstacles to the widespread use of GAI technology in librarianship, the most frequently selected answer was "lack of knowledge how to work with these technologies" (77.8 % of

responses; see Table 1). Among other things, lack of knowledge here implies an inability both to distinguish between AI and GAI and to identify specific AI and GAI tools. Consequently, no information about implementation in the area of GAI, or even AI more broadly, was discerned by the study. However, some academic libraries, such as the Main Library of Maria Curie-Skłodowska University in Lublin, the University Library of The John Paul II Catholic University of Lublin, the Main Library of the University of Physical Education in Krakow, and the Library of the University of Opole, have implemented an AI search assistant (BETA version), specifically the Primo Research Assistant. Primo Research Assistant was formally launched at the end of 2024 in selected institutions across 10 different countries, representing various cultural and linguistic backgrounds. It operates based on the digital resources of a given library, and each library decides whether to enable it or leave it inactive. Librarians currently have no control over its functionalities.

After logging into their library account, users formulate a search query and receive a short text response with references to specific electronic sources available in the library's collection. Its functionalities include semantic search and natural language queries; responses with references based on the top five abstracts; answers based on results found in the Central Discovery Index; links to full texts; links to the full

Table 1
Survey questions along with the obtained quantitative results.

Survey questions	Answers obtained	Of all participating libraries
S1. Does the library deal with the issue of generative artificial intelligence in any way?		
- yes	39.3 %	39.3 %
- no	60.7 %	60.7 %
- I don't know	0 %	0 %
S2. If so, to what extent?		
- encourages employees to use generative artificial intelligence tools	64.3 %	32 %
- collects and organizes information, e.g., in the form of a website, presentation, etc.	42.9 %	21 %
- organizes training for employees and/or users	35.7 %	17.8 %
- provides information to users	35.7 %	17.8 %
- different answers	28.6 %	14.2 %
- creates regulations	21.4 %	10.7 %
- develops guidelines for employees	14.3 %	7.1 %
S3. Does the library use generative artificial intelligence tools?		
- yes	46.4 %	46.4 %
- no	42.9 %	42.9 %
- I don't know	10.7 %	10.7 %
S4. If so, for what purpose?		
- generating texts for use in carrying out various tasks	66.7 %	35.7 %
- completing tasks faster	53.3 %	28.5 %
- assistance in professional activities	46.7 %	25 %
- assistance in scientific work	33.3 %	17.8 %
- obtaining relevant information	20 %	10.7 %
- acquiring knowledge (education)	13.3 %	7 %
- different answer	6.7 %	3.5 %
S5. Is there a need to incorporate generative artificial intelligence tools into library work?		
- yes	57.1 %	57.1 %
- I have no opinion	42.9 %	42.9 %
- no	0 %	0 %
S6. What is an obstacle to the widespread use of generative artificial intelligence technology in librarian work?		
- lack of knowledge of how to work with these technologies	77.8 %	77.8 %
- lack of appropriate regulations specifying the possibilities of using these technologies	70.4 %	70.4 %
- ethical considerations	18.5 %	18.5 %
- no need to work with this type of tool	11.1 %	11.1 %
- different answer	7.4 %	7.4 %

Table 2
AI and GAI. Examples of tools and their potential use in academic libraries.

Tools with AI	Tools with GAI
<i>Enhanced data processing and retrieval, personalized search results and recommendations</i> Example tools: <ul style="list-style-type: none">• Semantic Scholar• Google Scholar• Vega Discover• BASE (Bielefeld Academic Search Engine)	<i>Enhancing information retrieval</i> Example tools: <ul style="list-style-type: none">• Primo Research Assistant• Scopus AI• Web of Science Research Assistant• Consensus• Assistant by Scite• Elicit• SciSpace• OpenRead <i>Chatbots and virtual assistant</i> Example tools: <ul style="list-style-type: none">• ChatGPT• Perplexity• Chatbase• Botsonic• QuickChat <i>Metadata generation</i> Example tools: <ul style="list-style-type: none">• AI Metadata Assistant (Ex Libris)• Ex Libris Alma <i>Reading and summarization, conversing with documents</i> Example tools: <ul style="list-style-type: none">• ChatPDF• ChatDOC• NotebookLM (Google)

Table 3
Topics of information published by libraries on the World Wide Web.

Topic	Incidents of published information	Percentage of information published
Webinars and AI tools	90	58,44 %
Publications about AI	28	18,18 %
Events organized at the library	16	10,38 %
Exhibitions in the library	7	4,54 %
Events at the university	5	3,24 %
Conference activity of librarians	4	2,59 %
Other	4	2,59 %

result list in Primo; search suggestions to help users expand the topic and learn more about it; and non-English search and answer support (Ex Libris, 2024).

Lack of competency among staff is an obvious barrier, suggesting a need in Poland to organize and encourage participation by library staff in appropriate training courses, workshops, and tutorials, whether in traditional, hybrid or online delivery forms. Władysław Grabski's Main Library at the Warsaw University of Life Sciences (SGGW) is a signal example of an institution that is already active in this area. Similar projects could be launched by other universities, either individually or jointly, perhaps in collaboration with SGW's existing program. Consideration might also be given to the crucial matter of developing a common regulatory framework for AI and GAI use in libraries. Not only is this a necessary imperative for the future, but the very existence of

Table 4
Topics of information published by libraries on social media fan pages.

Topic	Incidents of published information	Percentage of information published
Books	47	30,12 %
Reference to article posted on external websites	39	25,00 %
Webinars and tools	20	12,82 %
Events organized at the library	17	10,89 %
Events at the university	14	8,97 %
Conference activity of librarians	7	4,48 %
Graphics generated by librarians	5	3,20 %
Exhibitions in the library	4	2,56 %
Other	3	1,92 %

such a framework might stimulate activity by university libraries that currently lag in this field.

The competencies desired among librarians include, above all, an understanding of how these technologies work, the opportunities they offer, their limitations, and the necessity of incorporating AI tools into the repertoire of tools used by academic libraries to support both scientists and students. In addition, librarians must acquire competencies that enable them to transfer this knowledge to others (Oddone et al., 2024; Watkins & Johnson, 2024). In other words, librarians must first understand what they are working with and learn to use these tools effectively so they can later teach their users. In this context, these issues are most accurately described by the term AI literacy.

“AI literacy is the ability to understand, use, and think critically about AI technologies and their impact on society, ethics, and everyday life” (Lo, 2025). The components of AI literacy include the following:

- Technical knowledge – a fundamental understanding of key concepts such as machine learning, algorithms, and neural networks.
- Ethical awareness – recognition of possible biases, gaps in accountability, and privacy concerns.
- Critical thinking – the ability to evaluate sources, data, and assumptions that form the foundation of AI models with a critical perspective.
- Practical skills – the ability to use AI tools and determine when it is appropriate to rely on AI versus when human judgment is essential.
- Societal impact – an understanding of how AI is transforming various aspects of the world, including cultural, economic, and environmental changes (Lo, 2025).

The social media fan pages used by libraries lacked a broader recognition of the possibilities of using AI in these institutions to enhance and improve the research activities of the university staff. One of the few exceptions was a post that appeared on 30 May 2023 on the Facebook fan page of the University of Warsaw Library (<https://tinyurl.com/58p2p3mb>). The post promoted an article by Łukasz Ratajczak, a librarian, on ‘Artificial intelligence in the service of the BUW?’ (Ratajczak, 2023). The article appeared on this library's online blog - BUWLog (<https://buwlog.uw.edu.pl>). The author gave an interesting overview of the library's use of the GPT Chat, including for information retrieval, generating ideas for research or for facilitating certain aspects of the research process, and creating graphics, text documents or composing music.

The posts published by the libraries tended to take the form of graphics with supplementary text. There were longer text posts, e.g., with a review of a book thematically related to the problem of using artificial intelligence (example: <https://tinyurl.com/2chdms23>) or a list of new products available in the collections. Individual posts also took the form of short videos (example: <https://tinyurl.com/5u2evz7v>). Interestingly, sometimes the hashtag “#artificialintelligence” appeared

in posts on other topics, such as the post published by the Main Library – University of Szczecin on World Pudding Day (<https://tinyurl.com/4eu7rk6b>). Presumably, in such cases, the AI-related hashtag was used as an element to attract the users' attention.

Academic libraries are gateways to knowledge and innovation. What happens at these institutions in terms of AI thus matters greatly. As those who work in academia are well aware, today's users of academic libraries make extensive use of these tools, clearly underlining the need to educate information science professionals about AI and GAI tools and equip them to meet the needs of contemporary library users. These tools save time, take pressure off limited budgets, generate new information and data sets, provide answers to new questions, and can be harnessed to improve library services for particular groups, such as non-native speakers and those with various physical disabilities.

Libraries are an important link between valuable knowledge resources and knowledge users and consumers. It is therefore critical that these institutions optimize their use of modern technological advances to make access to knowledge faster, more efficient, and more relevant. Of utmost importance, of course, is that academic libraries maintain their role as centers of knowledge exchange. Failure to remain abreast of technological change, where AI and GAI are at the forefront, runs the very real risk of rendering academic libraries obsolete in the minds of students and possibly also faculty. This stance would of course be erroneous and self-defeating, as use of AI and GAI can and does lead to unwitting user errors that could be eradicated or alleviated through appropriate intervention by academic library services. Of course, changes of this order require understanding and commitment on the part of library staff, which is why voluntary staff training aimed at improving AI and GAI competence and knowledge among the current cadre of academic librarians is so critically important. Equally critical, if not more so, is the need to integrate appropriate AI and GAI training into formal library science curricula to ensure that the university librarians of the future are equipped to meet the ever-evolving demands of academic knowledge users and consumers.

Conclusions

Based on the research conducted, the potential of artificial intelligence and generative artificial intelligence in Polish academic libraries can be clearly seen. It can also be seen that librarians are interested in this topic, especially from the information perspective. The potential of AI and generative AI is also visible on library websites and/or fan pages on social networks. Libraries tended to publish information on AI in general. Most of the published information did not distinguish between AI and GAI. It can be seen that, from the point of view of those publishing this information, such a distinction usually did not play an important role. As the survey documented here has shown, this is due largely to lack of appropriate knowledge about AI and GAI. Undoubtedly, the near future will show whether AI will be such a significant transformative force to become the basis for a paradigm shift in the coming years in the context of how libraries operate in the 'intelligent information' era and offer information and library services based on AI tools. Since a significant proportion of libraries (46.4 %) declare use of GAI tools to some extent, it would be worth conducting further research to determine precisely what GAI tools (and possibly also AI tools) are used by these libraries.

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Data curation, Conceptualization. **Sebastian D. Kotula:** Writing – review & editing, Writing – original draft, Validation, Methodology, Data curation, Conceptualization.

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