

AI literacy instruction program in international school libraries: A qualitative study under the lens of the Big Six Information Literacy model

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Abstract

School librarians instruct students in information literacy to help them search, assess, and use information. Generative AI (GenAI), like ChatGPT, has recently impressed users with rapid response time and detailed, intricate answers to complex problems through simple prompts. Thus, AI information-seeking technologies could significantly impact information literacy instructions at school libraries. This research uses a qualitative approach by interviewing librarians and students at an international school on their views on AI literacy instruction at schools. Results indicate that despite several drawbacks, students regard GenAI as a primary source of information searching. Therefore, librarians suggest fact-checking is essential when using GenAI for assignments and studies. Scant studies have examined the perception of international school librarians and students on AI literacy instruction at international schools, particularly in East Asia. Using the Big Six Information Literacy model, this paper attempts to fill a research gap by helping school librarians explore the critical elements of AI literacy instruction programs.

Keywords

Big Six Information Literacy model, generative artificial intelligence, information literacy, International Baccalaureate, school libraries

Introduction

Access to relevant, latest, and accurate information is essential for students to conduct study-related activities, especially for inquiry-based education in international schools (Majid et al., 2020). With recent ubiquitous information and communication technology, information is available almost anywhere, anytime (Dai and Chiu, 2023). Educators are also exploring innovative teaching approaches to equip students to become independent and lifelong learners (Hicks and Sinkinson, 2015). The current digital-native youth generation is more digitally competent in searching for information (Szymkowiak et al., 2021).

In November 2022, OpenAI introduced its chatbot ChatGPT to the public, which quickly captivated users with its remarkable speed of response and its ability to tackle complex inquiries. Its rapid generation of detailed and sophisticated answers from simple prompts impressed users. Within 2 months, an astounding 100 million users had registered to use the platform (Skopeliti and Milmo,

2023). Furthermore, ChatGPT's apparent aptitude for engaging in creative endeavors has been hailed as a groundbreaking feature. It can compose college-level essays, devise curriculum plans, generate articles, emulate various poetic styles, write computer code, and much more (Bhullar et al., 2024; Murray, 2023).

Information literacy skills have become essential with the advancement of the Internet age (Spisak, 2020). Keeping students well-equipped with information literacy skills enables them to succeed academically beyond high school (Al-Qallaf and Aljiran, 2022; Smith et al., 2013). Researchers have extensively discussed the potential impact of ChatGPT on education, emphasizing the potential for students to utilize the tool for cheating (Johnson,

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2023; Klein, 2023). Additionally, AI technologies for information search have the potential to significantly impact the media and information literacy instructions (Carroll and Borycz, 2024; Tiernan et al., 2023). Gaining insight into the disparate perspectives of school librarians and students on Generative AI (GenAI) technologies for information seeking is crucial to understanding the potential impacts on information literacy teaching among librarians (Bauld, 2023; Oddone et al., 2023). Using the Big Six information literacy model, this research attempts to help international school librarians develop and manage information literacy programs regarding the challenges of GenAI.

School librarians curate resources, teach information literacy, support educators, promote reading, and engage students in learning (Boyer and Kelly, 2014). Research has shown that students prefer online resources to seek information (Kim et al., 2011c). Nevertheless, students are weak in critically evaluating sources and selecting conceivable sources of information (Metzger et al., 2015). Students need “a comprehensive skill set to prepare them to leverage information abundance and diversity, and at the same time, enable them to differentiate between credible and dubious information” (Majid et al., 2020: 380). Information literacy skills have become increasingly crucial in the digital age because they increase critical thinking and help combat misinformation. (Spisak, 2020).

The term artificial intelligence was coined by John McCarthy and his team in 1955. With its pervasive presence in our daily lives, AI has become an essential technology widely integrated into various activities within the education realm. Librarians have traditionally played a crucial role in ensuring their communities have access to the latest technologies for information search and retrieval (George, 2023; Gul and Bano, 2019). Researchers also recognize librarians as essential in educating the public and students about AI (Cox, 2023; Finley, 2019; Huang et al., 2023; Ridley and Pawlick-Potts, 2021). Thus, the following research questions (RQ) guide this study:

RQ1. What are the perspectives of international school students and librarians in using AI for learning?

RQ2. What AI literacy skills should international school librarians develop and work on in future information literacy instruction?

RQ3. Using the Big Six Model, what key elements are necessary in AI literacy instruction programs developed by international school librarians?

Literature review

Students' information literacy competences

Information has recently become ubiquitous and dilating; digital-native students have become more proficient in technology than a prior generation (Šorgo et al., 2017;

Sparks et al., 2016; Spisak, 2020). However, they often cannot assess information according to accuracy, authority, objectivity, and coverage (Krecar et al., 2015; Smith et al., 2013; Spisak, 2022). Researchers recommended that information literacy skills are essential before students receive tertiary education (Dolenc and Šorgo, 2020; Smith et al., 2013).

Self-efficacy refers to a person's confidence in their abilities to perform tasks (Bandura, 1997). Some studies indicated that many secondary students rate their self-efficacy in information literacy as high, but their performance is low (Molteni and Chan, 2015; Spisak, 2022), indicating that students overestimate their information literacy skills (Dolenc and Šorgo, 2020; Spisak, 2022). Thus, more information literacy instruction is necessary at schools so that students can distinguish between information and misinformation for more informed decisions in society (Ho et al., 2022, 2023).

Several studies point out that postsecondary students generally lack information literacy. First-year university students had difficulties meeting the requirements of undergraduate research assignments, lacked problem-solving and analytical abilities, and evaded ethical responsibility when relying heavily on Internet information (Correll, 2019). Furthermore, information literacy is essential for student learning, academic development, and becoming informed citizens (Al-Qallaf and Aljiran, 2022). Nevertheless, there is a distinct gap in information literacy competencies when secondary students enter universities, calling for strengthening information literacy education at schools.

GenAI and its impacts on learning at secondary schools

By leveraging Natural Language Processing (NLP), ChatGPT can generate distinct responses that mimic human text, enabling it to engage in conversations and create *realistic natural dialogs* (Tlili et al., 2023). What makes ChatGPT attractive is data and power (Deng and Lin, 2023). Due to its extensive datasets, ChatGPT exhibits greater diversity in tasks, such as generating intricate code, writing essays at a college level, and providing educational resources from a simple prompt. Secondary students in Hong Kong mainly use Poe for their study. (Woo et al., 2024). Poe is a platform aggregating AI chatbots, providing users access to multiple chatbot options, such as Open AI's ChatGPT, GPT-4, GPT-4o; Anthropic's Claude 3; and Google's Gemini 1.5, etc. Other commonly used GenAI tools for learning and study are Perplexity and SciSpace.

However, the power of GenAI is still hindered by the unreliability of responses and limited information range (Tlili et al., 2023). It sometimes gives inaccurate replies or generates fictitious answers when faced with queries about which it lacks knowledge. These responses may sound

plausible but are entirely fabricated (Tlili et al., 2023). GenAI tools do not often possess a genuine understanding of users' questions and attempt to provide an answer based on probabilities (Bender et al., 2021). Consequently, it poses a challenge when using it to seek information due to unreliable responses.

The capability of ChatGPT to generate substantial amounts of unique text from a basic prompt has also raised worries about students using the technology to commit academic dishonesty. García-Peñalvo (2023) doubted genuine learning would take place when students' assignments are predominantly facilitated by technology. Accordingly, text assignments have become outdated with the rise of freely accessible online information that can be copied and pasted without critical engagement or appropriate citation (García-Peñalvo, 2023).

Librarians, therefore, play a vital role in promoting AI literacy at schools by providing diverse resources, teaching information, and digital literacy, and collaborating with educators to integrate AI concepts into the curriculum. They facilitate discussions on ethical implications and create engaging learning activities (Diseiye et al., 2024; Ghosh et al., 2025). By equipping students with essential skills and knowledge, librarians prepare them to navigate the complexities of AI for learning.

International Baccalaureate and International Schools in Hong Kong

The International Baccalaureate (IB) is a non-government organization that provides four education programs to students aged 3–19 since 1968, namely, Primary Year Program (PYP) for primary school students, Middle Year Program (MYP), Diploma Program (IBDP), and Career-related Program (IBCP) for secondary school students. The IB programs promote “international mindedness in a global context through multilingualism, intercultural understanding, and global engagement” (Wright and Lee, 2019: 684).

IB Schools must apply the Approach to Learning (ATL) in teaching to develop students' thinking, communication, research, self-management, and social skills (International Baccalaureate, n.d, a, n.d, b) Among those ATL skill sets, information literacy is crucial for MYP students to access, select, organize, and reference information (Ramli et al., 2021) It involves identifying points of view, bias, and weakness, using primary and secondary materials, connecting various sources, and referencing sources to respect intellectual property rights (Callens, 2021; Dulun and Lane, 2023).

The IBDP curriculum comprises six subject groups with three DP cores: Extended Essay (EE), Theory of Knowledge (TOK), and Creativity, Activity, and Services (CAS). Amongst those DP cores, EE requires students to demonstrate their information literacy skills. EE is “an independent piece of research, cumulating 4000-word

paper” (International Baccalaureate, n.d, a, n.d, b). Students are expected to formulate research questions, develop a methodology, explore and communicate found information, and develop arguments and personal ideas while adhering to strict rules of academic honesty (International Baccalaureate, 2019). Students must conduct a literature review to demonstrate their information literacy competence by critically examining “the relevance, reliability, and validity of secondary source material” (International Baccalaureate, 2017: 16).

The International Baccalaureate (IB) has significantly influenced global education, especially in the Asia-Pacific region, which is experiencing rapid growth in IB schools, enhancing the social status of the global middle class (Lee et al., 2022). The IB's emphasis on English as the medium of instruction opens pathways to prestigious universities. In Hong Kong, the English Schools Foundation (ESF), the largest English-medium international school organization, offers the IBMYP in two all-through schools and five secondary schools. Students can continue with the IBDP, IBCP, or BTEC in Years 12 and 13 (English Schools Foundation (ESF), n.d). Through this comprehensive curriculum, ESF not only prepares students for global citizenship but also aligns closely with the values and educational standards set by IB, fostering a seamless transition into higher learning and international opportunities.

Facing the challenges of GenAI on students' academic integrity, ESF has issued guidelines for students and staff on the proper use of AI academically. The first strategy is agile: to embrace changes and adapt to the evolving needs of students and staff by continuously refining their AI-powered solutions and adopting emerging technologies (ESF, 2024). Secondly, ESF schools should deploy AI for teaching and learning responsibly and ethically so that all stakeholders can align with their understanding of technology and its implications (ESF, 2024). Last, ESF educators must be accountable for using GenAI in classrooms to ensure that they are used to enhance, rather than replace, human interaction and creativity (ESF, 2024).

Big Six Information Literacy Model

Information-seeking behavior models, such as Kuhlthau's Information Search Process and Wilson's model of Information Behavior, provide valuable insights into how individuals access and utilize information (Mondol, n.d). The Big Six Information Literacy Model is particularly effective for librarians teaching AI literacy. It helps students systematically approach information tasks, which is crucial when navigating complex AI topics. It also encourages critical thinking, information synthesis, and evaluation of information sources, which are essential in the AI context, where misinformation can be prevalent.

Mike Eisenberg and Bob Berkowitz developed the Big Six Information Literacy Model in 1990 (Eisenberg, 1997,

2003; Eisenberg and Berkowitz, 1990). It is a structured model for solving information problems. It combines information search and usage skills with technological tools in a systematic procedure to locate, utilize, apply, and assess information for particular needs and tasks (Heath and Sinclair, 2020; Kamba and Buba, 2022).

The model comprises six stages: Task Definition, Information Seeking Strategies, Location and Access, Use of Information, Synthesis, and Evaluation. Each stage emphasizes critical skills necessary for effective information processing (Siamak and Koltay, 2016). Studies highlight its adaptability across disciplines, from K-12 education to higher education and beyond, demonstrating its relevance in developing critical thinking and research skills (Eisenberg, 1997; Parissi et al., 2023).

Research indicates that educators who incorporate the Big Six Model into their curricula enhance students' ability to navigate information-rich environments (Kuhlthau, 2004; Siamak and Koltay, 2016). For instance, a study by Kuhlthau (2004) associates the model with improved student engagement and learning outcomes, particularly in project-based learning scenarios. Additionally, the model's emphasis on metacognition encourages learners to reflect on their information-seeking behaviors, fostering lifelong learning skills.

However, critiques of the model suggest a need for updates to address the complexities of the digital age, including the rise of misinformation and the necessity for AI literacy to create a more holistic approach to information literacy education (Anurogo et al., 2023; George, 2023).

Research gap. As reflected in the literature, while many studies focused on the weaknesses of students in assessing the information from the Internet and the role of AI on learning among students, scant studies mention the role of school librarians in guiding students to use GenAI properly, at least in line with IB curriculum and regulations. There is also a lack of studies on how GenAI affects information seeking among students for completing assignments and other learning activities, particularly in international schools in Hong Kong. Thus, this research aims to fill the important research gap in information science.

Methodology

Leddy & Ormrod (2020) suggest that interviews are probably the most productive data collection method, especially for qualitative research. As such, this research conducted semi-structured interviews to reveal more diversified information than responses to a questionnaire provided, especially for using emerging technologies. To allow interviewees to express their thoughts and feelings based on their own experiences and understandings, a free conversational interview also enables a more open, spontaneous, and instant exchange of ideas (Leung et al., 2020). The interview will feature follow-up questions to clarify participants' answers and ensure that I will understand their ideas immediately.

Students from Year 12 taking different subjects were selected because of their extensive need to write essays to satisfy the IB requirements. Eight ESF Year 12 students (five males and three females) studying IBDP were selected for interviews to learn about their perceptions, needs, and challenges in using GenAI, including their understanding of the ethical application of using GenAI at ESF King George V School. Two ESF secondary school librarians were interviewed at ESF Sha Tin College and ESF King George V School to seek their ideas and experiences in instructing students on AI literacies or competencies. Table 1 summarizes the demographics of the respondents. This approach can triangulate the information obtained from the respondents.

The faculty-level ethics committee of the researchers approved this research. After getting the school principal's consent, interviewees were recruited voluntarily through a school-wide announcement. Before the interviews, each interviewee was informed about the study and signed a consent form for being interviewed.

Two sets of open-ended questions were customized for librarians and Year 12 students, respectively (Appendices 1 and 2), to maintain consistency while catering to their differences. The interview data was coded by hand to reveal themes from librarians and students individually. To answer RQ1 and RQ2, we read and interpreted the raw interview data to develop themes without preconceived notions, enabling us to discover which AI literacy skills are essential for interacting with AI chatbots for learning and study.

To answer RQ3, when exploring critical elements in an AI literacy instruction program, it is better to follow information literacy models that inspire librarians or teachers on the best way to teach students how to search and interpret the information for problem-solving and inquiry (Heath and Sinclair, 2020). Regarding the Big Six Information Literacy model, the interview questions were set into six stages of the model to explore key elements of the AI instruction program from the perspectives of librarians and students. Their answers were thus coded and analyzed following each stage of the model to examine how school librarians apply the Big Six Information Literacy Model for AI instruction programs.

Findings and analysis

Perception of year 12 students on using GenAI for study (RQ1)

Appendix 3 shows the perception of Year 12 students and ESF librarians on using Gen AI for study. Some respondents learned about ChatGPT from social media, friends, and teachers. They generally used it for simple assignments and initially doubted its effectiveness. For example, S3 shared, *"Using social media, I found out that ChatGPT being developed by OpenAI. . . I used it, tested it. . . I would assume it can't do it, and I basically tested it for a while."* S6 shared, *"The first time I used it was to help just answer*

Table 1. Demographic table of respondents.

Year 12 students	Gender	Subjects taken for IBDP
S1	Female	History, Psychology, Mathematics, English, Spanish, Economics, Biology, Physical Education, Theory of Knowledge, Extended Essay, Creativity, Activities and Services
S2	Male	Mathematics, Business, Computer Science, English, French, PE, Physics, TOK, EE, CAS
S3	Male	Business, Mathematics, English, Chinese, Economics, PE, TOK, EE, CAS
S4	Male	Mathematics, Chinese, English, Economics, Computer Science, Physics, PE, TOK, EE, CAS
S5	Female	Design, Mathematics, Philosophy, History, German, PE, English, TOK, EE, CAS
S6	Female	Biology, Mathematics, English, Business, PE, Spanish, Chemistry, TOK, EE, CAS
S7	Male	Mathematics, English, PE, Business, Film Studies, Sport Science, Spanish, TOK, EE, CAS
S8	Male	Mathematics, Chinese, English, Chemistry, PE, Physics, Business, TOK, EE, CAS
Librarians	Gender	Major for undergraduate and postgraduate
L1	Female	Undergraduate: English & Comparative Literature Postgraduate: Library and Information Management
L2	Female	Undergraduate: Economics and Business Management Postgraduate: Information Management

Table 2. GenAI tools used by ESF Y12 students for study.

AI tools used for the study	Interviewees—students (n=8)
ChatGPT from Poe	6
Poe Assistant	2
Claude	1
Perplexity	2
Grammarly	2
Canvas	1
Adobe Firefly	1

areally simple question.” Nevertheless, some respondents found that GenAI tools are innovative and started using them for most assignments. For example, S2 explained, “*I saw my friends using these GenAI tools. . . I thought it was a very convenient and smart resource to use. I use them in pretty much almost all school assignments.*”

Usage experiences. Tables 2 and 3 summarizes the respondents’ usage of GenAI. Most respondents have used ChatGPT from Poe. N stands for the total number of interviewed students. They opined that Poe.com offers a collection of GenAI tools for them to try different tools and compare their potential to aid their study. Within Poe.com, they used Poe Assistant and Claude more to help them write English essays. Many also reported frequent usage of Perplexity, as they saw better results than Poe’s ChatGPT in disclosing the information sources. Yet, some have never heard of ChatGPT, and they were puzzled by the content generated by Poe due to a lack of information sources. They also used Grammarly to polish their writing, while some used Canvas and Adobe Firefly for image generation, editing, and presentation.

Respondents predominantly used GenAI to brainstorm ideas and generate questions for research tasks and other

assignments. For example, S1 shared, “*I mainly use ChatGPT to help brainstorm ideas for my assignments.*” S7 explained, “*For my EE, I wanted to come up with a question. . . So I could use information from that to generate a question.*” Besides, they used GenAI to paraphrase their sentence, grammar check, and polish their writing. For instance, S3 said, “*I needed to, like, rephrase my works, paraphrase it.*” S5 remarked, “*It can help reform sentences of my own words.*”

Additionally, respondents would like to use GenAI to clarify some complicated concepts because the prompts could present simple definitions or explanations, enabling them to understand some theoretical ideas and search for more in-depth information. S2 commented, “*I don’t understand a particular topic or definition. So I may ask the AI.*” S4 reflected, “*I asked the chatbot to give more in-depth sources. . . giving you precise content.*”

Interestingly, they asked ChatGPT to create in-text citations and bibliographies, which they considered efficient in creating the correct bibliography format. For example, S1 shared, “*I ask it to help with APA referencing sometimes.*” S5 explained “*I’ve used it. . . like bibliographies as well. . . It takes a lot of time, like writing bibliographies in APA format and then alphabetically sorting it.*”

Perceived benefits of using GenAI for study. Most respondents agreed that GenAI tools are fast and convenient for information search. They could get a ready-to-use answer easily, directly, and immediately through interactive and personalized conversations. The answers were presented in bullet points with sub-headings, enabling them to interpret the ideas better. S4 believed “*ChatGPT makes everything faster. . . you get whatever you want directly.*” Similarly, S6 asserted, “*I’ll be able to do all my research in one place and not have to go searching for a long time.*”

Moreover, they perceived that GenAI could offer answers and analyze issues from various perspectives and

Table 3. Summary of application of AI literacy instruction program guided by the Big Six Information Literacy Model.

Stages of Big Six Model	Main ideas of each stage	Application of an AI literacy instruction program among international school
1. Task definition	<ul style="list-style-type: none"> • Determine and Define the Problem: Do I understand what I need to do? • Identify the information needs: What essential information do I need about the topic? 	<ul style="list-style-type: none"> • Instruct students on what AI is • Identifying the learning goals of students about AI literacy • Introduce the academic honesty policy of IBDP
2. Information seeking strategies	<ul style="list-style-type: none"> • Determine source of information: Where should I begin my search for information? Consider both print and online sources, such as databases and encyclopedias. • Select the best source: Choose resources that are perceived as easy to use and highly useful. 	<ul style="list-style-type: none"> • Let students understand how GenAI works and their potential bias • Teach students techniques for asking follow-up questions for AI prompts • Teach students other credible sources of information, such as e-journals, databases, newspapers • Introduce students to effective searching strategies for information resources, like filters, Boolean operations
3. Location and access	<ul style="list-style-type: none"> • Locate Information Sources: Develop the skills to use indexes and search through various sources for information. • Find information: Identify the specific information needed and seek out sources that contain relevant content to meet users' needs. Be sure to highlight and take notes as necessary. 	<ul style="list-style-type: none"> • Prompt Engineering: Teach students how to craft prompts that effectively guide AI to generate more useful and accurate answers • Suggest students use AI tools to gather information more reliably and ethically, such as Perplexity
4. Use of information	<ul style="list-style-type: none"> • Engage with the Information: Actively interact with the stored information related to the defined problem through reading, listening, and observing. • Extract Information: Determine effective methods to filter and select the most important and relevant information from a large volume of data related to the identified issues. 	<ul style="list-style-type: none"> • Inspire students to refine their prompts; students should learn how to extract relevant information from complex AI outputs • Provide tasks, requiring students to paraphrase • Summarize or quote information from various resources
5. Synthesis	<ul style="list-style-type: none"> • Organization of Information: Arrange the various sources into a cohesive format to achieve systematic results. • Information Presentation: How should I present the information to my teacher to complete assignments? Have I noted all the sources for the bibliography? 	<ul style="list-style-type: none"> • Teach students a necessity to integrate answers from GenAI with other sources of information • Work with teachers to develop interdisciplinary projects that combine AI with subjects • Gain practical insights into the capabilities and limitations of AI systems
6. Evaluation	<ul style="list-style-type: none"> • Evaluation of the Product: Users review the results to assess whether they effectively address the information research problem. • Evaluation of the Process: Users evaluate the process to determine if it meets their information needs. 	<ul style="list-style-type: none"> • Ask students to write reflective essays or presentations to assess their learning process, challenges faced and knowledge gained from GenAI

sources, making it easier for them to understand complex concepts. S1 stated, *"It's beneficial because it analyzes information from several sources."* S8 mentioned, *"For TOK (Theory of Knowledge), I would tell AI to help refine how the question works. . . ChatGPT helped me understand what the question was asking."*

Drawbacks of using GenAI for study. Respondents recognized that information on GenAI was too general and somehow offered irrelevant information. Thus, they

sometimes did not use the answers for assignments. When ChatGPT could not help them, they turned to major search engines like Google and Google Scholar and online resources from the school library. Yet, some did not seek other learning resources and just worked independently. For instance, S3 explained, *"Usually, it can give me very generic answers. . . I always specify what I need it for."* S4 expressed, *"I searched on Google because I don't trust the accuracy of chatbots."* Finally, S8 said, *"Basically, I stopped using it. That's how I overcome it."*

They also worried about GenAI providing fake information because they knew the limitations of such new technologies and would verify the answer by referring to academic journals and online resources. S2 stated, *"I use AI very carefully because I know it's not perfect right now, and there may be errors."* S4 described, *"One downfall of GenAI is that it's not always accurate compared to Google."* S8 complained, *"It does give misinformation."*

Finally, they are concerned that using GenAI would violate the academic honesty of the schools and IB. None of them would directly copy the answers from GenAI for assignments because they wanted their work to be more authentic. A student raised an ethical concern: the convenience and speed of ChatGPT would drive them to rely on it more and become lazier. For example, S4 suggested, *"If something is breaching academic honesty, then I shouldn't do it."* Likewise, S7 remarked, *"I am concerned about how many students end up generating whole essays from ChatGPT. . .it does reduce the integrity of other people's work."*

Perception of ESF librarians on students' usage of GenAI for study (RQ1)

Impressions on GenAI and its impact on information seeking. Librarian respondents generally doubted if the answers of GenAI were totally correct. However, they opined that it could be a great collaborative partner for learning because such unreliable answers would stimulate students to explore more and deeper. For instance, L1 expressed, *"It's not always the most reliable information. So already, the output is flawed."* L2 also believed, *"We're still going to need to check the accuracy and creditability of the source. . .They are using AI as a tool to extend the knowledge that they already have."*

Echoing students' opinions, the librarians agreed that GenAI could explain and clarify concepts in a way that students would understand more easily, especially for those afraid of talking to their teachers. Besides, L1 expressed that Perplexity would be better than Poe's ChatGPT due to its disclosure of the sources so that students could critically assess the relevance and accuracy of the answers. L1 explained, *"I'm very acknowledged a lot of students use the AI because their teacher wasn't able to explain. . .so that helped them break it down."*

Effects of GenAI on information literacy teaching among librarians. Librarian respondents opined that GenAI could largely impact their work on information literacy teaching. Due to students' increasing reliance on it as a major source of information to complete their assignments, students must know how AI works, its shortcomings, and how to use it effectively and ethically. Thus, they should let students know GenAI would serve as just another tool for information searching, not always giving them a correct answer. For example, L1 shared, *"You need to teach them*

how AI works, its shortcomings, and how to use it effectively." L2 explained, *"We know that ChatGPT is not 100% reliable or accurate. . .They need to be able to look at different perspectives of a topic."*

Besides, respondents believed they should enhance students' awareness to verify the answers from GenAI by cross-referencing traditional resources, such as academic journals, books, and online learning databases. L1 added, *"I would say verify not just with other websites, which they'll be very used to, but also with books, with their teachers, or even what they learned in class."*

Moreover, librarians expressed the need to strengthen students' concept of intellectual property. Although students should be alerted to the importance of citing AI as a source for their work, most students were uncertain about ESF and IB's academic integrity policies regarding the use of AI. They roughly knew they could not copy the answer from GenAI directly but were unsure when and how they should cite AI, especially for grammar and spelling. L1 clarified, *"Students are not even citing correctly because they don't really know how to cite AI. They don't even know if they have to cite AI."* S5 also mentioned, *"Correct the grammar and spelling. . .I don't think ChatGPT should be cited because it's something I could do."*

Perspective of school librarians on developing AI literacy instruction (RQ2)

As AI tends to play more roles in education, students have to know how to use AI wisely and ethically (Ng et al., 2021; Rodríguez-García et al., 2020). It gives rise to the concept of AI literacy. Scholars mostly quote the definition of AI literacy from Magerko and Long (2020: 2): "We define AI literacy as a set of competencies that enables individuals to evaluate AI technologies critically; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace."

However, the ability of ChatGPT and other GenAI technologies to produce extensive content from brief prompts has transformed our understanding of what AI can do (Zhao et al., 2024). There is a need to revise the idea of AI literacy. Academics started to concentrate on educating younger learners about AI knowledge and technology, emphasizing the importance of using AI ethically to address real-world issues (Ng et al., 2022).

According to Attewell (2023), students are worried that the answers to GenAI are less reliable and credible. They are also concerned about the shortcoming of over-reliance on GenAI. Although IB does not ban students from using GenAI for study, it reiterates AI is a starting point for research. Students have to identify if the answers of GenAI contain inherent bias (International Baccalaureate, 2023). Studies indicated that GenAI may not always offer a factually correct answer. Students are thus required to critically

assess and check the validity and inconsistency of the answers (Cotton et al., 2023).

ESF librarians opined that students should acquire skills to evaluate information from GenAI tools and understand that GenAI is not a panacea. Students should know what datasets are used to train GenAI, as GenAI platforms often source information from open websites subject to public change of content without adequate governance. For example, L1 noted, *"You need to tell students this is not a magic bullet. . . So, they will have to learn how to evaluate."* L2 also warned, *"You need to fact check. . . We know there's a lot of fake or inaccurate information."* Thus, the answers from GenAI may be rendered incorrect and contradictory, which some student respondents agreed with.

Besides, librarian respondents suggested enhancing students' awareness of biased information from GenAI. Students should analyze the reliability of results and the effectiveness of algorithms while scrutinizing the inherent biases associated with using GenAI (Silva et al., 2023). By examining the information sources of GenAI content, students can interpret the information from various perspectives. For example, L1 explained, *"Make sure you verify the information. . . maybe possibly checking its sources that it used."* L2 added, *"ChatGPT was developed in Western cultures. So you know the information bias will be toward a certain perspective on any issue."*

Studies have indicated that GenAI cannot perform original research or generate novel ideas. The feedback from GenAI may not contain appropriate citations and references to the sources (Cotton et al., 2023; García-Peñalvo, 2023). Librarians should teach students to examine the sources and citations of the answers to GenAI. It is also a regulation of IBDP, which is regarded as cheating and plagiarism (International Baccalaureate, 2023): *"If they use the text (or any other product) produced by an AI tool—be that by copying or paraphrasing that text or modifying an image—they must clearly reference the AI tool in the body of their work and add it to the bibliography."*

Finally, librarian respondents recognize the importance of prompting GenAI tactfully and ethically. Students generally remark the answers from GenAI are too vague and generic. It is necessary to prompt more specifically to get ideas for assignments. Librarians should suggest that students understand their information needs to personalize the answer. For example, L1 suggested, *"Prompts can't be too narrow; it can't be too broad. And you have to make sure that your prompts give you as much information as possible."*

Suggested elements for AI literacy instruction programs (RQ3)

Critical thinking is a fundamental aspect of learning in the 21st century (Saleh, 2019; Sari and Wardhani, 2020). The information age demands that individuals engage more thoroughly with the information they encounter, and they should utilize reliable sources to make well-informed

decisions, solve problems, and develop new insights (Smilansky, 2023). According to the interviews, participants extensively used AI chatbots as a source of information for assignments. As IB embraces the use of AI for assessment, school librarians should teach students to use GenAI effectively so that they would not easily commit plagiarism and academic misconduct.

Using the Big Six Model, this research provides a structured approach to ensure students understand AI and develop critical thinking and problem-solving skills related to GenAI technologies. Analyzed from the interviews, Table 3 summarizes the suggestions on how AI literacy programs can be organized and instructed for students, which helps add new knowledge to the Big Six Information Literacy Model:

Task definition. When librarians plan AI literacy programs, they should first teach students to determine and define the problems and identify their information needs. Students should ask questions like: *"Do I understand what I need to do? What are the topics/questions I need to answer? What do I need to know about the topic?"* (Eisenberg, 2003: 8; Kamba and Buba, 2022: 7).

Students should recognize the need for AI literacy and define their learning goals. In this stage, librarians would help students understand what AI is and its relevance to current and future societal contexts (Lo, 2024). Librarians should define specific and measurable goals for what students should learn about AI, including AI ethics, technology, application, and implications (Cox and Mazumdar, 2024).

Librarians can show students what AI literacy is by organizing workshops or presentations on AI technologies and their impacts across different sectors. Librarians should also explain the academic honesty policies of IBDP and ESF regarding GenAI. Instead of passive reception of information, ESF librarians adopt experiential learning for students to taste and use applications. For example, L1 shared, *"I would probably give them a topic, and then I'll ask them to put their prompts into AI. And then I'll ask them if you can shout out what you got."*

As such, students can independently learn how GenAI generates an answer and explore its benefits and shortcomings. Moreover, librarians can teach students how neural networks function, the history and recent developments of AI technologies, the ethics of using AI in various sectors, and the impacts of AI on global economics, politics, and culture (Mannuru et al., 2023).

Information seeking strategies. According to Eisenberg and Berkowitz (1990), students identify where their information comes from. They are trained to broadly understand different information sources, including books and other media, and to select the most appropriate one (Iriani and Wicaksono, 2021). For example, students can ask: *"Where can you start to look for information? What are the best*

sources to use? They should probably choose sources with perceived value and user-friendliness” (Kamba and Buba, 2022: 7).

Librarians should also train students to identify other credible sources when planning AI literacy instruction. Most student respondents shared that they did not plan before asking GenAI and just believed asking follow-up questions to GenAI could narrow down their search, aligning with the findings of Svendsen and Garvey (2023). As those answers are not always correct, students should be encouraged to ask teachers and search for information from academic journals, books, newspapers, and official websites of various organizations and government departments before sending prompts to GenAI (Verma et al., 2023).

Librarians should also guide students in sending prompts more specifically. Students should be clear about their assignment information to avoid over-generic answers. When introducing other learning resources, librarians can guide students in developing effective searching strategies using keywords, Boolean operations, and filters. Consequently, students would not solely rely on GenAI but use diverse sources to obtain the information more comprehensively.

Location and access. In this stage, students should search for information stored in various sources. They should identify the required information and search for relevant sources to satisfy their information needs. They can highlight or take notes if necessary (Eisenberg and Berkowitz, 1990). Librarians have to ensure that students have access to the required information sources, whether physical or digital.

Prompt engineering directs GenAI to produce targeted, high-quality outputs (Cain, 2024; Walter, 2024). Despite AI chatbot’s aim at emulating human behavior, they still need detailed instructions to deliver more specific and relevant results for the users (Chang et al., 2023; Kuhail et al., 2023). It matched with the views of ESF librarians: teaching students how to craft prompts that effectively guide AI to generate more valuable and accurate answers that essentially improve students’ ability to retrieve information from AI systems.

Furthermore, librarians should suggest students use AI tools to gather information more reliably and ethically. Based on the opinions of ESF students and librarians, Perplexity seems to perform better than Poe because its answers provide users with the sources of information. Students can check if the results are correct and trustworthy. GenAI can be a customized resource for learning if students can master the skill of prompt engineering (Pesovski et al., 2024). They can proficiently interact with AI to locate and access the desired data.

Use of information. At this stage, students should engage with the information by reading, listening to it, or observing

it. They then take, identify, and select the parts of the information that are important and relevant to solving the problems (Iriani and Wicaksono, 2021). They should ask for the information expected, what information from the source is valuable, and whether it is reliable.

To use the information from GenAI more productively, librarians can teach students to read and assess the information for credibility critically, relevance, and bias (Ferrara, 2024; Oloniruha et al., 2024). They should develop activities that encourage students to engage with actively. For example, by inspiring students to refine their prompts, students should learn how to extract relevant information from complex AI outputs. Librarians can also provide tasks requiring students to paraphrase, summarize, or quote information from various resources, such as academic articles, online resources, and GenAI (Koos and Wachsmann, 2023). Librarians should ensure students know proper citations and understand the content.

Students should tactfully take notes when using information from GenAI and other resources for assignments. Librarians can provide training on organizing information efficiently using tools like digital notebooks, reference management software, or spreadsheet templates for data collection from GenAI (Rodriguez and Mune, 2022). It helps enhance students’ information processing and organizing skills. Furthermore, librarians can help students develop their information needs academically (Derakhshan and Karimi, 2015; Mierzecka, 2018). Students can critically evaluate the information provided by GenAI while developing information needs. Hence, they can distinguish bias and misinformation from the answer of GenAI, which is crucial for responsible information use (Zhou et al., 2023)

Synthesis. It involves integrating information from various sources and creating something new or original based on such information (Eisenberg, 2003; Iriani and Wicaksono, 2021). After obtaining information from previous stages, students should combine, analyze, and organize it meaningfully. They should ask how to fit all the information together, write an outline of the project, and present the information to answer the question (Kamba and Buba, 2022).

Librarians should teach students to organize the information logically and coherently. Students should be alert to the limitations of GenAI. They have to consider other sources of information for completing their assignments, like books, academic articles, and online databases (Wang et al., 2023). They can also use the knowledge from teachers in classes. Thus, they can create a broader understanding and present a more comprehensive view of the topic by integrating various information.

Librarians can work with teachers to develop interdisciplinary projects that combine AI with subjects like economics and business. While allowing students to use AI for market analysis, librarians require students to use other

resources to complete the projects. Providing an opportunity to integrate the information from GenAI and other sources enables students to share and combine their findings, perspectives, and insights (Kooli, 2023; Labadze et al., 2023). Students can thus apply their knowledge, experiment, and gain practical insights into the capabilities and limitations of AI systems (Chen et al., 2023a).

Evaluation. In the final stage, students assess the outcome and determine if it addresses the research problem effectively. They also evaluate whether the process fulfills their information requirements (Eisenberg, 2003). They should ask if they have solved the problem, the difference in performing subsequent similar tasks, and what they have learned (Kamba and Buba, 2022).

Librarian respondents stressed that students must know where GenAI sources their information because GenAI may use open sources, which are less reliable than traditional sources. Yet, student respondents expressed they rarely evaluate the impacts of GenAI on their research process. Thus, librarians should teach students to evaluate AI outputs to refine their prompts and strategies. Librarians can ask students to write reflective essays or presentations to assess their learning process, challenges faced, and knowledge gained from GenAI. It enables students to understand how effectively their prompts have guided AI to meet their information needs, enhancing their information retrieval skills (Chen et al., 2023b).

Discussion and suggestions

Based on the Big Six Model of Information Literacy, librarians should incorporate AI-specific competencies into the existing information literacy curriculum and instruction, such as evaluating AI-generated content, understanding AI search mechanisms, and using AI tools responsibly. This approach ensures AI literacy is not taught in isolation but is seamlessly woven into the broader information literacy framework that students are already familiar with. This study suggests the following key elements for an AI literacy instruction program among international school librarians:

Evaluation of AI-generated content

Librarians should teach students how to critically evaluate the accuracy, reliability, and credibility of information generated by AI tools like ChatGPT (Huang et al., 2023; Whalen and Mouza, 2023). They should develop evaluation criteria for students that consider factors such as the source of the GenAI model, the training data used, potential biases, and the overall quality and usefulness of the generated content.

Librarians can encourage students to compare AI-generated information with authoritative human-created

sources, such as academic publications, reputable news agencies, and teachers' opinions, to assess the validity and trustworthiness of the AI-generated content. They can provide students with AI-generated articles or essays on a specific topic and have them compare the content to authoritative human-created sources. Students can then evaluate the accuracy and reliability of the AI-generated information.

Understanding AI search bias and limitations

Librarians should educate students on how AI search algorithms and language models can have inherent biases based on their training data and design (Meyer et al., 2023). Librarians can demonstrate how to conduct the same search query on both AI-powered and traditional search engines. Students can thus compare and analyze the differences in the search results, identifying potential biases and limitations in the AI-powered search.

Librarians can move forward to develop strategies for combining AI tools with traditional search methods. Based on the interview with ESF librarians, this includes cross-referencing information from various sources and employing diverse search techniques to gather complete and more balanced datasets.

Promoting responsible and ethical use of GenAI

Librarians should establish guidelines and policies for the appropriate use of AI tools in research and academic work, emphasizing the importance of proper citations when using AI-generated content (AIContentfy.com, 2023). They should discuss with students the potential risks and implications of over-reliance on AI for information seeking, such as the spread of misinformation, lack of original thinking, and ethical concerns around plagiarism or academic dishonesty (Rane et al., 2023; Zhai et al., 2024).

Librarian respondents also encourage students to use AI tools responsibly, such as brainstorming, proofreading, or generating initial drafts, while maintaining a critical perspective and ensuring the final work is their own (Lo, 2023). As such, school librarians can create a comprehensive and adaptable AI literacy instruction program that empowers students to navigate the evolving information landscape with critical thinking, ethical decision-making, and responsible use of GenAI technologies.

Conclusion

This research employs the Big Six Model of Information Literacy to investigate how to design and implement an AI literacy instruction program for students. Librarians can incorporate regular feedback mechanisms through surveys and focus groups to adjust the program to meet students' needs better (Weare, 2013). It helps students internalize their learning and understand their growth, boosting their

engagement and commitment to the program. With the advent of the fourth industrial revolution, AI has gained immense popularity and widespread adoption across various industries (Culduz, 2024). This is primarily attributed to the exponential growth of data, advancements in algorithms, and enhancements in computing power and storage capabilities (Zhang and Chen, 2023).

Training librarians to deliver an AI literacy program may require a certain level of technical expertise. If librarians cannot keep up with AI concepts and technologies, they may face challenges in effectively teaching and supporting students in this area (Formanek, 2024; Harisanty et al., 2024). The school management should provide librarians with training workshops and professional development opportunities focused on AI technologies and teaching methodologies. Moreover, they can collaborate with experts in the field of AI to provide support and guidance to librarians during the program implementation (Enakrire and Oladokun, 2023; Mallikarjuna, 2024).

As for limitations, this research concentrates on the relationships between GenAI and student information-seeking activities. However, the applications and impacts of various AI technologies extend far beyond information-seeking. AI's influence on school librarians' role is multifaceted and complex (Kamalov et al., 2023; Yunus et al., 2023). Many further studies are necessary to cover all the possible ways AI affects the works and responsibilities of school librarians. The development of GenAI is swift, which places a significant limitation on the study (Du et al., 2024; Wu, 2023). Such rapid development also means that findings may be quickly outdated, requiring continuous research to cope with the latest AI development (Kaur et al., 2023).

Moreover, this research only focuses on ESF international schools in Hong Kong. Thus, future research can work on how GenAI affects information literacy instruction among schools in other regions. Besides the IBDP curriculum, more works can focus on other curricula, such as HKDSE, IGCSE, IBCP, BTEC, etc. With the increasing influence of AI on our daily lives, there has been a growing emphasis on AI education to empower students with knowledge, skills, and ethical understanding related to AI (Kong et al., 2022). Educators should always consider effective instructional design to enhance students' AI literacy and competencies (Gameil and Al-Abdullatif, 2023).

Another limitation is that this research mainly focuses on school librarians' role in AI literacy instruction. Nevertheless, librarians should work with subject teachers to integrate AI literacy into subject-specific curricula and explore more interdisciplinary project opportunities (Friesen et al., 2023). Librarians can work with subject teachers to design project-based learning experiences that involve AI applications. More future research can focus on

how to encourage students to apply their knowledge, coming from both AI prompts and traditional resources, across multiple disciplines. By fostering teacher-librarian collaboration, it can create a vibrant and engaging AI literacy program that captivates students' interest and promotes a deeper understanding of AI.


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Data is available on reasonable request from the corresponding author

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Appendix I. Interview questions for students

Use and expectation of GenAI in general

1. How often do you use GenAI to support your study? In what circumstances do you use GenAI to support your learning and assignment?
2. What GenAI tools do you use regularly to support your learning?
3. How can incorporating ChatGPT into your study benefit you?
4. What specific features or capabilities would you like to see in ChatGPT that would support your learning and research needs?

Ethical Consideration of GenAI

1. Do you know the academic integrity policies of IB and your school or ESF, especially on using GenAI? If so, what are they?
2. How do you plan to ensure your use of ChatGPT adheres to the school's or IB's academic integrity?
3. What concerns, if any, do you have about the ethical implications of using AI-generated content in your work?

Using the Big Six Model, what key elements should be included in AI literacy instruction programs developed by international school librarians in Hong Kong?

Stage 1: Task definition

1. What types of assignments or projects would you use ChatGPT or similar AI for assistance?
2. What problems or challenges do you hope GenAI could help you solve in your study?

Stage 2: Information seeking strategies

1. How do you envision utilizing ChatGPT to formulate research questions or to identify key concepts and terms for your study?
2. What kind of information or content do you expect ChatGPT to provide you with when working on assignments or studying?
3. How do you plan to use ChatGPT to develop your information-seeking strategies for learning and research?

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Stage 3: Location and access

1. How do you see an AI like ChatGPT fitting into your research process when looking for information or resources?
2. Have you thought about any criteria you would use to decide when it's appropriate to rely on ChatGPT for information instead of other sources?

Stage 4: Use of information

1. How would you verify the information provided by ChatGPT before using it in your academic work?
2. Can you describe an experience where ChatGPT could help you interpret or analyze data for an assignment?

Stage 5: Synthesis

1. How and what do you integrate the information provided by ChatGPT with your existing knowledge and other academic resources?
2. What do you think about using ChatGPT to help you draft or outline your essays and other assignments? If so, how? If not, why?

Stage 6: Evaluation

1. How do you evaluate the usefulness and reliability of the information provided by GenAI in your studies?
2. After completing an assignment where ChatGPT was used, how would you assess its impact on your overall research process?

Appendix 2. Interview questions for school librarians

RQ1: What AI literacy skills or competencies should be developed in the future ILI?

Overview of GenAI

1. What is your impression of GenAI, like ChatGPT? How do you think GenAI change our way of information-seeking?
2. How do you think chatbots like ChatGPT will be integrated into the school library?
3. How do you think GenAI will affect how you work with ILI? In what way?

AI literacy skills or competencies necessary for students equipped to study

1. What are your views on the development of GenAI? How does such development affect your information searching and your work in ILI?

2. Could you suggest which AI literacy skills or competencies are the most important for international senior secondary students to be developed regarding GenAI and its ethical concerns? Why and how is it the most important?

RQ 2: Using the Big Six Model, what key elements should be included in AI literacy instruction programs developed by international school librarians in Hong Kong?

Stage 1: Task definition

1. How do you perceive the role of AI literacy in helping students identify and understand the scope of their study/research works?
2. Could you provide an example of a lesson or activity you teach students how to employ AI to develop precise and manageable research questions?

Stage 2: Information-seeking strategies

1. In your experience, what are common information-seeking strategies among senior school students? How do students integrate GenAI tools into their information-seeking strategies?
2. What challenges have you observed students facing when they use GenAI in research and assignments? How do you address these?

Stage 3: Location and access

1. What are your views on integrating the GenAI tools into library instruction sessions to improve students' ability to locate information?
2. How are students being taught to use AI tools to find and retrieve information effectively?

Stage 4: Use of information

1. How do you guide students to critically appraise the relevance and accuracy of information obtained through AI sources?
2. How do your approaches to teaching students adhere to ESF and IB's academic integrity policies?
3. How do you teach students to alert them to potential biases in AI-generated content and the importance of cross-referencing with traditional sources?

Stage 5: Synthesis

1. In what ways have you seen AI tools facilitate the synthesis of information from multiple sources in student research?
2. What strategies do you teach for combining AI-generated insights with human analysis to create coherent research findings?

Stage 6: Evaluation

1. How do you encourage students to evaluate the effectiveness and efficiency of AI tools in their research process?
2. What measures do you suggest students take to assess the credibility and reliability of AI-generated information?

Training and Professional Development

1. What professional development programs have you participated in to enhance your understanding of AI and its educational applications?
2. How do you work with subject teachers to ensure that AI literacy instruction is aligned with the curriculum and relevant to students' coursework?

Appendix 3**Perceptions of students on using GenAI for study****A. How do students use GenAI tools for study?**

Identified themes	Interviewees-(8 students)	Frequency	Sample responses
Brainstorming ideas for assignments	3	5	S1: "I mainly use ChatGPT to help brainstorm ideas for assignments." S3: ". . . firstly, to brainstorm ideas for like a project or any tasks I have."
Generating citation and bibliography	2	3	S1: "I ask it to help with APA referencing sometimes." S5: "I've used it. . . like bibliographies as well."
Clarifying concepts and definition	2	2	S2: "I don't understand a particular topic or a particular definition. So I may ask the AI." S5: "I use AI to understand certain concepts."
Paraphrasing sentence	3	4	S3: "Secondly, if I needed to, like, rephrase my works, paraphrase it." S5: "It can help reform sentences of my own words."
Developing research questions	2	2	S7: "I ask Poe for assistance on the topic. . . I was able to use information from that to generate a question." S8: "I would tell AI to help me refine how the question works."
Searching for in-depth information and resources	3	3	S4: "I asked the chatbot to give more in-depth sources. . . giving you precise content." S7: "It allows me to generate more information."

B. Benefits of using GenAI for study.

Identified themes	Interviewees-(8 students)	Frequency	Sample text
Fast to get the answer/ Save time for information searching	7	7	S4: "ChatGPT makes everything faster. you get whatever you want directly." S6: "I'll be able to have all my research in one place and not have to go searching for a really long time." S7: "Using ChatGPT saves me a lot of time as it reduces the number of searches I have to do."
Offer an answer from different sources/ perspectives	2	2	S1: "It's beneficial because it analyzes information from several sources." S7: "I can find a broader range of perspectives I can look through."
Personalized conversation	1	2	S2: "It's like holding a conversation with someone and getting personalized information. It is easy to access."
Easier to understand complex concepts	2	2	S1: "It's easier to understand because some academic websites, their information, they really use complicated words. It's easier just to put it in ChatGPT and ask to simplify the information."

C. Problems/Shortcomings of using GenAI for study.

Identified themes	Interviewees-(8 students)	Frequency	Sample text
The information is too general.	2	3	S1: "ChatGPT gives me a generic answer that doesn't score high." S3: "Usually, it can give me very generic answers. . I always specify what I need it for. . ."
Fake information	3	4	S2: "I use AI very carefully because I know it's not perfect right now, and there may be errors." S4: "One downfall of GenAI is that it's not always accurate compared to Google." S8: "It does give misinformation."
The information is irrelevant	2	3	S5: "Sometimes it gives me irrelevant information."
Afraid of committing academic dishonesty	4	6	S4: "If something is breaching academic honesty, I shouldn't use it." S7: "I am concerned about how a lot of students end up generating whole essays from ChatGPT. . it does reduce the integrity of other people's work." S8: "Using AI to help you write just feels like a cheat."
Easy to make students lazy	1	2	S5: "In the long run, you will be able to distinguish the people who lazily use AI. You're never going to develop your brain."

Perceptions of ESF librarians on using GenAI for study among students**A. Impression of GenAI and its impact on information seeking.**

Identified themes	Interviewees-(2 librarians)	Frequency	Sample text
Unreliable sources of information	2	4	L1: "It's not always the most reliable information. So already, the output is flawed." L2: "We're still going to need to check the accuracy and creditability of the source."
Extension of knowledge learned from teachers	1	2	L2: "They are using AI to extend the knowledge they already have."
Clarifying and explaining concepts in a simple way	1	2	L1: "If they manage to simplify it, then I think it will be very, very helpful, especially for some students who really don't want to talk to their teachers."

B. How does GenAI affect librarians' work on information literacy instruction?

Identified themes	Interviewees-(2 librarians)	Frequency	Sample text
Let students know the shortcomings of GenAI	2	4	L1: "You need to tell the students this is not a magic bullet. . You need to teach them how AI works, its shortcomings, and how to use it effectively." L2: "We know that ChatGPT is not 100% reliable or accurate. . They need to be able to look at different perspectives on the topic."
Enhance their awareness of verifying information from GenAI	2	4	L1: "They tend to forget that this information may not be quite as accurate as they want it to be." L2: "They need to check the accuracy of the information because. . . it will gather information sources and even websites that don't really exist."
Increase their awareness of intellectual property	1	2	L1: "Then you see all these creative artists are against AI because they're basically stealing all this to make your own output."
Teach students to cite AI correctly	1	2	L1: "They don't even know if they have to cite AI"

RQ2. From school librarians' perspective, what AI-related literacy skills should be developed for future information literacy instruction?

Identified themes	Interviewees-(2 librarians)	Frequency	Sample text
Evaluation of the accuracy of information from GenAI	2	4	L1: "They tend to forget that this information may not be quite as accurate as they want it to be. So, they will have to learn how to evaluate." L2: "You need to fact check. . . We know there's a lot of fake or inaccurate information."
Awareness of biased information from GenAI	1	2	L2: "ChatGPT was developed in Western cultures. So you know the information bias will be towards a certain perspective on any issue."
Essence of information sources of GenAI content	2	3	L1: "You should verify the information. . . maybe possibly checking the sources used." L2: "We need to check our sources correctly."
Skills to ask AI tactfully and ethically	1	3	L1: "Prompts can't be too narrow; it can't be too broad. And you have to ensure that your prompts give you as much information as possible."