Towards Accessible AI Literacy: Investigating How Teachers of Blind and Low-Vision Students Integrate Generative AI in Pedagogical Practices

Rudaiba Adnin
Northeastern University
Boston, Massachusetts, USA
adnin.r@northeastern.edu

Abir Saha
Northeastern University
Boston, Massachusetts, USA
ab.saha@northeastern.edu

Maitraye Das
Northeastern University
Boston, Massachusetts, USA
ma.das@northeastern.edu

Abstract

Generative Artificial Intelligence (GenAI) tools are reshaping the educational landscape; yet, how teachers working with blind and low vision (BLV) students integrate these tools into their pedagogical practices remains underexplored. To address this gap, we interviewed 17 teachers of BLV students to investigate how they leverage GenAI to fulfill their teaching responsibilities and educate BLV students about these tools. We found that teachers incorporated GenAI for personalized lesson planning and tasks specific to BLV education, while counteracting biases favoring sighted teaching methods. They addressed BLV students' curiosity and concerns about GenAI and taught them prompt formulation strategies that support their access needs in academic and daily tasks, although occasionally perpetuating their own misconceptions about GenAI to students. They expressed concerns about students' overreliance on GenAI lowering foundational accessibility-related skills. We discuss ways to promote *accessible AI literacy* and outline design considerations for incorporating GenAI to support teachers' BLV-specific instructional responsibilities and for integrating GenAI responsibly in BLV education.

CCS Concepts

• **Human-centered computing → Empirical studies in Accessibility**.

Keywords

Blind, visual impairment, teachers, TVI, Generative AI, AI literacy

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1 Introduction

Generative Artificial Intelligence (GenAI) tools (e.g., ChatGPT, Copilot, Gemini, Claude, etc.) are rapidly reshaping the educational landscape [83] in the 21st century. From GenAI-powered lesson-planning tools [44, 94, 106] to intelligent tutoring systems [1, 69], GenAI is increasingly being integrated into formal [115, 158] and informal learning environments [63, 152]. With industry initiatives like Google [59]'s "AI for Educators" and Microsoft [96]'s "AI for Education," teachers now have access to professional development opportunities and resources to incorporate GenAI into their classrooms. Relatedly, academics and policymakers are implementing new measures like AI4K12 [4] and Day of AI [98] to foster AI literacy [8, 12, 24, 54, 81], with the goal of helping students develop a deeper understanding of how these technologies work as well as how to use them ethically and responsibly.

Despite this widespread enthusiasm about bringing GenAI into mainstream education, the needs of disabled students—and the teachers who support them—have remained largely overlooked. This oversight is more pronounced for blind and low vision (BLV) students, who already experience limited access to higher education and employment [11, 103], further hindering their exposure to GenAI tools and related benefits [2]. Although researchers and industry practitioners have started building new GenAI-powered technologies to enhance accessibility for BLV users (e.g., advanced screen readers [75, 153] and image describer tools like Be My Eyes [18] and PictureSmart AI [48]), these innovations may not bear intended outcomes but create new challenges if teachers lack the training and awareness to educate their BLV students about GenAI. As prior work has shown, BLV students' ability to learn and use technologies effectively depends on their teachers' technological proficiency [5, 16]. Given the opaque and constantly evolving nature of GenAI tools, without deliberate efforts to educate BLV students about these tools, existing challenges with GenAI-related misinformation [128], biases [51, 93], and inequitable access [151] are likely to persist and get exacerbated.

To address these gaps, we investigate how teachers who work with BLV students integrate GenAI in their pedagogical practices. Our investigation centers around two research questions: *(1) How do teachers of BLV students use GenAI tools in their instructional tasks (e.g., preparing learning materials)? (2) How do these teachers educate their BLV students about GenAI (e.g., common use cases, errors, and risks)?* Examining both of these questions together is important, as how teachers engage with GenAI tools themselves directly informs what and how they teach their students.

We report findings from interviews with 17 teachers[1] (10 BLV, 7 sighted) of BLV students: 9 Certified Teachers of the Visually

[1]For simplicity and brevity, we use the term 'teachers' to denote both certified TVIs and other instructors who participated in our study.

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Impaired (TVIs) and 8 instructors who taught assistive technology, orientation and mobility, etc. Our analysis revealed that teachers leveraged GenAI tools for personalized lesson planning and completing tasks specific to BLV education, while addressing biased GenAI responses favoring sighted teaching methods. Beyond their own use of these tools, teachers guided BLV students in leveraging GenAI tools for academic tasks and independent living skills [123, 138], for example, by teaching them iterative prompt formulation strategies to support access needs and ways to identify inaccuracies in GenAI responses. We captured teachers' concerns about students' overreliance on GenAI, how they occasionally perpetuated their own misconceptions about GenAI to students, and how they envisioned various gamified and hands-on activities to help BLV students better understand GenAI functionalities.

Overall, our paper makes three contributions. First, we present rich empirical insights into how teachers integrate GenAI tools into their pedagogical workflows when preparing teaching materials for BLV students. These findings extend prior work that explored the potential of GenAI to assist teachers in mainstream classes (targeted toward sighted students) [17, 62, 105, 116, 140] to the unique context of BLV education. Second, we rethink teachers' strategies to educate their BLV students about GenAI use cases and fundamental AI concepts. Through this, we call for promoting *accessible AI literacy* among BLV students, complementing prior work on AI literacy that primarily focused on sighted learners [8, 24, 31, 54, 134, 135]. Finally, we outline design considerations for incorporating GenAI to support teachers' instructional responsibilities and for responsible GenAI integration in BLV learning environments.

2 Related Work

2.1 GenAI in Education

There has been a surge of studies exploring GenAI in education [1, 3, 17, 62, 140]. Researchers showed that students are increasingly using GenAI for brainstorming [3, 17, 32] and personalized learning support [14, 62, 108]. Likewise, teachers are incorporating these tools for information-seeking [17, 76], lesson planning [62, 105, 116], and student assessment [43]. For instance, Han et al. [62] found that teachers use GenAI to create adaptable teaching materials and to enhance their ideation processes during course preparation. Researchers also developed new GenAI-powered tools to support teachers' pedagogical practices [44, 94, 106, 119]. For example, LessonPlanner aims to alleviate teachers' workload by generating customized lesson plans [44]. Alongside this widespread excitement about GenAI in education, many concerns have been raised about its potential negative impacts, such as students' overreliance on GenAI [72], diminished learning outcomes [17, 155], and threats to academic integrity [3, 132, 150]. Further, Belghith et al. [19] found that students often formed misconceptions about GenAI capabilities (e.g., "ChatGPT's answers are always correct"). To address these concerns, researchers recommended redesigning academic tasks and curricula to allow students' GenAI use, prioritizing their critical thinking skills [3, 129, 155]. Complementing this scholarship, we focus on the context of BLV education, specifically by examining the practices of teachers working with BLV students.

2.2 AI Literacy Frameworks and Interventions

A growing literature focuses on AI literacy among students in K-12 education and beyond [8, 24, 54, 81, 92] to help them develop a deeper understanding of how AI tools work and how to use them responsibly. Scholars have proposed structured frameworks to teach AI concepts in a systematic way [12, 41, 88, 104, 145]. For example, Long and Magerko [88] proposed a conceptual framework comprising a set of AI competencies and design considerations. Subsequently, researchers have focused on designing and implementing AI literacy interventions, including dedicated curricula [54, 81, 84, 121] and instructional tools and activities [7, 24, 42]. Overall, these AI literacy frameworks and interventions aim to raise students' awareness of GenAI capabilities and limitations, such as inaccuracy and bias [8, 92, 131, 133] and improving students' prompt formulation skills [9, 12].

Complementing these efforts, researchers have started investigating ways to foster AI literacy among underrepresented groups [31, 38, 40, 55, 134, 135]. For example, Cao et al. [31] found that underserved students (e.g., female, people of color) brought their cultural nuances into co-designing AI literacy activities, including resistant capital (the ability to recognize and challenge biases associated with their identities) and communal capital (envisioning AI interventions to support their own communities). Yet, we know considerably less about ways to promote AI literacy among disabled students. Therefore, we focus on how teachers introduce and teach GenAI tools to their BLV students and how we might create a path for accessible AI literacy.

2.3 GenAI in Accessibility Research

HCI and accessibility researchers have started investigating how people with disabilities use GenAI tools to enhance information-seeking [99], creative expression [22, 57], and communication [68]. Particularly, students with disabilities leverage GenAI tools for various academic tasks, such as understanding complex topics, summarizing course materials, refining their own writing, and creating personalized learning resources [13, 157]. Despite these potential benefits of GenAI in enhancing accessibility, researchers highlighted concerns around inaccuracies and ableist biases in AI-generated content [51, 56, 93].

Relatedly, recent work investigated how BLV individuals use GenAI tools for content creation [2, 109], visual question answering [6, 58, 141, 151], and performing coding tasks [46]. Others built new GenAI-powered systems to support BLV individuals in understanding [33, 35], generating and editing images [34, 67], interpreting statistical data [124], supporting education [45], and navigating computer interfaces with screen readers [75, 153]. Simultaneously, researchers uncovered the accessibility breakdowns and uncertainties that BLV users must navigate while using GenAI tools [141] and in doing so, how they formed erroneous mental models of GenAI [2]. We draw on and extend this body of work by foregrounding the perspectives of teachers working with BLV students; in particular, how they leverage GenAI tools for their teaching-related tasks and increase their BLV students' awareness of GenAI.

2.4 Technology Use by Teachers of the Visually Impaired (TVIs)

TVIs play a critical role in the overall growth and education for BLV students, as they teach them both academic and independent living skills [87, 123]. One of the key responsibilities of TVIs includes introducing BLV students to different technologies (e.g., screen readers, braille displays) that would improve their access to learning materials and other everyday activities [16, 50, 100]. Researchers found that TVIs valued new technologies that enhanced BLV students' independent access to information (e.g., touch-activated audio feedback [130]) and allowed them to track students' progress [50]. Relatedly, prior work highlighted the challenges TVIs encountered with educational resources that were not designed with non-visual access in mind [15, 66, 101]. For example, while adapting a Computer Science course curriculum for BLV students, TVIs raised concerns about the heavily visual teaching materials [136]. As GenAI tools are being increasingly integrated into education, existing equity gaps may broaden without a comprehensive understanding of how TVIs use [137], evaluate, recommend, and teach GenAI to BLV students, which is the focus of our study.

3 Method

3.1 Participants

With approval from our university's Institutional Review Board, we conducted interviews with 17 US-based teachers of BLV students who had experience with GenAI chatbots (e.g., ChatGPT) and GenAI-powered image description tools (e.g., Be My AI). Participants were recruited by circulating an online screening survey to their publicly available email addresses and snowball sampling. Out of 32 survey respondents, we approached 25 participants who had experience in both using GenAI tools for their own teaching-related tasks and educating their BLV students about these tools. 17 of them agreed to be interviewed. Ten participants reported having visual disabilities and used screen readers (e.g., VoiceOver, JAWS, NVDA), magnifiers, or braille displays for information access, while the rest were sighted. All had experience with GenAI chatbots, thirteen with image description tools (e.g., Be My AI, Seeing AI, Envision AI, Picture Smart AI), and four with text-to-image creation tools (e.g., Dall-E, Midjourney). None received any formal or professional training on GenAI tools but they learned about it from various sources (count in parentheses), such as discussion with friends, colleagues, and other blind members (8), newsletters (4), podcasts (4), webinars (2), articles (1), YouTube (2), and Instagram (1) as well as by experimenting with the tools themselves (8). Relatedly, nine participants had no coding experience. Others reported that they had working knowledge of coding (Emily), tried coding a few times (Alice, Gina, Jake), or had some understanding of coding but never tried it first-hand (Flora, Sarah, Cody, Brian). Table 1 provides details into participants' teaching backgrounds and GenAI use. Table 2 presents participants' demographic information in an aggregated format to ensure anonymity.

3.2 Procedure

We conducted semi-structured interviews remotely via Zoom between February and March 2025. Prior to the interviews, we emailed participants the topics we intended to discuss so that they could prepare their talking points in advance. The sessions started with obtaining participants' verbal consent. Then we asked participants to share which GenAI tools they used and how they integrated these tools into their teaching practices. We requested participants to demonstrate their process of using and teaching GenAI chatbots (e.g., ChatGPT) and an image description tool (e.g., Be My AI) by sharing their computer screen (and screen reader utterances for BLV participants) via Zoom. Some shared their previous chat histories, while others performed live demonstrations of their typical use cases based on teaching scenarios they came up with during the session. Across both formats, participants showed how they formulated prompts, assessed responses, wrote follow-up prompts, and adapted GenAI responses for their queries. Participants who accessed GenAI chatbots or image description tools on their phones opened the respective apps and allowed their phone's screen reader to read the responses aloud. We requested participants to increase their phone volume and bring it closer to their computers so that we could clearly listen to and record their phone audio via Zoom.

Next, participants talked about the benefits and challenges of using GenAI tools in their pedagogical practices and the broader implications of GenAI for BLV students. We probed for how they adapted AI-generated responses to meet BLV students' unique needs and how they taught BLV students to use GenAI tools. Participants described their instructional methods, the specific activities or exercises they designed, and the strategies they employed to teach BLV students to critically evaluate AI-generated responses. Lastly, we engaged participants in a speculative exercise where they verbally described their envisioned solutions, activities, or curriculum for teaching BLV students about how ChatGPT and Be My AI worked. Each interview session lasted for approximately 90 minutes. Participants were compensated with US$45 via Amazon gift cards. All sessions were video-recorded and transcribed.

3.3 Data Analysis

We followed reflexive thematic analysis [30], a method commonly used to analyze qualitative data in ASSETS studies [6, 22, 141]. The first author open-coded all interview transcripts using a combination of inductive and deductive coding, following Braun and Clarke [30]'s suggestion that in 'Big Q', i.e., reflexive thematic analysis, no analysis is purely inductive as researchers inevitably bring their own backgrounds, learnings, and assumptions to make sense of data. During inductive coding, we took participants' accounts as the starting point for understanding their experiences and capturing nuances of BLV education (e.g., preparing braille-related materials, GenAI struggling to generate non-visual content). Our deductive coding was informed by relevant prior studies, which shaped what we noticed in our data and how we interpreted it (e.g., creating engaging lessons [62, 116], academic integrity concerns [3, 155], and misconceptions about GenAI [19]). Throughout this process, all coauthors met weekly over five months (plus ad-hoc meetings) to discuss initial codes and data, bringing in alternative perspectives to interpret the data and make conceptual meanings. For example, the first author initially coded an excerpt about Emily helping BLV students interact with existing AI literacy tools as 'verbally explaining inaccessible content.' The third author later noted that

Table 1: Details of interviewed teachers. All names are pseudonyms. COMS: Certified Orientation and Mobility Specialist, CATIS: Certified Assistive Technology Instructional Specialist. CTVI: Certified Teachers of the Visually Impaired. AT: Assistive Technology. Transition age refers to young adults aged 18–22. * denotes that the teacher uses the GenAI tool for personal or teaching-related work and † denotes that they teach the tool to BLV students.

Name	Self-reported visual disability and AT expertise	Teaching role (years of experience)	Grade level of BLV students	Teaching topics	GenAI tools used & taught
Brian	Totally blind with no light perception; uses screen reader (expert)	Special education teacher, AT trainer (14 years)	High school, transition age, adults	Technology, math, science, history, sociology, psychology	ChatGPT*†, Be My AI*†
Cody	Retinopathy of prematurity; uses magnifier and screen reader (expert)	CTVI, COMS, CATIS (5 years)	Elementary, middle school, high school	Math, science, technology	Gemini*†, Be My AI*†
Dave	Blind; optic nerve hypoplasia; uses screen reader and braille display (expert)	CTVI (26 years)	Middle school, high school, transition age	Technology	Perplexity*†, Be My AI*†
Helen	Completely blind; uses screen reader and braille display (expert)	AT trainer (2 years)	Elementary, Middle school, high school, transition age, adults	Math, science, technology	ChatGPT*†, Be My AI*†
Ivan	Completely blind; uses screen reader (expert)	AT trainer (6 years)	Transition age, adults	Technology	ChatGPT*†, Be My AI*†
Jake	Totally blind; uses screen reader and braille display (expert)	AT trainer (7 years)	High school, transition age, adults	Technology	ChatGPT*†, Be My AI*†
Lily	Totally blind; uses screen reader (expert)	Home management instructor (11 years)	Transition age, adults	Cooking, cleaning	ChatGPT*†, Be My AI*†
Portia	Low vision; central vision loss; legal blindness; uses magnifier and screen reader (beginner)	Home management instructor (25 years)	Transition age, adults	Cooking, cleaning, finance and home management	Be My AI*†
Paul	Totally blind; uses screen reader (expert)	Orientation and mobility instructor (6 years)	Transition age, adults	Navigation skills	Be My AI*†
Ruby	Visually impaired with only light perception; uses screen reader (expert)	Vocational rehabilitation instructor (<1 year)	Adults	Kitchen skills, finance management	Be My AI*†
Alice	N/A	CTVI, special education and general education teacher (4 years)	High school, transition age	Math, financial literacy	ChatGPT*†, Be My AI†
Emily	N/A	CTVI, adjunct professor (14 years)	Preschool, elementary, middle school, high school, transition age	Math, science, technology, Programming	ChatGPT*†, Be My AI†
Flora	N/A	CTVI (9 years)	Middle school, high school	Math, science	ChatGPT*†, Be My AI†
Gina	N/A	CTVI, special education teacher (11 years)	Middle school	Math, technology	ChatGPT*†, Be My AI†
Mila	N/A	CTVI, special education teacher, clinical assistant professor (16 years)	Preschool, elementary, middle school, high school, transition age	Math, science, technology	ChatGPT*†
Nancy	N/A	CTVI (2 years), special education teacher (30 years)	Preschool, elementary, middle school, high school, transition age	Math, science, technology	ChatGPT*†
Sarah	N/A	CTVI (7 years)	Preschool, elementary, middle school, high school, transition age	Math, science, technology, programming	ChatGPT*

Table 2: Participants' demographic information on an aggregate level

Gender	Count
Male	6
Female	10
Non-binary	1

Age (years)	Count
25–34	3
35–44	6
45–54	6
55-75	2

Race	Count
White	13
Latinx	1
Asian	1
Not disclosed	2

Emily's verbal narration, while helpful, still could not fully replace students' direct interaction with the tools. Overall, we iteratively defined and refined five themes that capture key aspects of how teachers integrated GenAI into their pedagogical practices.

3.4 Positionality

Our team includes three sighted researchers with three, nine, and ten years of experience respectively working with the BLV community through research, volunteering, and partnerships at schools and workplace settings. Our analysis is grounded in feminist disability studies literature [70, 85, 148] and disability justice principles [23] that understand access as a collective responsibility enacted through interdependent interactions and negotiations between people with and without disabilities [21]. Drawing on this scholarship, we focus on uncovering ways in which educators, researchers, technology developers, and disabled students can collectively work towards enhancing accessibility in GenAI education.

4 Findings

Our findings elucidated how participants navigated the opportunities and limitations of GenAI in their pedagogical practice. On one hand, they strategically incorporated GenAI into their instructional responsibilities, alongside addressing several GenAI limitations. On the other hand, they prepared BLV students to navigate an increasingly AI-mediated world through teaching them strategies to leverage GenAI in various contexts, promoting awareness of GenAI limitations and potential misuse, and supporting their conceptual understanding of how GenAI tools work. Table 3 in the Appendix presents a summary of the findings.

4.1 Leveraging GenAI for Instructional Responsibilities Related to BLV Education

Teachers of BLV students perform a unique set of instructional responsibilities that distinguish their work from mainstream teachers [10, 27, 120]. Indeed, participants elaborated how they used GenAI to create personalized instructional content tailored to access needs and developmental profiles of students, maintain sufficient content knowledge in various academic disciplines, and prepare extensive documentation related to educational planning for BLV students, revealing how their use of GenAI does, in fact, complement their specialized expertise and assist in supporting the BLV-specific individualization demands of their work.

4.1.1 ***Creating Personalized Lesson Plans.*** Teachers of BLV students often need to tailor their instructions for individual students, given that students' visual abilities, sensory perception skills, and learning needs vary widely [10, 120, 144]. Our participants leveraged GenAI tools to prepare personalized learning materials catered to their students' interests and abilities. For example, to *"break up the monotony"* of the traditional, *"very rigid"* braille curricula, Mila used ChatGPT to generate lesson plans that aligned with her students' reading levels, likes, and dislikes. An example prompt she used was:

> `"I am teaching a 2nd grade student braille contractions[2]. They are learning part-word contractions 'wh,' 'sh,' 'ould,' and 'tion.' Please create lesson activities that would benefit practice with these contractions. This student is currently reading at a level 'f' Fountas & Pinnell level[3]. The student enjoys horses, Spiderman, and dislikes his little sister."`

An important BLV education-specific scenario involves students whose age and skill levels do not align. These students, especially older ones, need age-appropriate learning materials when their foundational skills (e.g., reading, math) and grade level misalign. However, traditional resources could appear too juvenile, and accessible learning materials (e.g., braille resources) are often scarce and lack variety [15, 127]. Therefore, Alice and Sarah used ChatGPT to create customized content that fits specific student profiles and includes cultural references. Below is a prompt Alice used:

> `"Create an educational math game for high schoolers accessing math standards at a second to fourth grade level students with a focus on basic operations... This game should be in the style of a familiar game like Jeopardy [a quiz-based game]..."`

The misalignment between age and skill level also applies to adults with newly acquired vision loss who are learning braille, assistive technologies, or independent living skills, where outdated or simplistic learning materials are likely to cause these learners to easily lose interest [74]. Given this, Jake used ChatGPT to make existing lessons more engaging by *"tying it to their interests, if they're into ultimate fighting, anime, or any specific hobby."* Likewise, to motivate students reluctant to learn braille, Emily used GenAI to brainstorm creative *"braille learning games"* and Dave crafted *"Seinfeld-style skits"* (i.e., short, humorous everyday life scenarios inspired by a popular sitcom) about braille. Thus, teachers leveraged GenAI to create personalized materials to address the complex intersection of age, ability, and access needs of BLV students.

4.1.2 ***Refreshing Discipline-Specific Knowledge.*** Unlike subject-specific teachers (e.g., science, history), TVIs typically do not specialize in specific disciplines [10, 26]. Instead, they make subject-specific materials accessible for BLV students, often by adapting materials (e.g., scientific diagrams, math formulas) not originally designed with accessibility in mind and pre-teaching relevant skills (e.g., tactile map perception before a geography lesson) to ensure students are prepared to participate in classroom discussions [10, 27]. Therefore, TVIs need to familiarize themselves with diverse subjects to support their students' learning [10, 26]. Accordingly, Flora, Helen, and Nancy used GenAI tools to *"refresh their knowledge"* on topics like higher-level math and science. For example, Nancy appreciated how ChatGPT gave her quick and direct explanations to science concepts like *"What is water vapor?"* Flora added, *"It's giving me more confidence to help my students because I'm not a content teacher... One of my students is going to take an honors placement test... So I might go to ChatGPT and say, 'Give me the steps to factor the following equation* $5x - 43x + 56$*'"* Overall, GenAI served as an on-demand reference tool for TVIs and supported them in maintaining instructional momentum for guiding students through subject-specific concepts.

[2] Braille contractions are shorthand combinations of braille characters used to represent common letter groups, syllables, or words to make braille compact and efficient [111].

[3] Fountas and Pinnell [47] Level F corresponds to early-to-mid grade reading skills, featuring slightly more complex sentences, longer words, and simple story structures.

4.1.3 ***Streamlining Educational Planning Documentation Workflows***. An important responsibility of TVIs includes preparing documentation for educational planning and assessment specific to BLV learners, including drafting Individualized Education Program (IEP)[4] goals [113], IEP transition forms [114], Present Levels of Academic Achievement and Functional Performance (PLAAFP) statements [112], and Functional Vision Assessments (FVA) [26]. As Mila explained, *"There are so many documents, forms, and things that you often have to create yourself"* as a TVI. Participants frequently used GenAI to streamline these documentation workflows. For example, for writing students' IEP goals, Sarah used ChatGPT as *"a place to jump off from rather than just starting with a blank page"* using prompts like "`Create 3 IEP goals targeting a third-grade braille student. He is an emergent reader, currently reading on a Kindergarten level.`" Mila similarly used ChatGPT to create IEP Transition Survey Forms for students aged 14 and up and step-by-step guidance for administering a *"shift-gaze assessment"* (i.e., assessing someone's ability to shift their gaze between points while keeping visual focus fixed) using post-it notes.

Although GenAI helped prepare initial drafts, teachers had to extensively refine its outputs to fit their students' distinct profiles. For example, Sarah refined responses through follow-up prompts like "`Lower the objectives`" (to lower the proficiency percentage criteria of a IEP goal) or through manual edits by replacing generic phrases, for instance, *"the use of tactile learning strategies"* with specific strategies she used with individual students. However, Mila noted that usage limits on free GenAI models constrained her work, because her school did not support paid subscriptions.

When using GenAI for educational planning documentation, participants deliberately avoided including personally identifiable or sensitive student information (e.g., student medical information contained in IEPs) in their prompts [156], fearing that such information could remain within the *"AI universe"* (Sarah) permanently. For instance, Alice, Sarah, and Cody used fake names or generic placeholders (e.g., *"John"*, *"the student"*, or *"X"*). These insights call for design interventions to support teachers of BLV students in their increasingly AI-integrated educational planning workflows.

4.2 Navigating Limitations of AI-generated Content

GenAI tools showed promise in enhancing teachers' instructional responsibilities and productivity. However, teachers also encountered challenges that constrained their use, including factual inaccuracies, inaccessible content, and ableist assumptions within GenAI responses.

4.2.1 ***Mitigating Inaccuracies and Formatting Issues***. Participants frequently encountered factual inaccuracies in GenAI responses when querying about accessibility-related learning materials, like screen reader commands and braille notations. Consequently, they proactively requested accuracy checks within their prompts. For instance, Jake would prompt ChatGPT: "`Write an introduction to using the internet with a screen reader... Please make sure your screen reader information is accurate.`" Similarly, Cody prompted with precise terminology

[4]IEP is a legal document that outlines special education services, supports, and goals designed to meet the unique needs of a student with a disability [113].

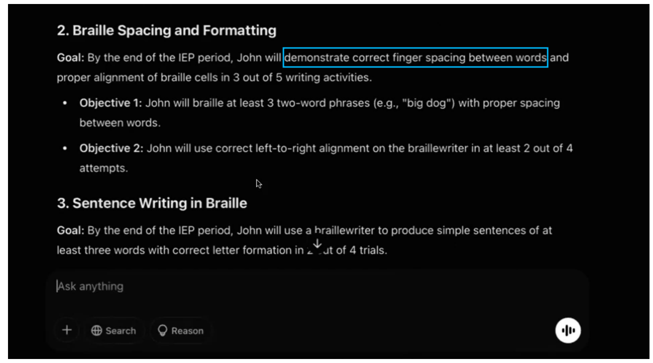

Figure 1: An IEP goal suggested by ChatGPT for teaching a student named John (pseudonym) about braille spacing. ChatGPT recommended demonstrating "correct finger spacing between words" (highlighted in blue). However, 'finger spacing' technique is typically used by sighted print-writing students and not by braille learners.

like "Unified English Braille code" instead of "UEB," as Gemini struggled to interpret accessibility-related abbreviations. Despite employing such prompt crafting strategies, teachers remained vigilant about verifying factual details in GenAI output, as errors could directly impact students' learning.

Additionally, teachers noticed that reusing GenAI output in their BLV students' materials, e.g., copying math equations from ChatGPT to another document often led to formatting errors that rendered the content inaccessible for students who used screen readers or braille displays. Consequently, Alice retyped math symbols and equations manually using an equation editor before converting them into braille and Flora used MathKicker [95] to ensure mathematical equations maintained proper structure.

4.2.2 ***Confronting Ableist Assumptions and Biases***. Participants encountered widespread ableist assumptions in GenAI responses [50, 93] that fundamentally misunderstood blindness and favored sighted learning methods. For example, when Sarah asked ChatGPT to generate IEP goals related to braille writing for a third-grader, the GenAI response included a goal requiring the student to demonstrate *"correct finger spacing between words"* (Figure 1). This response was misaligned with braille instruction, where spacing is defined by blank cells between characters rather than the finger spacing used in print-writing for sighted students [29]. Similarly, while using ChatGPT to create games to teach math, Alice repeatedly received vision-centric suggestions like a *"projector for displaying the game board"* despite follow-up prompts stating non-visual needs. After multiple unsuccessful attempts, Alice used their non-visual teaching expertise to adapt the game into an auditory format compatible with screen readers. This reveals how GenAI tools struggled to shift from vision-centric assumptions despite explicit instructions, which severely frustrated participants.

Beyond vision-centric assumptions, teachers also encountered more overt ableism in GenAI responses, including pity toward blindness [2] and deficit-oriented framings [49]. For instance, when Jake asked ChatGPT to *"Describe the Taj Mahal for a blind person,"* it responded with *"A blind person can't appreciate the beauty of the Taj*

Mahal's visual aspects, instead they can focus on the smell of the flowers, the sound of the fountains..." This relegated non-visual sensory experiences as merely compensatory alternatives to a supposedly superior visual appreciation. Jake and Dave gave GenAI tools feedback by explaining how their responses were biased against BLV people, as they hoped that their feedback might improve future outputs. These insights confirm how GenAI tools perpetuate harmful narratives [50, 93], requiring teachers to actively counteract deficit-oriented disability narratives [49] in learning materials.

4.3 Preparing BLV Students for Effective Use of GenAI

Alongside incorporating GenAI into their instructional practices, teachers recognized its potential to support BLV students' access needs and independence. Accordingly, they guided students about choosing appropriate GenAI tools for academic and everyday tasks and using these tools effectively through iterative [86, 154] and disability-centric prompting strategies.

4.3.1 ***Recommending GenAI Tools for Academic Tasks and Independent Living.*** Teachers taught BLV students about using GenAI to enhance their academic performance and independent living skills. In academic contexts, Helen recommended ChatGPT to her students for filling in incomplete understanding of visual concepts. This recommendation aligns with her own use of GenAI to revisit science concepts (Section 4.1.2). She recounted how a student used ChatGPT to get a description of a 97-minute documentary, Arctic Tale, which was *"so visual... [and only] had a little bit of narration in it."* Brian taught his students to use Be My AI for generating description of data visualizations (e.g., line graphs, pie charts) and then probing for specific details through follow-up questions, a level of interactive exploration that traditional screen readers could not provide. For information seeking within lengthy documents, Mila recommended using ChatGPT instead of traditional screen readers that sequentially read entire webpages, which required navigating back-and-forth to locate desired information. These teachers called GenAI's assistance for BLV students in bypassing traditional time-consuming approaches a *"game-changer"* and considered it *"an assistive technology that helps them complete tasks at a similar pace to their sighted peers rather than always being behind"* (Mila).

For real-life GenAI applications, Lily who taught cooking and home management, asked her students to use Be My AI for reading food labels. Paul, who provided orientation and mobility training, suggested using Be My AI to interpret visual information essential for traveling independently, for example, to identify street signs or locate specific train station gates. His students also learned loading screenshots from Google Maps onto Be My AI for receiving richer descriptions. As an assistive technology trainer, Ivan taught using GenAI for technology-related troubleshooting, such as reducing verbose screen reader announcements that disrupted reading flow in Microsoft Word, e.g., *"too much information about line breaks."*

While BLV students recognized the usefulness of GenAI for schoolwork, Portia noted that students often overlooked its potential to improve independent living skills, especially in situations when sighted help is unavailable or undesirable. She said, *"I make sure to reinforce their independence... It's okay to ask for help, but if they have a tool, I encourage them to try that first... They are proving to themselves that they don't need a sighted person near them to read instructions."* Thus, teachers recognized GenAI's potential in improving efficiency, independence, and autonomy for BLV students.

4.3.2 ***Teaching Disability-Centric Prompting Strategies.*** Alongside suggesting potential use cases, teachers taught BLV students how to enhance GenAI responses through iterative and conversational prompting. Without stopping after the initial response, teachers modeled how to build upon it and clarify instructions through follow-up prompts. For example, Brian told students about his own experience with Freedom Scientific's AI chatbot (FSCompanion), where he struggled to get help with enacting a Zoom whiteboard feature until he rephrased his question multiple times. He also taught students the importance of providing clear and precise instructions when prompting to obtain satisfactory responses. He explained, *"It won't infer things if you don't ask, you have to be specific."* For instance, when a student received a vague description of action figures from Be My AI, Brian encouraged him to follow-up with more targeted questions. He demonstrated how to start with a broad, open-ended prompt ("`Describe the picture`") and move toward specific follow-up questions to drill down into relevant details ("`What's the third action figure doing?`").

Given GenAI's tendency to default to vision-centric assumptions, Lily encouraged students to explicitly disclose their blindness in the prompts by adding "`I'm blind. Could you give me another way to do this as a blind person?`"—framing this as a strategy that yielded more useful and BLV-centric responses. She shared example prompts with her students, such as asking for an audio-described walking tour of the Pillsbury Mansion. Importantly, these prompt formulation strategies, which involved disclosure of disability status and explicit requests for non-visual alternatives, were uniquely reported by BLV teachers based on their lived experiences and did not come from sighted teachers in our study.

4.4 Promoting Responsible and Critical GenAI Use Among BLV Students

Teachers highlighted the importance of helping BLV students discern when GenAI tools fail to provide accurate and reliable information. This led them to develop pedagogical approaches that balanced encouraging GenAI use with promoting critical evaluation skills to ensure BLV students' responsible use of GenAI.

4.4.1 ***Increasing Awareness of Inaccuracies and Biases in GenAI Responses.*** Teachers helped BLV students develop critical evaluation skills to identify when GenAI tools produce unreliable or fabricated information, sometimes by sharing personal experiences. For example, Jake shared a humorous but insightful incident with his adult students where a friend holding a lipstick was mistakenly identified by GenAI as holding a joint, and another case where Be My AI fabricated an entire restaurant menu when asked to read it. Participants also encouraged students to share their own GenAI experiences. One of Ivan's students shared how Be My AI misidentified someone's skin discoloration as an indistinct tattoo.

Teachers also highlighted contexts where GenAI was more likely to provide inaccurate information to help students recognize domain-specific limitations and predictable failure patterns stemming from training data sparsity. Lily explained to students how ChatGPT consistently gave incorrect answers about braille, likely due to the lack of *"enough information available about braille that AI can access."* She contrasted this example with areas where GenAI performs well, like general technology-related questions. These examples facilitated classroom conversations about critically reflecting on the ableist assumptions and biases in GenAI outputs and their reliability for disability-related contexts. Teachers encouraged students to be cautious and context-aware, particularly in high-stakes situations where GenAI errors could adversely impact their safety or well-being. For instance, Portia demonstrated in class how Be My AI could misread medication labels when the text is *"crammed together with minimal spacing,"* leading to serious health consequences.

Beyond raising awareness about possible inaccuracies, teachers demonstrated hands-on strategies to verify GenAI responses through repeated queries and cross-referencing with prior knowledge [2]. During an in-class demonstration, Brian held up a bill and asked Be My AI, "`What's the denomination of this bill?`" The app initially responded, *"That's a $10 bill,"* but Brian knew he had no tens in his pocket. He repeated the question two more times, but the app correctly identified it as a $1 bill in later attempts. He then explained the app's inaccurate first response to his students, *" It could be due to poor lighting or just a hiccup in the system. Remember, this is a machine, and it can be inaccurate."* Jake also suggested that students add metacognitive instructions in prompts, such as asking GenAI to check itself for errors during response generation. This suggestion aligns with Jake's own use of GenAI for creating learning materials, where he proactively requested accuracy checks in his prompts (Section 4.2.1). Through these strategies, teachers attempted to instill a *"healthy skepticism"* (Alice) among BLV students toward GenAI outputs instead of accepting them unequivocally.

4.4.2 *Advising Moderation Against Overreliance on GenAI*.

Teachers expressed concerns about BLV students developing undue reliance on these tools at the expense of foundational competencies essential for daily living and problem-solving. Ivan, Gina, Portia, and Jake observed how their *"blind students get much more excited"* about GenAI, likely because GenAI's support with rapid information retrieval significantly offset the time and effort BLV students would otherwise need to expend compared to their sighted peers [122]. They added that some students *"just want that instant gratification and it gets right to the point,"* (Flora) which reduced the need for extensive manual research on their part. This raised concerns among teachers (Lily, Mila, Brian, Paul, Flora, and Dave) about the impact of GenAI overreliance, particularly in diminishing students' problem-solving and decision-making skills. Flora lamented, *"It's creating independence but also taking away our independence."*

Teachers emphasized the importance of developing foundational skills [10, 138] first so that GenAI could serve as *"an extra support rather than the only way they know how to complete a task"* (Mila). To help BLV students understand the challenges of overreliance on GenAI, Brian drew parallels with dependencies on other assistive technologies, such as, *"What if you're extremely low-vision and rely on a handheld video magnifier, and suddenly, it stops working?"* As a precautionary measure, Paul introduced GenAI tools later in their orientation and mobility program only after students had built core skills (e.g., reading cardinal directions and using basic cane techniques) and gained the necessary situational awareness to use AI responsibly. He cautioned students to understand their goals and surroundings on their own, as *"AI will not do that for you."* Further, Dave, Portia, Alice, and Ruby advocated for balancing the adoption of GenAI tools with low-tech, tactile methods. For instance, Dave helped students combine tactile perception with GenAI for organizing canned vegetables: *"We use high-tech Be My AI to identify our cans. Then we use low-tech tactile solutions like rubber bands with index cards to keep track of them."* Teachers, thus, argued for integrating GenAI in ways that supported instead of impeding the development of students' core skills.

4.4.3 *Navigating Concerns about Academic Integrity*.

Teachers grappled with the challenge of maintaining academic integrity [146, 150] while ensuring that BLV students' access to information is not hampered. As a starting point, teachers tried to clearly demarcate acceptable and unacceptable use of GenAI. However, challenges remained with identifying and penalizing students' sophisticated attempts to use GenAI for unauthorized assistance. Flora recalled an incident where a student bypassed test restrictions by exploiting the unique affordances of their assistive technology setup. The student was *"using a lockdown browser for a test which means they cannot leave that browser [window], but they can connect the braille display to their phone."* They discreetly switched to receiving content from their hidden phone without anyone noticing. Since neither teachers nor classmates could notice the braille text being streamed from phone, *"they could go to ChatGPT and ask something."*

Beyond these intentional misuse attempts, teachers experienced situations where GenAI inadverdently provided direct answers even without students explicitly requesting them. When students asked Be my AI to describe images containing test questions, e.g., labeling diagrams or identifying coordinates on math plots, it often provided direct answers instead of just contextual descriptions of visual elements. Therefore, Cody developed strategic prompting approaches where he asked students to include the phrase *"without giving the answer"* in their prompts, (e.g., "`Without giving the answer, can you describe the top part of the image?`"). He also collaborated with paraprofessionals (i.e., classroom support staff for disabled students) to ensure that students followed this prompting protocol, which required extra monitoring and coordination effort.

A contrasting challenge appeared when institutional rules and policies around technology constrained BLV students' opportunities to use GenAI to address access needs. For instance, Nancy's and Emily's schools did not permit students using internet-connected devices. Similarly, Brian's school was reluctant to install GenAI tools on campus-owned devices. As such, Brian encouraged his students to use Be My AI on their personal phones instead.

4.5 Addressing BLV Students' Knowledge Gaps about GenAI Functionality

In preparing BLV students for an AI-integrated future, teachers encountered hurdles in indulging students' curiosity about how GenAI tools function, compounded by their own limited technical understanding and the absence of accessible AI literacy resources.

4.5.1 *Demystifying How GenAI Tools Work*.

As BLV students engaged with GenAI in their academic and daily lives, many naturally developed curiosity about how these systems functioned.

For instance, Portia's students asked, *"How does [Be My AI] know what's in the picture? How can it read text from an image?"* At times, students also raised concerns about data privacy: *"If they take a picture, where does that picture go? Who else could look at that picture?"* (Ruby). Moreover, Brian and Alice observed that students viewed GenAI tools as *"magical"* or infallible solutions [156], which potentially engendered their unrealistic expectations from these tools. Considering students' curiosity and concerns about GenAI, teachers tried to explain GenAI tools' inner workings to them *"in very simple layman's terms"* (Cody) without going into technical details. Helen explained AI to her students as *"basically a whole mess of information that we fed the internet as long as the internet's been around, and even earlier."* Dave shared with his students that these tools continuously learn and improve from follow-up questions and conversations in real time. This approach potentially stemmed from Dave's own practice of providing feedback to GenAI tools through follow-up prompts to improve future output (Section 4.2.2). However, these explanations from teachers were often oversimplified or flawed, as the inner workings of GenAI tools are far more intricate than simply accessing the internet, querying a database, or learning in real time from user feedback [2, 156]. Moreover, teachers occasionally downplayed privacy risks of GenAI: *"I explain to them that AI apps collect data to improve their functionality, but that doesn't mean they're collecting personal information"* (Portia). These oversimplifications risk perpetuating flawed understandings of GenAI among BLV students and fostering inaccurate mental models [2] that could influence how students trust, interpret, and make decisions around GenAI responses.

One key reason behind teachers' oversimplified explanations was that many did not feel knowledgeable enough to teach AI concepts [117]. Alice said, *"In order to teach this well, I'd need a better understanding of how it works. I only know what I know—I don't know what I don't know."* Although Emily, Nancy, and Portia highlighted the need for professional training and formal resources about AI concepts, Mila and Paul felt that many teachers of BLV students were less inclined to engage with the technical details of AI unless it is directly related to accessibility-specific use cases. Mila explained, *"I don't think many teachers would want to sit through a long explanation of why AI functions the way it does unless there's a direct application for them."* This view was not surprising, given the already high workload of special education teachers [25]. Moreover, unlike sighted peers, BLV students need to learn assistive technologies and independent living skills, reducing time available to learn new computational concepts. Therefore, Lily thought that BLV students might also lack interest in learning the underlying mechanics of AI: *"I just don't know how much students really care about [AI concepts] in the end... They're just happy with the results they get... without knowing any behind-the-scenes details."*

Nevertheless, Emily believed that BLV students needed at least *"a basic understanding of AI,"* referring to concepts like prediction, classification, and training data, given AI's growing presence in various professional fields. She introduced her students to existing AI literacy tools like RAISE Playground [97] and Teachable Machine [60] which, to her dismay, were completely incompatible with screen readers. As a workaround, Emily operated the tools herself (since she was sighted) and concurrently narrated each step to her BLV students. She elaborated, *"I describe everything as I go to ensure the student has a clear mental picture. At the end of the session, I ask, 'Tell me, what did we do? Do you have any questions?'"* On one hand, this workaround demonstrates the important role teachers play in crafting accessible AI literacy experiences for BLV students that are otherwise lacking. On the other hand, it is necessary to recognize that hands-on exploration is still essential for BLV students to fully comprehend how AI technologies work and cannot be replaced with teachers' verbal narrations.

4.5.2 ***Envisioning Accessible AI Learning Tools and Activities****.* Teachers articulated a clear need for BLV-centered AI literacy curricula that could support conceptual understanding of GenAI, recognizing the limitations of existing AI literacy resources and their own ad-hoc teaching approaches. To help students develop a deeper understanding of the *"thinking"* process of GenAI (i.e., how GenAI tools synthesize and produce information), teachers envisioned immersive and hands-on activities that would translate abstract computational concepts into embodied and multi-sensory experiences. For example, Alice imagined a physical room-scale activity where learners would embody an AI model and follow a branching path of words, similar to a *"choose your own adventure"* game, thus gaining familiarity with decision tree algorithms. Mila imagined a tactile representation of the sequential workflow of ChatGPT that would include physical markers (e.g., buttons and raised paths) to denote different phases, such as entering the initial prompt, ChatGPT accessing various information sources, synthesizing data, and generating a final response. To illustrate iterative prompting, Mila suggested incorporating a textured *"bump"* in the tactile model, followed by an alternate path that represents prompt refinement or follow-up questioning. She proposed complementing tactile representations with audio recordings of using ChatGPT with a screen reader so that students could simultaneously hear how the interface functions—how prompts are read aloud, responses are delivered, and follow-up interactions occur.

To teach students how prompt formulation [86, 154] impacted GenAI responses, Jake envisioned gamified activities like a *scavenger hunt* where students would rely on GenAI tools to complete tasks and uncover clues, with each step demanding thoughtful prompt refinement. An alternative approach he suggested included a *virtual escape room* that would require students to leverage their knowledge of GenAI behavior and prompting strategies to advance through different levels and ultimately escape. Sarah considered teaching prompt formulation through the classic *peanut butter and jelly sandwich* where students guide someone step-by-step on how to make a sandwich. By making students follow one another's instructions, such as placing the jar of peanut butter on the bread instead of spreading it, she aimed to demonstrate how vague directions could lead to unintended outcomes, mirroring how imprecise prompts yield unhelpful GenAI responses. To simulate incorrect or incomplete GenAI responses, Paul envisioned a role-playing game in which one student takes on the role of ChatGPT while another acts as the user posing questions to allow students to experientially explore the gap between query intent and system interpretation.

To demonstrate practical applications of GenAI in supporting BLV individuals' access needs, Gina proposed gamified applications similar to *Mario Brothers*[5] for teaching students how to use different AI tools (e.g., ChatGPT, Be My AI) through reward-based progressive levels that increase in difficulty by guiding students from simpler interactions (e.g., identifying what an AI tool does) to more advanced use (e.g., correcting errors in AI outputs). Given her work with young students, Gina envisioned the app would incorporate age-specific themes (e.g., animals for elementary students), fun elements, and music to enhance engagement. These speculative learning activities and curricula surface opportunities for designing accessible AI literacy interventions, incorporating hands-on exploration with conceptual understanding.

5 Discussion

We now discuss ways to promote accessible AI literacy and outline design considerations for supporting teachers' instructional practices and responsible integration of GenAI in BLV education.

5.1 Towards Promoting Accessible AI Literacy

With increasing attention on AI literacy in K–12 education and beyond, researchers are developing frameworks and interventions to equip students with skills to understand, critique, and responsibly use AI in everyday and professional life [8, 12, 24, 54, 81]. Concurrently, inclusive AI literacy interventions highlighted how underrepresented students (e.g., Black girls) draw on their lived experiences and cultural knowledge to engage critically with AI concepts, such as bias and fairness [31, 134, 135]. However, the unique needs of disabled students and their educators have remained largely underexplored in this expanding field. To address this, we propose *accessible AI literacy*—a pedagogical framework that centers the unique use cases, risks, and needs of BLV learners and guide them to be informed, competent, and active users of GenAI technologies (Figure 2). In doing so, we draw from the cognitive apprenticeship (CA) model [36, 37] which has been applied in other computing education contexts [125] (e.g., software engineering [126] and robotics [78]) and focuses on preparing learners to apply complex skills in real-life situations instead of passively receiving lessons. Our study presents an initial step towards promoting accessible AI literacy, while acknowledging this will require sustained collaboration between educators, researchers, policymakers, and the BLV community.

Center Access-Related Use Cases: Teachers of BLV students have long prioritized technologies that enhance accessibility for their students [16, 50, 100], and this preference extended naturally to their practices around GenAI. Indeed, our participants showed students how to leverage GenAI in disability-centric application contexts by drawing on their own tacit knowledge and everyday GenAI use in instructional tasks. This aligns with the *modeling* method in CA which involves teachers demonstrating how a task is carried out so that students can understand its purpose and the steps required to accomplish it [37]. When applied to BLV education, modeling GenAI use in access-related activities could help students attach meaning to these activities, follow the steps required to perform those efficiently, and transfer skills between use cases. This is particularly important for BLV students, as the usefulness and relevance of GenAI in certain tasks (e.g., skim reading an inaccessible webpage) may not be immediately apparent to them and need to be explicitly taught in authentic, real-life contexts [10, 26]. Although some participants tried existing tools and materials for teaching BLV students about GenAI [81] and prompt formulation [9, 12], these resources neither included access-centric use cases nor reflected BLV individuals' lived experiences, leading teachers to develop techniques through trial and error.

Therefore, we argue that teachers need resources that center on how GenAI could address BLV learners' access needs, along with specialized techniques required for effective non-visual interaction with GenAI. For example, AI literacy interventions could include meaningful, access-related applications of GenAI [2, 141] (e.g., interpreting scientific diagrams, extracting and summarizing information from lengthy documents that are cumbersome to navigate with screen readers). These resources could also include structured prompt-crafting exercises in which BLV students practice articulating their access needs (e.g., `Describe this diagram so that a blind student can understand`).

Unpack Access-Specific Risks: Beyond concerns about bias, hallucination, and privacy discussed in prior work [38, 81, 156], teachers were cognizant of the unique risks GenAI tools pose to BLV students. For instance, when GenAI produces inaccurate descriptions of visual content, BLV students may have limited ability to verify these outputs independently [6, 151], which can negatively impact BLV students' comprehension of educational materials (e.g., charts) and create severe misinformation and safety concerns (e.g., misinterpreting medicine labels).

We argue that accessible AI literacy interventions should explicitly address how AI-related risks manifest differently for BLV learners, introduce additional risk categories specific to accessibility contexts, and guide students on strategies for counteracting these risks. These could include activities for raising awareness of BLV-specific AI risks, such as types of hallucinations (e.g., distortion, fabrication, misfocus) in AI-generated image descriptions [142] and teaching how to counter these hallucinations by applying BLV-specific fact-checking strategies (e.g., tactile recognition techniques, deductive reasoning) [2, 6]. Applying CA's *coaching* method [37] can help in this regard. Teachers could observe BLV students performing a risky task using GenAI and offer hints and reminders if the students accept inaccurate or incomplete GenAI suggestions without additional verification and modification.

Enable Conceptual Understanding of AI: While educating BLV students about GenAI applications and risks, teachers sometimes imparted their own oversimplified and flawed understandings. Though such misconceptions are also common among sighted individuals [19, 156], accessibility breakdowns (e.g., inaccessible buttons in GenAI tools) can further fuel these misconceptions [2]. Moreover, a flawed understanding of GenAI can have compounded effects for BLV learners who already face limited access to mainstream educational resources [20, 127, 149] and undermine their readiness to responsibly engage with this evolving technology.

[5] *Mario Brothers* is a video game where players guide a character through a series of levels that gradually increase in difficulty.

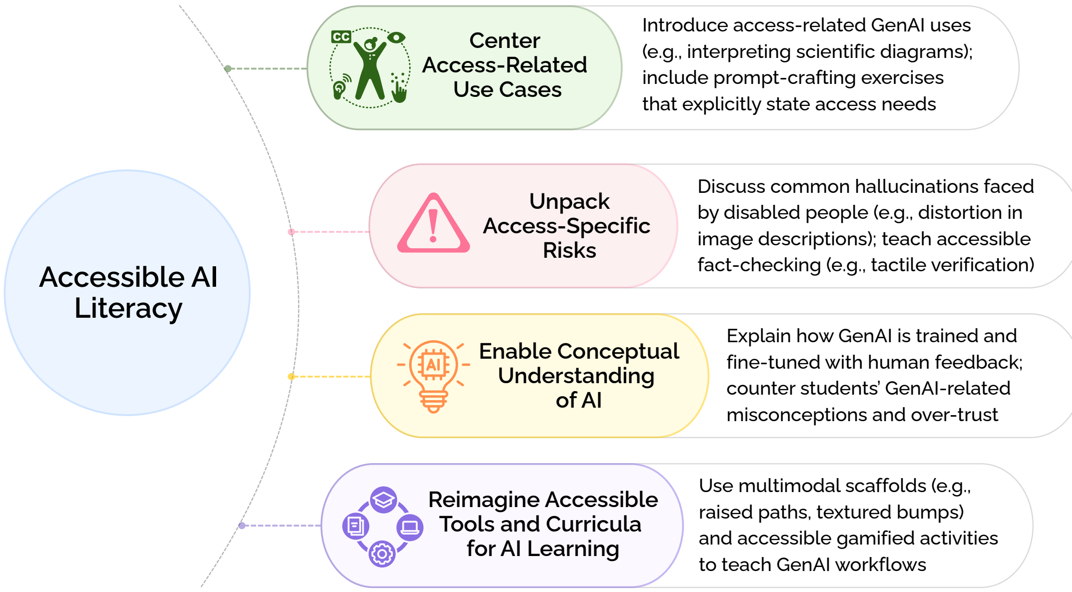

Figure 2: Four components of our proposed accessible AI literacy framework: center access-related use cases, unpack access-specific risks, enable conceptual understanding of AI, and reimagine accessible tools and curricula for AI learning.

Therefore, accessible AI literacy interventions should highlight conceptual understanding of GenAI among BLV students while actively mitigating potential misconceptions arising from inaccessible interfaces. *Articulation* and *reflection* methods from CA [37] could facilitate this approach. For example, to assess and improve students' conceptual knowledge of GenAI, teachers could guide them to articulate and reflect on their understanding of how GenAI tools produce responses based on training data [7, 91], what it means to fine-tune models, how human feedback is incorporated into GenAI models, and more. Similarly, to help students identify and counteract their own misconceptions, teachers could implement guided question prompts (e.g., what, why, and how questions) [36], think-aloud exercises, and critiquing tasks where students compare and evaluate inconsistencies between different GenAI outputs [39]. Making students' thinking visible in this way could help them critically reason about why GenAI outputs may be unreliable and how biases emerge. This aligns with existing AI literacy initiatives (e.g., five big ideas of AI [145]) but requires specific attention to how BLV students interact with and conceptualize these technologies.

Reimagine Accessible Tools and Curricula for AI Learning: When attempting to use existing AI learning tools with their BLV students, teachers in our study encountered significant accessibility challenges (e.g., the lack of screen reader support in RAISE Playground [97]). One teacher resorted to verbally narrating every step of the interaction with these tools to her BLV students. However, this workaround was time-intensive and limited BLV students' autonomy and direct engagement with these tools. Moreover, if BLV students learn about AI only through a teacher's narration, they may develop incomplete mental models of AI [2], as they cannot directly explore, test, or manipulate the systems themselves.

To promote accessible AI literacy, we must ensure that BLV students can directly interact with AI learning tools while teachers provide conceptual guidance as needed. For this, we need to both adapt existing AI literacy resources to make those more accessible as well as develop new technologies and curricula that leverage BLV students' strengths (e.g., tactile and auditory skills) and offer additional support according to individual students' learning needs. Following the *scaffolding* method in CA [37], these interventions could include multimodal tools with physical markers (e.g., raised paths, textured bumps) that translate abstract computational concepts into tangible interactions, paired with synchronized audio narration of screen readers. Additionally, gamified and embodied learning activities (e.g., scavenger hunts, escape rooms) could be developed to improve BLV students' prompt crafting skills [9]. Importantly, accessible AI literacy interventions must be rooted in BLV learners' lived experiences [31, 135] and position them as active and responsible users of GenAI instead of passive recipients of content [134].

5.2 Design Considerations for Supporting Teachers' Instructional Practices with GenAI

Prior work highlighted GenAI's potential in supporting teachers in mainstream classes for manual and repetitive tasks [155], ideation [3, 17], and preparation of personalized educational content [62, 105, 116, 140], alongside concerns about GenAI's inaccurate and hallucinated outputs [62, 116] and transparency and accountability issues [61, 150]. While these insights persist for teachers of BLV students as well; they are accompanied by distinct GenAI use cases and concerns involving BLV instructional contexts. Accordingly, we discuss design considerations for future GenAI tools to better align with accessibility-specific instructional responsibilities.

5.2.1 ***Supporting BLV-Specific Personalization of Educational Content***. Unlike in mainstream classrooms with minimal adaptation needs, teachers of BLV students needed content tailored to each BLV student's individual skills, interests, preferred learning mediums, and access needs [10, 120]. While prior work has proposed strategies and frameworks to support mainstream teachers [44, 62, 140], accessibility-centric support for teachers of BLV students remains scarce. Future tools could support teachers in maintaining *access profiles* for students to capture each learner's skills, preferred mediums, and developmental context (e.g., a 4-year-old reading at a 2nd-grade level), where GenAI tools could automatically leverage individualized access profiles to accelerate personalized content creation. Furthermore, while participants did use GenAI to create BLV-relatable materials or adapt inaccessible ones, this often required deliberate work and active search for ideas. Instead of requiring teachers to create everything from scratch, GenAI tools could suggest relevant learning activities and support their adaptation for non-visual use, for example, reusable prompt templates [44] and guided task-based workflows that could walk them through generating accessible content or adapting available learning materials (e.g., creating audio-tactile versions of visual board games).

5.2.2 ***Facilitating On-Demand Subject Knowledge Acquisition***. Beyond using GenAI for brainstorming and refining educational content like mainstream teachers [3, 17, 62], teachers of BLV students sought GenAI to learn unfamiliar subjects outside their expertise, given they often needed to create accessible versions of learning materials (e.g., tactile graphics for scientific diagrams) [10, 27]. Since this need is on-demand and closely tied to ongoing classroom instructions, future GenAI tools could introduce an *instructional momentum mode* to provide guided explanation tailored to teachers' immediate instructional needs [105, 140], such as suggesting BLV-specific explanation prompts (e.g., `Explain X like I'm about to teach it to a high-school BLV student`) and time-bound overview prompts (e.g., `Give me a 2-minute overview on X with an example`). To support collaboration and alignment between teachers of BLV students and subject-specific teachers, this mode could include features that summarize recent updates on a topic (e.g., what changed since you last looked?) and generate collaborative summaries incorporating notes from subject-specific teachers. However, teachers must remain cautious about subtle yet critical conceptual gaps or errors in inaccurate or hallucinated GenAI responses [62, 116].

5.2.3 ***Ensuring Accessibility-Aware Content Verification***. To address BLV-specific GenAI limitations (e.g., ableist assumptions in responses), teachers actively intervened by asking follow-up questions and revising their prompts to explicitly state BLV students' learning needs. When these efforts still fell short, they manually reworked AI-generated materials into accessible formats. While mainstream educators also need to monitor GenAI inaccuracies [62, 116], this workload intensifies for teachers of BLV students because they additionally must track whether GenAI outputs conflict with accessibility standards. GenAI tools could introduce an *accessibility-check layer* that lists assumptions made by the system (e.g., preferred modality) and allows teachers to review. This could also embed an accessibility reasoning step in which GenAI makes its accessibility-related decisions explicit, helping teachers understand why certain explanations were generated (e.g., visual metaphors being avoided to cater to BLV instruction). Additionally, a formatting validation feature could check accessibility of math equations and formulas and simulate how equations would be rendered by screen readers, and warn teachers when content might be inaccessible or read ambiguously by screen readers. However, designers must consider that such techniques could still fail to capture nuanced accessibility standards (e.g., braille pedagogy norms) [107].

5.2.4 ***Nudging for Teacher Oversight in High-Stakes Instructional Tasks***. Compared to general-purpose uses, the stakes of GenAI limitations are often more pronounced in BLV education. That is, if GenAI responses fail to accurately capture accessible, non-visual teaching methods, they could seriously misguide critical aspects of educational planning for BLV students (e.g., creation of IEP goals). Any nuance missing at this stage risks jeopardizing the very systems meant to support BLV students' learning experience [10, 26, 118]. Therefore, GenAI tools could include a *high-stakes mode* where more emphasis is given on teachers' agency and oversight in critical contexts [28]. This mode could flag potentially high-stakes educational planning tasks involving decisions with significant consequences for BLV students and preemptively nudge teachers when additional scrutiny might be necessary before integrating GenAI responses [82, 147]. For example, as the stakes of a task increase, it could introduce access-critical checkpoints—brief reflection points [143] at moments requiring critical accessibility decisions to give teachers flexibility to pause and reflect on choices. GenAI tools could also proactively remind teachers not to include sensitive information when crafting prompts [156]. However, we must be mindful that GenAI tools could fail to flag high-stakes tasks and warnings from GenAI to preserve privacy cannot replace the need for awareness and professional training for teachers.

5.3 Design Considerations for Integrating GenAI in BLV Students' Education

Prior work noted mainstream teachers' concerns regarding students' overreliance on GenAI [17, 72, 109] and academic integrity issues [3, 132, 146]. Our findings showed how these concerns created unique trade-offs for BLV students. Accordingly, we outline design considerations for integrating GenAI responsibly into BLV learning environments.

5.3.1 ***Promoting Foundational Skills Against Overreliance on GenAI***. Overreliance on GenAI carry heightened risks for BLV students compared to their sighted peers, as this could jeopardize the development of core accessibility-related skills (e.g., orientation with white cane and braille literacy) [87, 123] essential for their autonomy and independent living. In the absence of critical validation, the newfound benefit of immediate output [100, 139] may lead BLV learners to develop undue trust on GenAI tools. This creates a deeper tension between *fast* intuitive thinking and *slow* effortful reasoning [71, 80]. Therefore, teachers could incorporate targeted *speed bumps* (i.e., intentional obstacles) into their lessons, prompting students to slow down and engage in deliberate thinking. These could include subtle errors that cannot be caught by quick prompting with GenAI [110]. This way, instead of relying on GenAI to fulfill every step, students would be required to spot and correct mistakes themselves and develop core problem-solving skills. Beyond classroom strategies, GenAI developers could incorporate metacognitive prompts [143] or insert brief pause points where students are nudged to reflect carefully or check other sources before receiving more assistance.

5.3.2 ***Creating Experience-Driven Learning Resources for GenAI Use.*** Teachers in our study demonstrated to their BLV students how to navigate GenAI quirks by sharing their own trial-and-error stories [17, 90]. Students, in turn, discussed their own experiences, successes, and frustrations during class discussions. To amplify such reciprocal practice, we propose creating *experience exchange boards* or repositories [52] where both teachers and students can post insightful prompts, highlight GenAI misfires, and share innovative GenAI use strategies. This could facilitate open dialogue and an iterative experience-sharing environment between teachers and student peers [89, 90]. When a student posts a failure case like a misleading GenAI output, others can respond with clarifying questions or complementary experiences. New features could be added to help students tag and save GenAI misfires (e.g., what went wrong, how they noticed the issue, what follow-up questions they asked, and which strategies helped them address it) and later share or revisit these examples when similar issues arise. However, this tagging process must be accessible so that BLV students can easily organize and find examples of how others identified, questioned, and worked through GenAI issues.

5.3.3 ***Enabling Collaborative Exploration of GenAI Limitations.*** Teachers often collaboratively explored GenAI tools with BLV students in the classroom to help them better understand GenAI limitations. However, such collaborative explorations were often in-the-moment and improvised in response to the quirks GenAI tools happened to produce that day. Instead, we call for a structured approach that focuses on deliberate collaborative exploration activities [64, 73] with and around GenAI tools. For instance, to strengthen students' awareness around GenAI inaccuracies, students could rotate through *fact-checking stations,* evaluating AI-generated snippets for correctness by cross-referencing trusted sources. For privacy awareness, students could engage in *data protection role-plays,* where the teacher could act as the data guardian and challenge students to think critically before sharing personal information with GenAI tools. Alongside these classroom activities, designers could build shared workspaces where BLV students, peers, teachers, or parents can jointly inspect, question, and check AI outputs for collaborative sensemaking.

5.3.4 ***Ensuring Academic Integrity While Supporting Information Access.*** Striking a balance between encouraging GenAI use to promote accessibility [57, 99] and taking strict measures to uphold academic integrity [65, 79] is not a straightforward binary decision but a complicated issue demanding nuanced consideration. However, targeted interventions could recognize BLV students' information access needs while mitigating the risks of GenAI misuse. For example, teachers could structure assignments into distinct phases: one phase granting facts-only access that provides contextual information, followed by another phase requiring independent reasoning and critical thinking [77]. Meanwhile, developers could build student-facing GenAI tools that would reveal descriptive or contextual information without providing direct solutions for academic tasks. These tools could provide context-aware access support across various academic tasks (e.g., homework, exams, coding, and diagram interpretation [46, 53, 102]), while teachers choose the permitted level of assistance, such as image description, syntax reminders, or additional explanation. To increase transparency, GenAI tools could document what types of assistance students received, what choices they made, how they revised their prompts, and reached the final answers.

5.4 Limitations and Future Work

Our recruitment strategy may have introduced selection bias and technology adoption bias, as we purposefully recruited teachers who were current users of GenAI tools to learn from their early adoption experiences [57, 141]. This approach may have excluded teachers who chose to avoid or abandon using these tools. Additionally, our findings drawn from US-based teachers may not fully represent other geographic contexts where educational infrastructures, disability services, and technology provisions vary. Our racially-skewed sample (13 of 17 White) may not have captured diverse cultural and racial perspectives. We also did not systematically collect data about participants' socioeconomic status, paid vs free model usage, and device availability issues. Future work should include participants from diverse background and with a wide range of GenAI use experience to capture broader perspectives on GenAI integration in BLV education. Future work could also investigate differences in pedagogical strategies between teachers with formal training in GenAI and those without such training. Finally, future research could include participatory co-design with BLV students and their teachers to prototype, implement, and evaluate new AI learning tools and activities.

6 Conclusion

Our study sheds light on how teachers of BLV students are adopting GenAI tools into their teaching practices and guiding students to navigate, evaluate, and meaningfully use these tools. Based on their pedagogical strategies, we propose four components for accessible AI literacy interventions: center access-related use cases, unpack access-specific risks, enable conceptual understanding of AI, and reimagine accessible tools for AI learning. By centering the unique needs of BLV students and the experiences of their teachers, we call for educators and GenAI developers to not only focus on enhancing accessibility but also to support BLV students to become critical users of GenAI technologies.

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A Appendix

Table 3: Summary of interview findings with illustrative examples

Theme	Subtheme	How teachers used and taught GenAI	Illustrative examples
Leveraging GenAI for instructional responsibilities related to BLV education	Creating personalized lesson plans	Generating individualized BLV-specific materials; adapting content for age–skill misalignment	Mila prepared a customized braille contraction lesson for her 2nd-grade student; Alice created a Jeopardy-style auditory math game
	Refreshing discipline-specific knowledge	Using GenAI as an on-demand reference to refresh subject knowledge across disciplines	Flora used ChatGPT for step-by-step guidance to factor a math equation ($5x - 43x + 56$)
	Streamlining educational planning documentation workflows	Drafting and revising BLV-related educational planning documents (e.g., IEP, FVA, PLAAFP)	Sara used ChatGPT for writing initial drafts of IEP goals
Navigating limitations of AI-generated content	Mitigating inaccuracies and formatting issues	Specifying accuracy needs in prompts; manually fixing inaccessible formatting	Jake crafted strategic prompts with "`Make sure screen reader info is accurate;`" Alice fixed inaccessible math formatting after copy-paste
	Confronting ableist assumptions and biases	Identifying vision-centric and ableist outputs; adapting content using professional expertise	Sarah identified GenAI suggestion of "Finger spacing" for braille literacy; Alice encountered GenAI suggestion of whiteboard/projector as non-visual learning materials
Preparing BLV students for effective use of GenAI	Recommending GenAI tools for academic and daily tasks	Providing students with examples of GenAI use-cases for academic and independent living tasks	Mila recommended ChatGPT for information seeking within lengthy documents; Brian recommended Be My AI for generating descriptions of data visualizations; Lily suggested Be My AI for reading food labels
	Teaching disability-centric prompting strategies	Modeling follow-up questioning and disability disclosure to obtain responses aligned with access needs	Brian taught layered prompting for visual description; Lily suggested adding explicitly "`I'm blind`" in disabilty-centric prompts
Promoting responsible and critical GenAI use among BLV students	Increasing awareness of inaccuracies and biases in GenAI responses	Demonstrating GenAI inaccuracies with real-life examples; teaching verification through repeated queries and cross-checking with multiple tools	Jake demonstrated Be My AI fabricated a menu item; Brian showed how Be My AI misidentified a bill denomination
	Advising moderation against over-reliance on GenAI	Teaching foundational skills before GenAI introduction; promoting low-tech alternatives alongside GenAI	Paul introduced GenAI after teaching navigation skills; Dave taught vegetable can organization using AI identification along with tactile labels
	Navigating concerns about academic integrity	Clarifying acceptable GenAI use cases; developing strategic prompting protocols to avoid direct answers	Cody taught strategic prompting for Be My AI by adding "`without giving the answer`"
Addressing BLV students' knowledge gaps about GenAI functionality	Demystifying how GenAI tools work	Providing simplified explanations of GenAI mechanisms; addressing privacy concerns; mediating inaccessible AI literacy tools	Cody used "soda machine" metaphor to explain how GenAI tools work; Emily verbalized how Teachable Machine works to students
	Envisioning accessible AI learning tools and activities	Suggesting tactile, embodied, and game-based activities to teach AI concepts and prompting	Mila envisioned a tactile model to teach ChatGPT workflow; Jake proposed adapted scavenger hunt for prompt formulation skills