

Deploying an AI-Powered Mobile Tool to Support Connection Through Creative Visual Interpretation in Mixed Visual-Ability Families

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We present a field deployment of a mobile system that enables blind and low-vision (BLV) adults to receive AI-generated descriptions of children's artwork, crafts, or picture books. We conducted a three-week deployment using a modified version of *ArtInsight*, a prior open-source tool, with seven families consisting of BLV relatives and their sighted children. Participants captured 135 images, 91 of which were children's artworks; other captures included picture books, architecture, scenic landscapes, family photographs, and house furnishings. We found that ArtInsight sparked meaningful conversations by revealing new levels of detail, with BLV family members noting children felt reduced pressure to describe their art and initiated more discussion about artwork during the weeks. We reflect on the role of AI-powered creative visual interpretation systems in daily life, highlighting impacts on *all* mixed-ability group members—not only enabling access for BLV adults, but also supporting children's emotions and evolving understanding of AI.

Additional Key Words and Phrases: BLV accessibility, creative tasks, visual interpretation, mixed-ability groups, field deployment

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1 Introduction

Artificial intelligence (AI) tools are increasingly integrated into systems to enhance accessibility for blind and low-vision (BLV) users, including *Be My AI* [2] and *Seeing AI* [4] for scene descriptions,

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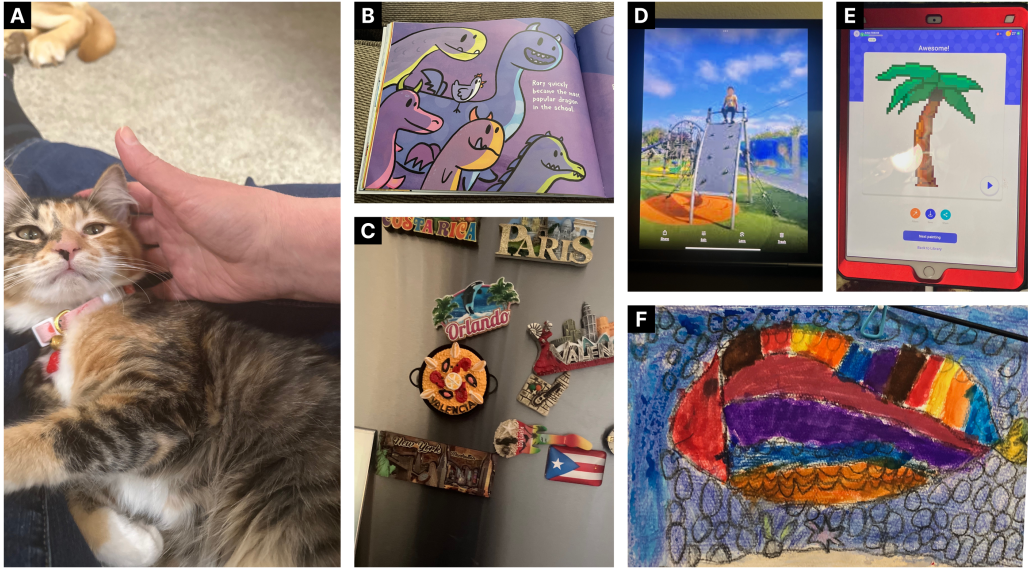


Fig. 1. Participants explored a range of live and static content using ArtInsight, including facial markings on a colorful cat (A), a picture book (B), magnets on a fridge (C), an old family photograph (D), and digital and watercolor children’s artworks (E and F). These examples highlight the diversity of “artistic” artifacts mixed visual-ability groups want to access.

screen readers such as JAWS [5] for image descriptions, and pedestrian navigation applications such as OKO [9]. Although these and other AI technologies show promise for BLV people [8, 28, 36, 38], we know little about how such systems affect relational dynamics *beyond* the BLV individual, such as in mixed visual-ability family or educational settings. This gap in our understanding persists in part because most research evaluations of AI systems occur in controlled settings that center BLV individuals’ personal or productivity use of AI [11, 12, 40, 46, 67, 77]. Even within this individual-use framing, few studies extend to deployments beyond the lab [38, 78, 81]. As a result, the relational consequences of deploying these AI interpretation systems, particularly in intimate mixed-ability contexts that involve joint meaning-making, remain unexamined.

In mixed visual-ability social settings, such as families with blind parents and sighted children, access to visual information is often co-constructed: sighted members describe visual content to BLV members and BLV members determine what information matters along with when and how they need to access it [21, 28]. These interactions involve conversation and negotiation, and introducing AI systems into this mixed visual-ability dynamic raises questions about whether and how conversations and shared access practices might differ. Furthermore, traditional AI visual interpretation systems for BLV people focus on *objective* scene or image descriptions [38, 78], rather than the interpretation of more creative and subjective visual content (e.g., personal artwork, picture books, and handicrafts). Creative visual interpretation is not only known to be important for BLV individuals [43, 57], but also enables relational interactions such as BLV parents engaging with their sighted children’s artwork for family connection and children’s emotional and developmental well-being [1, 27, 28, 68]. Collectively, the rapid proliferation of AI visual interpretation systems and the central role of creative interpretation in mixed visual-ability interactions motivate the need to better understand whether and how mixed visual-ability groups use such systems in daily life, especially beyond the individual user.

To answer these questions, we aim to understand the behaviors and interactions of people in mixed visual-ability settings when an AI-powered creative visual interpretation system is deployed for everyday use. Towards this goal, we modified, deployed, and studied *ArtInsight*,¹ an open-source AI tool introduced by Chheda-Kothary et al. [27] to enhance mixed visual-ability family experiences of children’s artwork through tailored AI descriptions. ArtInsight enables users to customize AI descriptions to be either objective or interpretive, includes AI-generated starter questions to facilitate dialogue between BLV adults and sighted children, and even lets children record voice descriptions of their artwork to inform and further contextualize the generated descriptions through human-AI interactions. Chheda-Kothary et al. [27] conducted preliminary user evaluations of ArtInsight, but the lab-based nature of their study constrained the scope, generalizability, and ecological validity of their findings. Informed by prior work, we modified ArtInsight, making it robust, removing previously unsuccessful components, and adding social sharing and study-logging capabilities. Doing so enabled field deployments through which we could examine user behaviors and interactions that went well beyond the lab [72].

In this work, we address the following research questions:

- RQ1.** When and how do mixed visual-ability groups use human-AI creative visual interpretation systems for tasks in the real world?
- RQ2.** How do creative visual interpretation systems affect relationships between mixed visual-ability group members such as sighted children and their BLV relatives? How does in-home usage of such systems affect these relational dynamics?

We investigated these questions by deploying ArtInsight to seven mixed visual-ability family groups for three weeks. These family groups consisted of a BLV parent or grandparent and their sighted children or grandchildren. We remotely installed ArtInsight on BLV adults’ phones, and families used the system over three weeks. We offered ArtInsight as a tool for child-created artwork interpretation but encouraged the BLV adults to use it for any desired visual tasks.

Our findings reveal that creative visual interpretation systems such as ArtInsight can enable deeper and more meaningful dialogue in mixed-ability families and more thorough understanding of creative content. BLV adults primarily used ArtInsight together with their sighted children when discussing child-created artwork, typically listening to both AI-generated descriptions (objective and interpretive) before deciding if they wanted to add corrections or augmentations. BLV family members felt that ArtInsight helped establish more trust with and reduce the burden on their children, giving younger children in particular a stronger vocabulary to discuss their art with their adult relatives. Children appreciated ArtInsight’s image descriptions, particularly the creative ones, as they conveyed a sense of “*fantasy*” and “*whimsy*,” but also experienced moments of frustration, such as when two sisters perceived an imbalance in how the AI described their respective pieces to their blind grandmother. Beyond exploring children’s artwork, BLV adults used ArtInsight to analyze live scenery (e.g., their backyards or the architecture of buildings), family photographs, professional artwork, and children’s picture books.

Overall, we contribute empirical findings from an exploratory field deployment of ArtInsight to advance knowledge of (1) when and how mixed visual-ability families use AI-powered systems for creative tasks in the real world, (2) if and how using a creative visual interpretation system over time affects understanding, intimacy, and relational dynamics between group members.

2 Background and Related Work

We situate our work in AI systems for artwork and image interpretation as well as human-AI accessibility tools. We also draw upon previous accessibility field deployments.

¹<https://github.com/makeabilitylab/ArtInsight>

2.1 AI-Powered Image Interpretation and Verification

AI tools for accessible image interpretation are increasingly prevalent [2, 4, 7, 27, 40, 46, 56, 73]. Applications and devices such as *Be My AI* [2], *Seeing AI* [4], *TapTapSee* [7], and *OrCam* [12] enable BLV users to capture images of live scenes and receive corresponding AI descriptions. In HCI research, Xie et al. [77] explore how BLV users interact with a specific visual assistance application (*Be My AI*), and Seiple et al. [67] compare the performance of visual assistance applications to smart glasses. A body of work also explores AI-powered alternative text (ALT text) generation as a key part of making images accessible [37, 40, 50, 73, 76, 82]. However, the majority of these technologies focus on objective understanding of scenes or images for functional use (task completion, media browsing) unlike our work which seeks to deploy AI for more *creative* interpretation.

Closer to our work is a smaller body of research investigating AI in creative interpretation, such as for picture books or artwork. In AI for co-reading, Cassidy et al. [24] and Park et al. [63] investigate BLV parents' understanding of their children's picture books, while Zhou et al. [85] evaluate AI model performance at generating quality ALT text for picture books. Li et al. [57] and Chheda-Kothary et al. [28] discuss the potential for accessible, AI-powered interpretation of professional museum artwork and children's artwork, respectively. Chheda-Kothary et al. [27] then introduce a creative visual interpretation system, *ArtInsight*, specifically tailored for AI descriptions of children's artwork, and show through a within-subjects lab evaluation that BLV parents consider *ArtInsight* more useful than *Be My AI* for evaluating children's artwork. We directly build upon Chheda-Kothary et al. [27]'s open-sourced *ArtInsight* system to augment it for a field deployment, extending the research beyond controlled lab settings and "into the wild" [64].

A body of research also explores BLV validation strategies of AI-generated image descriptions. Lee et al. [56] develop a touch-based approach for digital image exploration to validate AI-generated image captions. Huh et al. [46] provide BLV users options of AI-generated visual content to then validate using AI summaries. Alharbi et al. [11] identify when and how BLV users of visual interpretation systems want to correct inaccurate image descriptions, with one of their participants appreciating that "as a user I have the power to improve it." Das et al. [32] and Bennett et al. [18] similarly discuss the implications of inaccurate or lacking AI descriptions for AI-generated images [32] and photographs of people [18]. We extend this notion of AI validation to creative interpretation, revealing how mixed visual-ability groups use human corrections and context to refine AI interpretations in everyday settings.

2.2 AI Supporting Adult-Child Relationships

As AI becomes increasingly embedded in everyday life, researchers have begun exploring its role in intimate adult-child relationships across home, school, and care settings; our work builds on this by examining the organic use of creative AI tools in similar contexts. In educator-student settings, He et al. [44] highlight generative AI as a co-creation tool for educators developing novel, culturally responsive content. Sharma et al. [69] highlight children's attitudes towards a human-AI hybrid teacher experience, with some concerns about AI replacing the human teacher experience, particularly when it comes to emotions and feelings. In families, we see AI facilitating parent-child discussions and relationships [24, 27, 33, 63, 70, 80, 84] as well as offering tailored support [15].

A handful of prior works prioritize human-AI systems that center children while also supporting adults [75]. For example, *StoryBuddy* [84] and *ContextQ* [33] scaffold parent-child dialogue during story time with dynamic, contextual actions and prompts. In intimate *mixed-ability* adult-child groups, such as families with disabled and non-disabled members, the need for AI systems to support added human context is even more critical [27–29, 58]. *AACessTalk* from Choi et al. [29] supports parents of minimally verbal autistic (MVA) children, showing parents contextual speech guides

and children contextual card recommendations. Chheda-Kothary et al. [27] enable a human-AI component in *ArtInsight* for children of BLV individuals to update AI-generated descriptions of their artwork with their own interpretation and intention [28]. We retain the original functionality to update AI descriptions [27] in *ArtInsight*. Furthermore, by deploying ArtInsight, we organically explore when and how BLV adults and sighted children work independently or together in real-world settings to add human context to AI for everyday creative tasks.

2.3 Field Deployments in HCI and Accessibility Research

HCI has repeatedly shown the value of studying technologies “in the wild” through deployments, demonstrating the research impact of learning from ecological validity and lived practice [23, 25, 34, 35, 47, 64–66]. Field deployments sit between laboratory evaluation and naturalistic observation, often helping researchers understand how a prototype is appropriated in context rather than substantiating adoption or causal claims [65, 72]. Siek et al. [72] emphasize that field deployments should separate the question of whether people will independently adopt a prototype from what the prototype reveals when used in context; indeed, our study focuses on the latter. We position our deployment as exploratory: check-ins and logs contextualize usage of ArtInsight, but our contribution lies in understanding what these uses reveal about co-use, correction of AI, and human connection in mixed visual-ability family settings.

While critically important, deployments in accessibility research are less common [59], perhaps due to recruitment challenges or the added burden on disabled individuals to conduct multi-day research tasks [60]. Exceptions include a few studies focused on disabled individuals conducting tasks in their daily settings [20, 26, 38, 39, 48, 49, 83], such as characterizing in-home voice assistant behaviors [26] or improving sound awareness for Deaf and hard-of-hearing individuals [48, 49].

In BLV accessibility, prior field deployments have focused on productivity tasks [16, 20, 83], unlike our work investigating creative and relational tasks. As examples for scene and image descriptions, Bigham et al. [20] deploy *VizWiz* and Avila et al. [16] conduct a survey of *Be My Eyes* users to evaluate sighted human assistance in answering visual questions. Additional deployments include work by Xu et al. [78], who investigate touch-based image exploration, and Gonzalez Penuela et al. [38], who survey BLV user practices with AI-powered scene description using a custom system. We combine methods from these past deployments, such as activity logging [78] and follow-up interviews with participants [38], for the present work. But unlike prior deployments exploring objective image descriptions, we evaluate an AI-powered *creative* visual interpretation system in more ecologically valid contexts, as creativity-based interactions have been shown to greatly benefit disabled individuals and their familial and social groups [19, 24, 27].

3 Preparing ArtInsight for Deployment

We first review the open-sourced² ArtInsight system developed by Chheda-Kothary et al. [27] and then discuss key modifications we implemented for our field deployment. Our goal was not to advance system capabilities, *per se*, but to use a stable tool as an observational probe to study everyday mixed-ability use of creative visual interpretation. That said, to achieve a deployable tool with robust data collection, we enhanced and modified ArtInsight.

3.1 ArtInsight

ArtInsight [27] is an open-sourced, AI-powered Apple iOS mobile prototype (Figure 2) that helps BLV family members interpret their children’s artwork, with full VoiceOver compatibility [14] to allow for independent use by BLV individuals. Users first capture a photo of child-created art, after

²<https://github.com/makeabilitylab/ArtInsight>

which they use ArtInsight’s three components to engage with the artwork alongside their child: (1) navigating two types of AI image descriptions, *i.e.*, *descriptive* and *creative*, to get more objective *vs.* more interpretive descriptions of the art; (2) creating an audio recording that is transcribed and used to update the AI descriptions, enabling the child to add their own context to their artwork’s description; and (3) AI-generated starter questions about the artwork to spark discussions between parents and children. ArtInsight uses a custom-prompted GPT-4o [3] backend, and has a library where all captured images and their associated descriptions and recordings are saved. While we made three large updates to ArtInsight for field deployment readiness, we did not modify the previously-used custom prompts and core system infrastructure. For more detail on the original open-sourced prototype, see Chheda-Kothary et al. [27].

3.2 System Modifications for Field Deployment

We made three significant modifications to ArtInsight for our field deployment. First, we removed the AI-generated starter questions, which was the main user experience change, based on user evaluations by Chheda-Kothary et al. [27] that showed BLV family members’ preferences for asking children their *own* questions rather than AI-produced ones. Thus, our revised system had two ways to interact with captured images: toggling between descriptive and creative descriptions, and capturing an audio recording of a person (child, adult, or both) describing the image to update the AI-generated description (Figure 2). Second, we enabled images to be shared along with their descriptions, integrating with the native iOS “share sheet” [6]. Sharing allowed us to (1) track how often BLV users chose to share images with friends and family, and (2) easily receive captured images. Third, we added an automatic data collection mechanism through Firebase³ that pushes usage logs to the cloud, along with an on-device, local data collection mechanism for users to send the research team their usage logs directly (Figure 2). These logs contained interaction events (such as toggling between descriptions and the audio recording component), transcripts from audio recordings, and error logs, but did not contain captured images and audio snippets for users’ privacy. We consider these enhancements not as research contributions, but rather as engineering investments for deployment robustness, which facilitates our research.

4 Deploying ArtInsight to Mixed Visual-Ability Families

To investigate how mixed visual-ability families use a creative interpretation tool like *ArtInsight* in everyday settings, we conducted a three-week field deployment [72] with seven BLV family members and their sighted children.

4.1 Participants

We recruited seven BLV parents and grandparents (Table 1) located throughout the United States through email lists. BLV participants were required to be 18 years or older, have access to an iPhone running iOS 18.0 or greater (and ideally, have daily usage familiarity with the iPhone), and have sighted children in their family who regularly create visual artwork. All participants had previous experience using AI-powered visual interpretation applications such as Be My AI, Seeing AI, and ChatGPT, but none reported using these existing tools in daily creative, family-oriented settings.

4.2 Apparatus

Participants used their own Apple iPhones for the study, with models ranging from SE to 14 Pro. All participants were on iOS versions greater than 18.2 (Table 1). We remotely installed ArtInsight onto

³<https://firebase.google.com/>

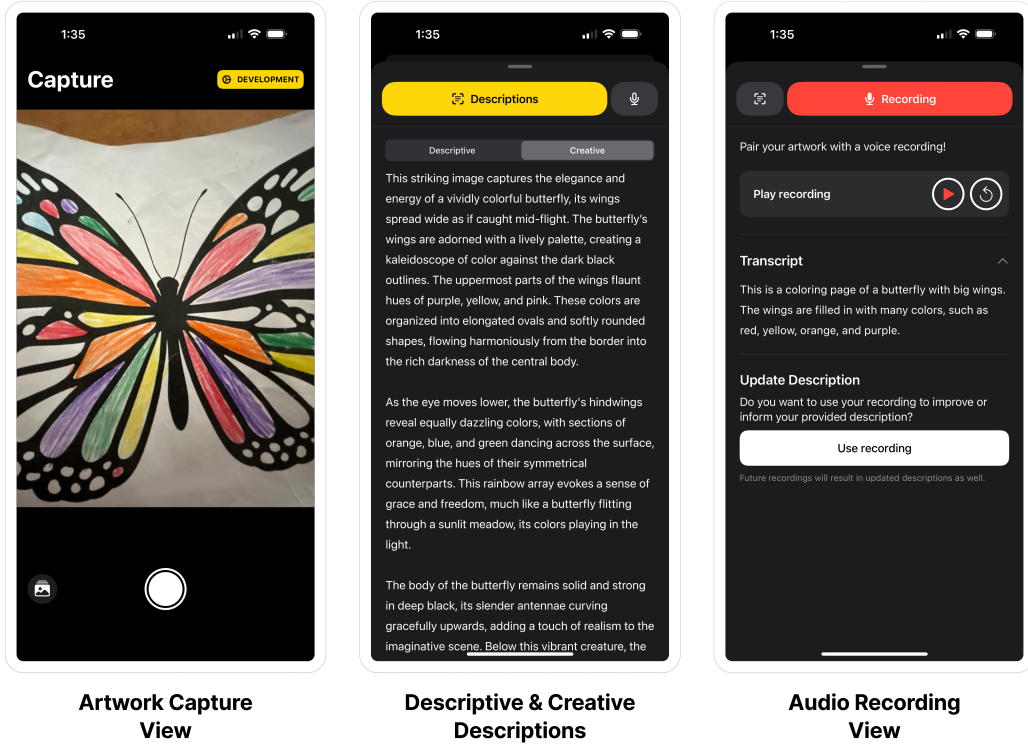


Fig. 2. ArtInsight’s revised user flow. Upon capturing an image (left), there are two high-level tabs—“Descriptions” which contains the descriptive and creative components (center), and “Recording” for the audio recording component (right). Users can also share logs and images with the research team through the “Development” tab on the top of the capture screen (left).

PID	Age Range	Gender	Degree of Vision Loss	Age of Children	Relationship	iPhone and iOS version
1	25-34	F	Legally Blind	7	Mother	14, 18.3.2
2	35-44	M	Totally Blind/No Usable Vision	8 and 10	Father	SE, 18.3.2
3	35-44	F	Legally Blind	5 and 7	Mother	12, 18.3.2
4	55-64	F	Totally Blind/No Usable Vision	8 and 10	Grandmother	14 Pro, 18.3.2
5	25-34	M	Legally Blind	14	Father	13, 18.2
6	18-24	M	Totally Blind/No Usable Vision	8	Father	SE, 18.3.1
7	45-54	M	Legally blind	14 and 15	Father	13, 18.4

Table 1. Self-reported demographics of BLV study participants, including information about relationship to child and iPhone model with iOS software used for the study.

participants’ devices using *TestFlight*⁴ and employed two methods to collect data about system usage: (1) sending usage logs to Firebase for aggregate usage trends through analytics dashboards and cloud-based data querying, and (2) on-device logging to participants’ individual phones for insight into a specific participant’s end-to-end usage trends. To protect participant privacy, the research

⁴<https://developer.apple.com/testflight/>

team did not log photographs by default; instead, participants used the “Share” functionality to send us images.

4.3 Procedure

Our field deployment consisted of a 60-minute introductory session, three weeks of ArtInsight system use with 15-minute check-in calls by the research team every five days, and a 60-minute exit interview. We invited participants to include their children in the exit interview to capture the children’s perspectives on their three weeks of using ArtInsight with their BLV family members. All sessions were conducted as either a Zoom or phone call. Participants were compensated \$50 per week for the deployment and \$25 for each of the introductory and exit sessions for a total of \$200. Prior to the introductory session, participants completed a demographics questionnaire, received the consent form, and the ArtInsight installation link. We explained that we would obtain consent and assist with system installation during the introductory session.

Introductory session. After gathering participant consent, we asked participants semi-structured interview questions about their artwork engagement practices and use of AI tools. We then helped participants remotely install ArtInsight on their iPhones and guided them through some example tasks to get familiar with the system components—descriptive and creative descriptions, audio recordings to update the AI descriptions, sharing the images with friends or family, and sharing the logs with the research team. We encouraged participants to use ArtInsight for any tasks where they saw potential benefit in addition to engaging with children’s artwork; for children’s artwork specifically, we intentionally did not restrict participants to new art pieces made in the three-week period, so families could revisit older creations by their children as desired.

Check-in phone calls. Informed by field deployment practices from Siek et al. [72] and past example tool deployments [49, 71], we conducted 15-minute check-in phone calls approximately every five days. Participants were asked to send their logs and any recent images they had captured beforehand. We started each call by asking participants if they encountered any bugs or crashes with ArtInsight; fortunately, ArtInsight crashed infrequently, and only as a result of unsuccessful GPT API calls, which users worked around by regenerating the AI descriptions. We then discussed specific log entries or images; if participants had not sent logs beforehand, we probed how they had used ArtInsight since the last check-in.

Exit interview. After the three-week study, we conducted exit interviews through Zoom or phone calls with each participant and their children. All participants except P3 included their children, and we collected child assent at the start of the interviews. P6 also invited his BLV wife, who had frequently used ArtInsight with him. Participants sent us their final logs and captured images beforehand. The exit interview consisted of semi-structured questions around usage of ArtInsight, understanding where human-AI interactions were valuable, and questions about specific participant interactions based on their logs. Similar to prior HCI work in parent-child settings [13, 33, 45], we treat parents’ observations of their children’s behavior as an important source of evidence, alongside children’s own comments during exit interviews. Thus, the child-centered findings presented are triangulated from parent observations, child responses, and usage patterns.

4.4 Data Analysis

We had two types of study data—logs and interview data. We conducted a manual review of all logs to understand overall usage patterns (e.g., number and types of photos taken, components used). We recorded and transcribed all study sessions. The lead researcher conducted inductive and deductive coding [22] to develop an initial codebook of 15 codes. We provided this codebook and two exit interview transcripts to an external researcher, who then independently coded the transcripts. We calculated inter-rater reliability using Cohen’s Kappa [42, 55], resulting in $\kappa = 0.91$, indicating

PID	Active Days	Total Captures	Total Recordings	Pattern
P1	7	15	7	Distributed
P2	14	31	11	Distributed
P3	9	26	9	Distributed
P4	5	18	16	Late burst
P5	3	13	5	Bursts
P6	7	21	5	Initial burst with later smaller usage spikes
P7	6	11	4	Sparse, check-in adjacent

Table 2. Usage patterns across participants, including total active days, photo captures, and audio recordings.

strong agreement. Through peer debriefing [74], the two researchers reconciled differences and finalized a set of 11 codes. We organized these code into themes [22], presented below.

5 Study Findings

We present the findings from our study with mixed visual-ability families organized around our research questions.

5.1 RQ1 Findings: When and How Participants Use a Creative Visual Interpretation System

We first report on overall usage trends, then discuss when and how participants interpreted visual content with ArtInsight and how participants leveraged the objective and interpretive styles.

Overall usage. During the three-week deployment study, the seven participants took a total of 135 photos with ArtInsight ($M = 19.3$, $SD = 5.2$), out of which 91 photos were of children's 2-D or 3-D artworks. The other 44 items were picture books, outdoor landscapes, indoor arenas and architecture, household objects (e.g., keychains, DVD covers, magnets, wall hangings, toys), food containers, statues, and live or photograph captures of family and pets. P2 captured the maximum number of images—31—and P7 captured the minimum—11. Participants added 57 audio transcriptions, switched from descriptive to creative image descriptions 84 times, and switched from creative back to descriptive image descriptions 36 times. For session duration ($M = 8.5mins$, $SD = 10.1mins$), the shortest sessions were under one minute (e.g., performing a single action like sharing a photo), and P4 had the longest session⁵—one hour. Session durations did not follow a holistic steady increase or decrease. Some participants had longer sessions earlier in the study (e.g., P2, P6, P7), while others showed longer sessions or spikes during later weeks (e.g., P1, P4, P5).

We also found that usage patterns (Table 2) varied across families. P2 and P3 showed relatively distributed use across multiple weeks, capturing new photos every two or three days, while P6 had a large initial burst, capturing 11 photos during the first week, followed by smaller later sessions. These patterns also reflected participants' individual or joint use of the tool: P4, P5, and P6 mostly used ArtInsight with their children, producing more clustered activity, whereas P2 used it both independently and with his children, contributing to more distributed use. P4's use was also shaped by family constraints, because her granddaughters were only with her for a few days. P7's activity was most closely tied to check-in calls, suggesting that researcher contact may have prompted use; we therefore focused more on the exit interview to understand P7's feedback on the AI descriptions. Across several families, audio recording events occurred during higher-activity sessions, suggesting that audio was used during more involved sessions rather than as a routine step after every capture.

⁵We define a single session as time performing actions with not more than ten minutes of inactivity.

Children’s artwork. BLV participants primarily used ArtInsight *with* their children as they were discussing artwork. The most common practice among families involved the BLV parent or grandparent taking a photo of the artwork (either independently using VoiceOver⁶, or with the help of their children) and reviewing the ArtInsight descriptions together with their child. The adult would then either pose additional questions, or the child would offer further detail, naturally sparking conversation.

P1, P3, and P6 primarily used the tool with new artwork their children created. P1 described her process of using ArtInsight:

She’d tell me, “I made this in art” and she would usually give me a brief description of it. But then I found myself [thinking], “Do I want to ask her or should I just scan it?” I did have moments where I would just ask her, but then [she] wasn’t always 100% sure how to describe it, so then I would end up scanning it.—P1

Other participants (P2, P5, and P7) used ArtInsight to understand their children’s older creations. P5 expanded his explorations to 3-D pieces, using ArtInsight to review “Kiwi Crate” crafts his son made several years prior (Figure 3). Despite these crafts being physical or tactile, P5 appreciated how ArtInsight helped him understand “the amount of artwork, the manual labor that it took... In the description, you’ll hear all the fine elements of what [my son] had to do to get it together.” P5 also reflected on how his son (age 14) rarely creates new artwork now, limiting opportunities to use a creative visual interpretation system for newer pieces.



Fig. 3. 3-D crafts created by P5’s son that P5 enjoyed learning more about using ArtInsight.

P4 typically used ArtInsight to view her granddaughters’ finished artwork with them, but in one instance, she used the tool throughout the creation process. She captured various stages of

⁶<https://support.apple.com/guide/iphone/use-voiceover-in-apps-iphe4ee74be8/ios>

the art as her granddaughters spontaneously chose to update their drawings in response to the AI descriptions: *One of [them] decided, “I really liked the way [my sister’s picture] looks, and the description... I’m going to go back and fix mine...”*

Beyond children’s artwork. All seven BLV participants used ArtInsight for image interpretations beyond children’s artwork, including: old photographs (P2, P4, P5), outdoor scenery or indoor architecture (P2, P5, P6), live scenes of family members or pets (P2, P4, P5), household objects and furnishings (P2, P3, P6, P7), and picture books (P1, P3). Some participants also tested the system with receipts, menus, and food labels, but found ArtInsight unsuitable. P2 used ArtInsight to read a menu, saying, *“It did too good of a job of describing everything... but [it] wouldn’t always read the print.”* P6 similarly described reading a receipt with ArtInsight as *“very flowery”* and mentioned he would probably use Be My AI instead for *“the more analytical stuff.”*

However, for several other scenarios, participants enjoyed the layers of detail from ArtInsight. For example, P5 described using ArtInsight to view his springtime backyard:

[It’s] springtime, so the flowers are blooming. I took a picture of them to try to appreciate the flowers... in our backyard. The creative mode did a wonderful job. I did other [backyard] pictures... So my kids, they put together a rock formation for ants to march through... it’s random stuff like [that] I was using [it] for.—P5

P4 wanted to hear a more detailed description of her cat (Figure 1A), motivated by friends and family who had described the cat:

The reason I did the cat in particular is that I wanted to see... the description of her face and her coloring... The way it’s been described to me, her markings are unique and she’s got a whole lot of coloring.—P4

P1 and P3 both tried ArtInsight with picture books—P1’s daughter had described a picture book cover as *“really nice,”* which prompted P1 to use ArtInsight on the cover. P3, on the other hand, is a speech pathologist who works in schools with children with verbal disabilities, and uses picture books in her curriculum:

I do a lot of shared storybook reading with students, and I work with students a lot of whom have language impairments. It’s really important for me to have a clear idea of the story from the book, and with picture books, a lot of the story is not just in the text, but on the page and the pictures. So, I sometimes struggle...—P3

When asked how she reviews new picture books for her classes, P3 said she relies on her sighted children for descriptive help, uses optical character recognition to read text, and infers images from context, hoping *“there’s not something key that I’m missing in the pictures.”* These limitations motivated her to try ArtInsight.

Holistically, participants identified two main factors that motivated them to use ArtInsight beyond child-created artwork: (1) having more time to explore the content in depth, and (2) encountering visually rich and nuanced scenarios, where a more expressive, detailed description felt particularly valuable. One participant, P2, described how ArtInsight became his *“go-to tool”* over the weeks:

It was a fun go-to tool, whether it’s passing time or [if] I’m interested in, “What is around here?” It was something I could do on my own... [I used it for] building architecture... landscape scenes of trees and rocks... it was intended to use for the art with children, but I felt myself using it just as much outside of that.—P2

Usage of objective and interpretive description styles. Participants either used only the descriptive image description, or used the descriptive and creative image descriptions *together*. Accessing the creative description was an additional step (P2, P6, P7), which limited its use to scenarios where participants had more time, such as interpreting artwork with their children. In

contrast, participants used the descriptive text for detail-oriented tasks, like exploring supermarket items (P7), or when they had less time, such as getting quick scans of artwork displays at a child's school event (P1). P3 wanted both descriptive and creative image descriptions for "*forming the full mental picture of the artwork*." P5 was surprised at how his preferences for descriptive and creative image descriptions *evolved* through the three-week study, saying:

I do remember me liking the descriptive mode at the beginning, because I thought that the creative description was too creative... But through my journey of actually [using] this app, I ended up falling in love more with the creative description... It felt to me like it gave it a story... it really brought to life the picture.—P5

For P6, using both descriptions together bridged the gap in understanding between objective and interpretive details of his son's artwork while also teaching him patterns that he could then recognize in other artworks:

I really enjoyed the distinction between description and interpretation... Descriptive would tell me these shapes that were combined together, and then creative would tell me that it's a house. Then the next time I looked at the descriptive tab first and those similar shapes were on another picture, I was like, "Oh, maybe this is a house."—P6

Leveraging human-AI interactions for context, corrections, and play. We noted two main purposes for engaging with the human-AI audio recording component: (1) adding contextual details, and (2) correcting AI descriptions. Out of the 57 audio recordings, 45 were used to add context. These contextual additions for artwork fell into two categories: background about the creator or setting of the piece (e.g., "*made by my daughter in art class*," or "*for Valentine's Day*") and sharing the child's own descriptions of the artwork (e.g., "*there's mountains, and it goes to dark purple-ish...*"). Beyond artwork, participants also recorded personal information such as names and locations in family photos and live scenes.

P5 described his motivation for adding context to photograph descriptions, such as Figure 4:

I was trying to add context to it because my intention was to share it... When you do this with a screen reader, trying to correct text... you have to perform 100 steps to fix one word, and that's a lot of work. Using [ArtInsight] cuts down on that kind of work, where it basically does, "find and replace," kind of like in Microsoft Word... This way, when I shared it [with friends or family], it's a more personal connection.—P5

As another example of the BLV adult individually adding context to a captured non-artwork image, P2 used the audio recording to inform a description of his church interiors by providing context about it being a Catholic church:

It felt like the AI generated more details, because [at first] it didn't realize it's a Catholic church. So maybe some of those symbols and such were [easier for] the AI tool ... to generate a little bit better of a description [with that added context].—P2

Ten recordings focused on correction or clarification, including direct fixes to AI errors such as color corrections ("*half of the heart is pink*," in response to AI identifying it as purple and red), misidentified features ("*at the top of his head are ears, not horns*"), or tone ("*the eyelashes are not really scary*"), as well as clarifications that helped the AI better interpret the image ("*the blue fruit is a raspberry*," or "*the circles at the bottom are a flower*"). BLV participants either drew on their own prior knowledge or responded to prompts from their children to fix inaccuracies.

Children also shared that the AI "*got it more right, and didn't get it wrong again*" after the audio recording update (P1's daughter), and that the descriptions "*got more accurate when I used the audio*" (P6's son). P3 and P4 both had children who actively wanted to correct or add to AI descriptions, and would prompt their BLV family members to add audio recordings. P3 expressed:



Creative

This image captures <name of child> in a moment of awe and exploration at the Museum of Discovery. Standing with an air of curiosity, <name of child> is dressed in a cozy light blue long-sleeve shirt and dark pants, perfectly poised in front of a grand fossil display. The fossil, an extensive spine of what once could have been a mighty dinosaur, curves elegantly, creating a dramatic backdrop that envelops <name of child> in its mysterious history.

The museum atmosphere brings together the quiet power of the fossil and the vibrant inquisitiveness of <name of child>, illustrating a journey through time from the ancient eras to...

Fig. 4. A photograph of P5's son (blurred for anonymity) at a museum and the accompanying creative description from ArtInsight. P5 added context through the audio recording by saying, "the person in the picture name is <name of child>," which subsequently updated the description.

One of my daughters in particular... she was interested in hearing the description and if it missed something... or if it had described something differently from what she'd intended it to be in the picture, then she very much wanted to correct that.—P3

Finally, two recordings by P6 and his son were more playful or experimental, suggesting that the human-AI feedback loop also became a site for exploration. They experimented with the system in two ways: (1) by going on a tangent during the audio recording talking about "chicken wings," and (2) by intentionally submitting an audio update containing false information about the son's drawing to test the AI's response (Figure 5). They found the AI to be "very generous" and "focused" in those scenarios, for example, by ignoring the tangent about chicken wings in its final description altogether. P6 reflected on the importance of systems like ArtInsight representing his child's false descriptions in a "tactful" manner:

It helps me understand what he drew from his perspective, but also objectively what the artwork looks like... The AI will [listen to] whatever [my son] says the artwork is, and the AI will frame it as that. But... if the art doesn't look like what he says... like we intentionally told that it was something that it wasn't, [then] the description makes that clear.—P6

Additional desired human-AI interactions. Participants wanted additional conversational capabilities in ArtInsight. P1, P5, and P6 wanted to ask follow-up questions, similar to what is offered in Be My AI, allowing for more prompts about the artwork itself but also practical queries like whether an image was captured upside down. P2 and P5 wanted the system to recognize recurring people or places across images. P2 said:

I've taken three pictures of [my guide dog], Philip. Then maybe next time I take a picture of the same yellow lab dog that has a guide harness on it, [ArtInsight can] say, "Oh, that's Philip laying down."—P2

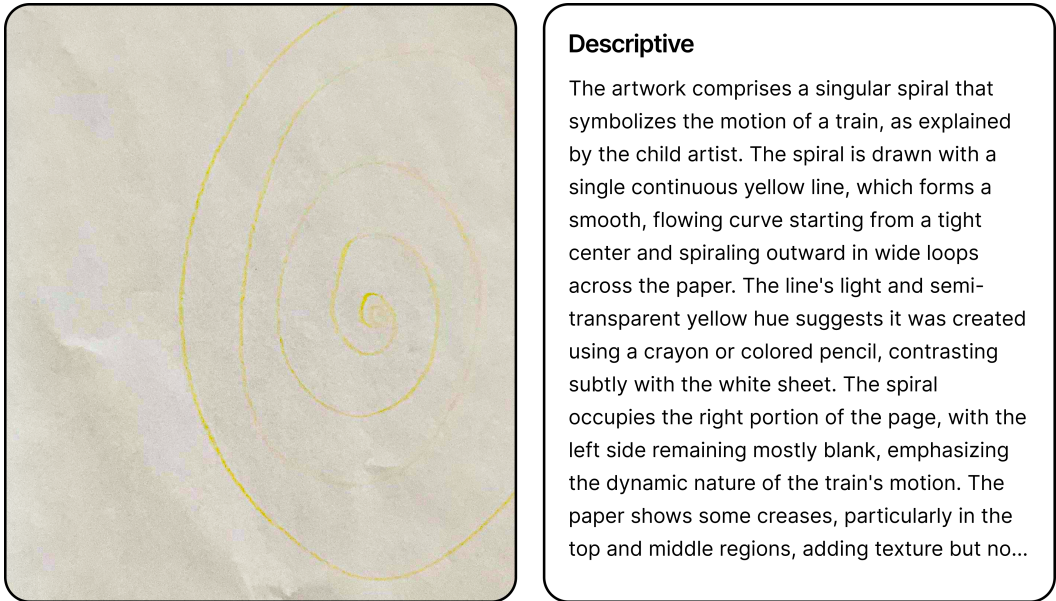


Fig. 5. A yellow spiral that P6 and his son told ArtInsight represented “the motion of a train.” ArtInsight respects the child artist’s description while also providing an objective understanding of what’s on the page.

5.2 RQ2 Findings: Relational Dynamics in Mixed-Ability Families

We discuss how ArtInsight promoted deeper family dialogue and understanding, while helping BLV relatives build trust and lighten children’s describing burden. We highlight the BLV relatives’ need to keep child–adult interaction central, particularly when introducing technology.

Deeper, more meaningful dialogue between BLV relative and child. All seven BLV participants emphatically expressed that working with ArtInsight enabled them to talk about artwork with their children in a deeper manner. P1, for example, discussed the generative nature of artistic detail in AI descriptions (Figure 6) sparking conversation and reflection points for her daughter:

Usually she’ll just show me [her art] and tell me, “I made this cat.” I’ll [ask], “When did you make it?” But... [ArtInsight] created more conversation, especially with the creative [description]. She was like, “Oh, yeah, it is a sweet bear, because it’s smiling,” or... “This butterfly was made with love because it’s very colorful.” [ArtInsight] definitely gave us more to talk about.—P1

Both P1 and P2 specifically used the terminology “two-way conversation” to describe how ArtInsight changed their discussions with their children. P2 elaborated on the increased engagement:

They’ve asked me more in the last three weeks, “Hey dad, let’s look at this.” Or, “What do you think of this?” That’s cool. I think they’re happy that I’m more engaged with their art... [ArtInsight] created a dialogue [beyond], “Oh, that’s a nice piece of artwork...” —P2

P6 and P7 both discussed how ArtInsight allowed them to “jump right to the things that we want to talk about” with their children. P7, for example, mentioned how he appreciated getting into specific artwork details with his son around detailed character sketches:

Usually I [want to] hear exactly what the artwork is... [Now] we’re talking about something I already know. That’s a good thing because I could be like, “Why do [your characters]

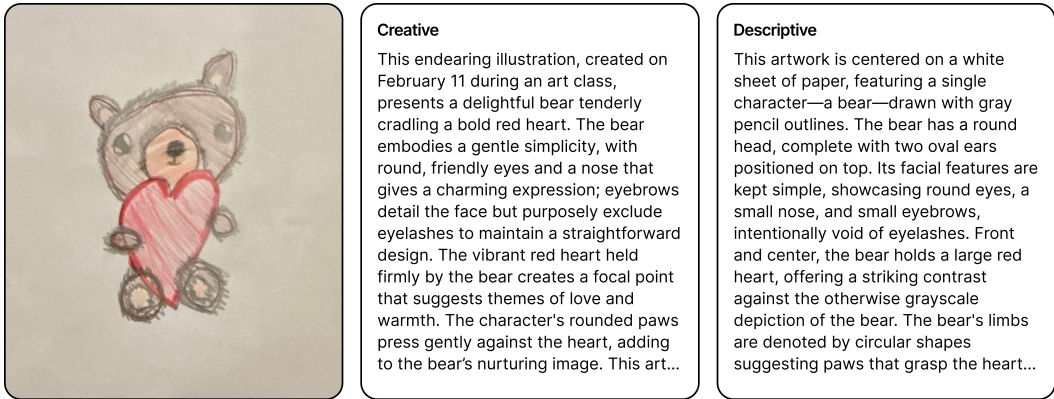


Fig. 6. A drawing of a bear (left) by P1's daughter with snippets of the creative and descriptive text from ArtInsight.

have the severe smile?" I have an insight of what [the art] is first, so I know exactly what to ask him about it.—P7

P6 further situated the emotional value of this dialogue with his son within the context of his broader family, many of whom are sighted. P6 reflected on using ArtInsight with his son over time:

We don't have to go, "tell us about it" and [have him] tell the basic stuff that anyone else, other people in his family, can just look at... I think [my son] feels better and I think we feel better because we can jump right to the things that we want to talk about and not just getting on the same playing field. That makes him happy, and... he feels better about sharing the artwork.—P6

Deeper understanding of creative content by BLV adults. In addition to sparking new types of dialogue with their children, BLV participants found that ArtInsight gave them a deeper level of *individual* understanding of visual details. Through the deployment, participants also gained a better sense of the kinds of details they wanted to know. P4 reflected on how, as a BLV individual, she may not be aware of the details she wants to know about, which may inherently limit her dialogue with her grandchildren:

[While it] makes [my grandchildren] more aware in their descriptions... I think it made [me] more thoughtful about how to describe what I'm asking them for. [ArtInsight has] given us... new details, new things that even as a blind person ... I have just not thought about asking. And I've [previously] had some vision enough that I should have asked those questions and didn't.—P4

P5 described how often even adults unintentionally minimize their descriptions for blind individuals, and he was impressed with how ArtInsight chose "*the right types of words*" for him to have "*more interaction*" with his son and "*show appreciation*" for his son's artwork. P6 explained that meaningful conversations with others require first "*develop[ing] [his] own thoughts on the artwork... then after that, it's conversational,*" and felt that ArtInsight provided more detail than he could otherwise access. P2 shared his sighted wife's reactions to ArtInsight's descriptions, where she said: "*I've never described it in that much detail to you. I'm not doing it justice.*"

Establishing trust with and reducing pressure on children. Adults noted that ArtInsight built stronger trust with their children, as children felt their BLV family members meaningfully understood their artwork. For example, P2 expressed:

[If] I said that without [ArtInsight], [my children] are like, “Dad, you can’t [see],” and again, they would never say it, but they [are thinking] “he doesn’t know what he’s talking about on that, and I just handed him a piece of scribbled paper.”—P2

With ArtInsight, participants felt their children had less pressure to comprehensively describe their artwork. P6 and P7 both discussed their children’s lack of “social battery” (P6) and not wanting their children to “get frustrated” (P7) with repeated questions about their artwork. P1 described her child’s reduced burden:

It really took a lot of pressure off of her... She couldn’t always find the right terminology... She just wants to be excited, not have to worry about describing it.—P1



Fig. 7. P2 discussing artwork with his daughter as they use ArtInsight together.

Maintaining the human interaction between the BLV relative and child. Several participants' preferred way of keeping their child engaged while using ArtInsight was to let the child be in control of the interaction. For example, P6 said, "I would ask [my son] if he thought anything was missing... I usually let him drive." P2 emphasized the need to be intentional (Figure 7):

It's up to me to really push that interaction... you can't get lazy. You don't want to have the tool take the place of that interaction that we've built their entire life.—P2

Children's reactions. In line with BLV adults' goal of centering their children, we present findings on children's reactions to the AI creative visual interpretation system. Children enjoyed AI-generated descriptions of their work, especially ones that framed their artwork as fantastical or whimsical. As P6 expressed, "Kids are kids... If they don't get joy out of something themselves, it's a lot less interesting. I was really happy to find [my son] enjoys the [AI] descriptions." Additionally, children valued that descriptions highlighted underlying meanings or implications. P7's son explained, "I think the app could explain things that were there, but... [it also] could explain things... I was trying to imply." P2's son similarly expressed, "It was cool... [my dad] could see stuff that my mom and me and my sister couldn't describe."

AI descriptions also had the potential to affect children's interpersonal dynamics with family members such as their siblings. P4 described an example of this with her younger granddaughter:

She's so emotional about everything, so when it wasn't perfect in the description, it would be very upsetting... She would get really upset, [thinking], "It got [my sister's] right, but it didn't get mine right."—P4

P4 attributed her younger granddaughter's emotional response to differences in her temperament and expectations of detail, where even small mismatches (in this case, a missing line on a cat's paw) were considered significant.

6 Discussion

We discuss the findings from our field deployment of ArtInsight, situating them in prior work. We also present the ethics and limitations of the present work and opportunities for future work.

6.1 Beyond the Lab: Insights from Deploying ArtInsight

We investigated two primary research questions through our field deployment: (RQ1) When and how do mixed visual-ability groups use AI-powered creative visual interpretation systems for daily tasks? (RQ2) How do creative visual interpretation systems affect relationships between mixed visual-ability group members such as sighted children and their BLV relatives? How does in-home usage of such systems affect these relational dynamics? We now reflect on our findings, particularly focusing on deployment-specific insights. Unlike prior work investigating the original ArtInsight system [27], which focused on specific system component evaluations and comparisons to an existing baseline (*Be My AI* [2]), the present work shifts the focus to habits and relationships formed around multi-week usage.

RQ1. While the primary use case for ArtInsight in mixed visual-ability families was to view children's artwork, BLV adults also used ArtInsight to interpret photographs, outdoor scenery and architecture, live scenes of people or pets, and household objects. We observed two use cases of examining picture books—for discussing with children (P1) and for use by BLV educators in classrooms (P3). These findings expand upon prior deployments of visual interpretation systems to BLV individuals [38, 77] by highlighting new desired interpretation scenarios (architecture, family photos). Our findings also augment research in mixed visual-ability engagement around picture books [24, 63], which has primarily focused on family settings, by showing the use of picture books in mixed-ability classrooms.

We also introduce two scenarios in which BLV people may prefer a *creative visual* interpretation system over standard visual interpretation systems: having *more time* to explore content in depth and encountering “*artistic, nuanced visuals*” (e.g., appreciating a known pleasing aesthetic such as backyard flowers or pets with unique markings). By surfacing these everyday uses beyond children’s artwork, our findings position creative visual interpretation as a meaningful mode of environmental engagement for BLV individuals. In this sense, ArtInsight extends a long line of BLV camera-based access tools, including research systems such as VizWiz [20], VizLens [41, 79], and AccessLens [52], and commercial applications such as Seeing AI [4] and Be My Eyes [2]. But findings from our deployment of ArtInsight broaden this engagement from functional tasks, as much of the prior literature has explored, toward daily aesthetic and relational interpretation.

Regarding human-AI interactions, we found mixed visual-ability families primarily updated AI descriptions through the audio recordings to augment AI descriptions with more context or to correct inaccuracies. BLV adults often contributed prior knowledge, such as naming individuals in photographs or clarifying locations like a “*Catholic church*.” Children also played an active role, prompting BLV adults to correct or enhance AI outputs when the descriptions misrepresented their artwork. This behavior extends prior research on children’s reactions to AI [28, 62] by illustrating how, in more ecologically valid settings, children augment AI. Beyond augmentation and correction, one family (P6 and his son) used the human-AI feedback loop to experiment with the system, highlighting how AI accessibility tools can be conduits for joint curiosity and play.

RQ2. All groups reported increased and persistent dialogue around children’s artwork across the weeks, pointing to interaction dynamics that are hard to surface in time-constrained lab evaluations. Families could more thoroughly cover the “*questions that matter*,” and children became more engaged and eager to discuss visually nuanced 2-D or 3-D crafts. The multi-week study helped BLV participants view this as a *meaningful behavioral shift* rather than a passing novelty, as reflected in P2’s remark: “*They’ve asked me more [about their art] in the last three weeks...*” These findings build on Chheda-Kothary et al. [27, 28] and Zhang et al. [84] by showing the potential for AI to enhance family connections, revealing deeper engagement persisting over multi-week usage.

We also extend a growing body of work deploying AI-mediated technologies into families, including AACessTalk [29] for engagement between minimally verbal autistic children and parents, and AccompanySleep [80] for parent-child bedtime routines. Where prior work has designed explicitly for bi-directional communication in parents and children, our work shows that a creative AI accessibility tool—ostensibly usable individually by a BLV parent to interpret artistic creations—was most often used by BLV adults and children *together*. Thus, for BLV adults, the value of such tools is not only better descriptions for themselves, but also the richer dialogue fostered through collaborative use with their children.

Finally, we identify some positive and negative impacts of such systems on children that emerge more clearly under real-world deployment. AI descriptions helped P1’s daughter articulate new emotional nuances in her art (e.g., “*sweet... because it’s smiling*”) and also helped take pressure off her daughter to “*not worry about having to describe it*.” This highlights the generative potential of AI descriptions, as BLV parents often balance seeking helpful descriptions with preserving their children’s autonomy, enjoyment, and spontaneity [28]. But there are also risks—children leaning too heavily on the AI’s framing could limit the growth of their own creative language expressions [61]. We further observed emotional impacts around perceptions of their work based on AI descriptions. In one instance, P4’s younger granddaughter became upset when the AI described her sister’s drawing more correctly than her own.

These moments highlight the need for careful design around AI language, even in tools intended for adult use, that reduces comparisons between children but still supports generative, reflective engagement by children with their created artistic content. Our findings sit at the intersection

of BLV visual access research and work on children's AI literacy and well-being [30, 31, 51, 53, 54], underscoring interdependence [17] as a central design value—creative visual interpretation tools, which can support intimate moments such as artwork sharing, are most compelling when they meaningfully engage all family members, particularly children. But as Dangol et al. [30] report, “*children’s understanding of AI is shaped by fragmented and often contradictory experiences.*” Encountering AI for the first time while supporting their BLV relatives may further complicate children's perceptions of and responses to AI, as they simultaneously react to AI output of their personal creations while helping their BLV relatives access their creations.

6.2 Ethics, Limitations, and Future Work

When deploying AI systems “in the wild,” particularly in family groups with vulnerable members, it is vital that parents and children have agency in how their data is stored and used. We employed the “best practices” used by Chheda-Kothary et al. [27] for storing audio recordings on-device (*i.e.*, only uploading transcripts to the AI backend instead of children's voices) and uploading children's artwork and other captured images to the AI backend with explicit parental consent and child assent. Additionally, captured images were not logged by default to minimize accidental storage of sensitive material that participants might choose to delete. That said, we acknowledge that a field deployment widens the possibility of ethical risks relative to lab studies. Participants may unknowingly capture personally-identifiable information or sensitive scenes that get sent to AI models. A practical mitigation for future deployed systems is to use on-device verification that scans captured content locally and alerts users to potentially sensitive information [10].

Our work has some further limitations. First, we had a small participant pool due to the specific nature of our recruitment needs (BLV adult and sighted child family groups, familiarity with AI tools) as well as the potentially challenging demands of a multi-week deployment [60]. Additionally, most interviews occurred via without video, which often led to shorter responses from children. Future work could consider more in-person engagement and fostering interactive child experiences with their BLV relatives (*e.g.*, co-creating artwork). Our study also reused an existing open-source system and prompts [27], so we did not dive into model nuances in the present work, preventing systematic characterization of model-specific behaviors and failure modes across the multi-week deployment. Finally, while we followed practices similar to prior accessibility field deployments [38, 49], researcher contact and tool novelty may have shaped engagement, with check-ins potentially reminding families to use ArtInsight. Future work should consider longer deployments with reduced researcher contact. Future work could also broaden the deployment of ArtInsight to new creative settings such as Braille libraries, BLV community centers, or BLV art instruction.

7 Conclusion

Our field deployment of ArtInsight demonstrates the value of AI-powered tools for interpretation of more expressive visual content and the behavioral shifts in adult-child communication as a result of extended use. By revealing new layers of detail and enabling more informed dialogue, ArtInsight helped foster deeper connections and visual understanding in mixed visual-ability families. We also found that children felt less pressure and burden of describing their artworks, and BLV family members enjoyed using ArtInsight for scenarios beyond artwork, such as family photographs, live scenery, and picture books. Ultimately, we believe AI-powered tools can foster rich, shared experiences for BLV individuals and mixed visual-ability groups, but they must support BLV access while centering the needs of all group members, including sighted children and partners.

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