

The Autobiographical Design and Field Evaluation of A Digital Calendar to Support Blended Families

by
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Abstract

Blended families are those where partners have children from previous relationships in a shared household. They are increasingly common and face challenges in scheduling and maintaining connection. While digital calendars are widely used in family life, it is not clear how to design digital family calendars to support the dynamics of blended families given mixed parenting arrangements, various ages of users, and complex relationships. I present a design-oriented study of FamilyCanvas, a digital calendar for blended families, and examine how it was incorporated into everyday family life. I conducted a nine-month autobiographical design, followed by a five-week field study with two additional blended families. Findings reveal heavy, uneven, and fragmented scheduling and unstable connection dynamics, and show how FamilyCanvas was selectively adopted through lightweight whiteboard interactions, and used alongside other existing calendaring tools rather than replacing them. I further found that shared visibility supported awareness and coordination within households and across households, but remained limited in practice, shaped by practical constraints, uneven participation, and relational dynamics. Based on the findings, I discuss design implications for blended families, highlighting the need for family calendars to support shared awareness through lightweight interactions, and remain usable within and across household contexts, while accommodating asymmetric participation and restricted relationships.

Keywords: Blended Family; Digital Calendar; Scheduling; Connection; Autobiographical Design

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AI Use Statement

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List of Acronyms

HCI	Human-Computer Interaction
CSCW	Computer-Supported Cooperative Work
CMC	Computer-Mediated Communication

Chapter 1. Introduction

Blended families are those where partners have children from previous relationships in a shared household, often after separation or divorce (Kumar, 2017; Portrie & Hill, 2005). They have become increasingly common alongside rising divorce and remarriage rates (Australian Institute of Family Studies, 2023; Bureau, 2023; Cherami Wichmann, 2023; *Household Composition and Well-Being*, 2019; Kazakos, Bales, et al., 2013). Canadian survey data, for example, showed that 11.8% of couples with children were step-families, and that this proportion had increased by 17% since 1995 (Cherami Wichmann, 2023).

Many blended families involve mixed custody arrangements, introducing challenges for family members to coordinate daily routines and stay aware remotely. For example, joint custody, where divorced parents share parenting time and decision-making responsibility (Black & Garner, 2009; Department of Justice Canada, 2025; Torres Perea et al., 2021), has been identified to mitigate the negative effects of divorce on children (Amato, 2000, 2001, 2004; Kelly, 2007), and becomes the choice of many divorced families globally (Andrina Hayden, 2011; Buchanan et al., 1996; Gardner, 1985; Nielsen, 2018), including blended families. This arrangement allows children to maintain significant relationships with both parents through designated parenting time (Department of Justice Canada, 2025). However, it introduces challenges in family scheduling as children need to transition periodically between two homes.

Consider the Martins, a blended family navigating multiple custody schedules. Sarah and Mark Martins live together with their shared toddler Mia, as well as Sarah's 9-year-old son, Liam, from her previous marriage, and Mark's 12-year-old daughter, Emily, from his prior relationship. Every other week, Liam and Emily stay with Sarah and Mark. Every other Thursday at 3:15 p.m., Sarah leaves work early to pick Liam up from school, then drives him to his father's apartment downtown. The next week, his father returns him. On Sundays at 6 p.m., Emily transitions between this home and her mother's. At the center of this shifting rhythm, little Mia asks why her siblings disappear every few days. Compared to families who have not gone through a separation or divorce, both children and parents in blended families navigate complex schedules shaped by mixed custody arrangements. These arrangements introduce additional coordination work

beyond everyday family routines, such as managing transitions between households and negotiating responsibilities across caregivers, alongside fragmented connections across distance. These lived complexities underline the need for designs that better support coordination and awareness in blended families' everyday lives (Odom et al., 2010; Yarosh et al., 2013).

Beyond that, blended family life also contains complex relationship dynamics between parents (former partners) (Davies & Cummings, 1994) or between children and step-parents or step-siblings (Furrow & Palmer, 2007), which can shape what information is appropriate to share and with whom. These challenges are further compounded by cross-aged and cross-generational participation, as family members may have varying abilities, preferences, and roles in planning and communication.

Digital calendars have been widely adopted in family contexts because they enable family members to view, update, and coordinate schedules more easily than paper calendars (Neustaedter et al., 2009). Prior research and commercial products also suggest that digital calendars can support family coordination in contexts such as parenting arrangements after divorce (Odom et al., 2010; OurFamilyWizard, 2025). This indicates the potential for digital calendars to support scheduling and connection in blended families.

However, existing digital calendars may not adequately address the needs of blended families. First, most calendar designs implicitly assume family members are living together in the same home rather than multiple homes (e.g., under co-parenting arrangements) (Forghani et al., 2018; Neustaedter & Bernheim Brush, 2006) and may not align with the complex coordination and relationship dynamics in blended families (Davies & Cummings, 1994; Furrow & Palmer, 2007; Odom et al., 2010). Second, cross-aged and cross-generational use can be difficult, as many calendar systems remain largely parent-centered (Neustaedter et al., 2009) and are not easily accessible to children (Plaisant et al., 2006). This suggests opportunities to explore whether children might engage with family calendars in age-appropriate ways beyond being passive recipients of scheduling information. While some systems support co-parenting coordination after divorce (Odom et al., 2010; OurFamilyWizard, 2025), they tend to be adult-oriented and focus on information sharing or negotiation between parents, often overlooking children as active participants. Furthermore, much of the existing research

on digital calendars was conducted decades ago, when calendaring systems were largely designed around shared household displays at home (Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006; Plaisant et al., 2006). Since then, calendaring technologies have evolved substantially through the widespread adoption of consumer calendar platforms such as Outlook, Google Calendar, Apple Calendar, and co-parenting applications like OurFamilyWizard (OurFamilyWizard, 2025), which support mobile access, cloud synchronization, and shared scheduling across devices. These changes raise new questions about how current calendaring technologies may support contemporary family structures such as blended families.

To address these research gaps, I focus on the research question: **How can a digital family calendar be designed to support blended families in scheduling and awareness?** I aim to explore the design of a digital calendar to be visible within a home and remotely accessible to family members across ages, with considerations of sensitive relationships within blended families and co-parents if there is a joint custody arrangement. Beyond designing a system, I also aim to use this design process as a lens to better understand the everyday contexts of blended families and how family calendaring practices may be evolving in contemporary households.

As a first step, I focus on coordination and awareness within a single blended household (e.g., with a parent, step-parent, and both of their children) rather than cross-household collaboration (e.g., connecting one divorced parent's new home with the other divorced parent's new home). The latter situation often involves highly complex and sensitive relationships and can quickly scale to be nearly unmanageable (Davies & Cummings, 1994; Furrow & Palmer, 2007; Odom et al., 2010; Yarosh et al., 2013). For example, if two parents divorce and start new homes, designs could connect across their two households; yet, if each parent remarries and their new partners are also divorced, four homes may need to be connected through a calendar system. Given this complexity, I chose to first explore the single blended household situation. Future work could explore how findings might extend beyond a single household for information sharing with co-parents and multiple households.

Importantly, while this thesis focuses on awareness and coordination within a single blended household rather than direct coordination between co-parent households, children in blended families often move between homes under joint custody

arrangements. As a result, the study also considers situations where children may remotely access information about the household they are temporarily away from. However, FamilyCanvas is not designed to support direct information sharing, coordination, or collaboration between co-parents or multiple households.

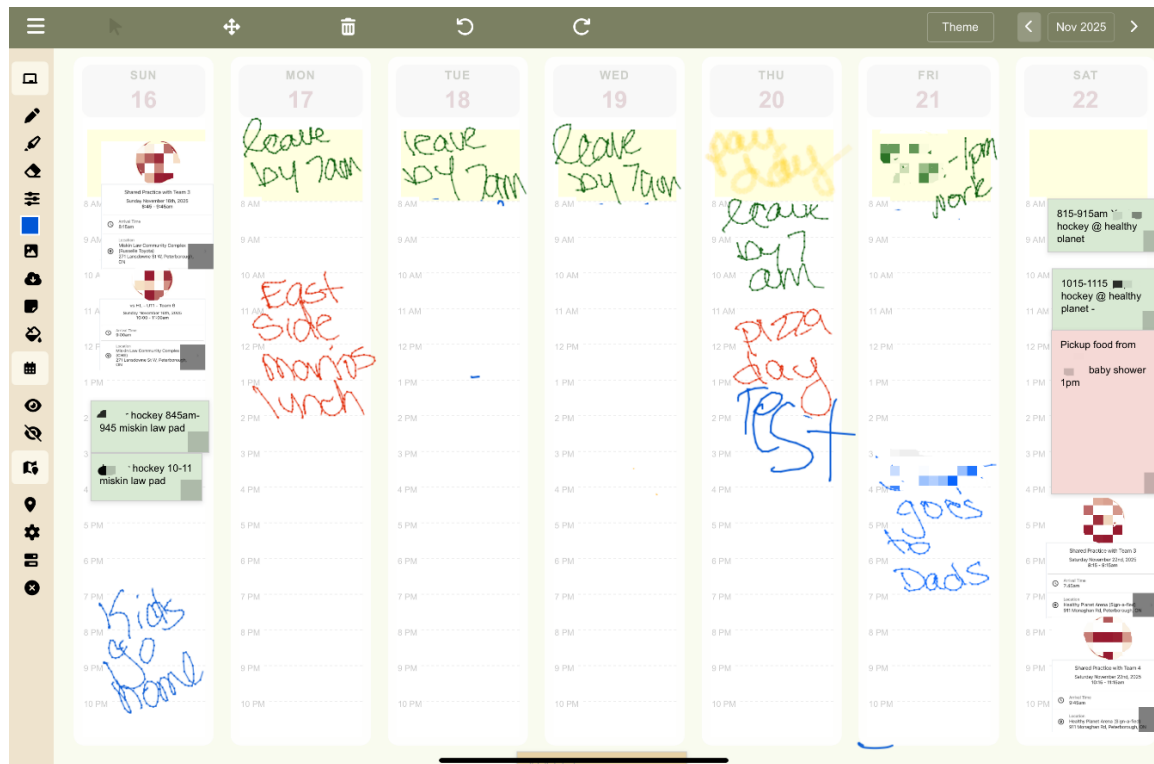


Figure 1.1 The whiteboard interaction layer of FamilyCanvas

I took a design-oriented approach to answer the research question through a combination of autobiographical design and field deployment. The autobiographical design work was conducted within my supervisor's blended family household. While the deployment was situated within that household, I served as the sole thesis author, system designer, developer, and primary researcher responsible for designing the system, implementing design changes, documenting the deployment, collecting data, and analyzing findings. My supervisor acted as both a faculty advisor and a household participant who regularly shared reflections, observations, and family feedback arising from everyday use of the system. Other household members participated primarily through their use of FamilyCanvas and informal feedback, but they were not involved in thesis authorship or formal data analysis. Through a nine-month autobiographical design deployment within this blended family, I designed and iteratively refined a digital family

calendar called **FamilyCanvas**, inspired by the design of whiteboards (see Figure 1.1). Following this design process, I conducted a five-week field study by deploying the system in the homes of two additional blended families.

The results characterize scheduling and connection practices prior to FamilyCanvas as heavy, uneven, and fragmented, with unstable cross-household connection. I then show how, in use, families valued lightweight whiteboard interactions and selectively adopted FamilyCanvas as part of a broader calendaring ecology, alongside other existing calendaring tools. I further found that shared visibility supported awareness and coordination within households and across households, but remained limited in practice, shaped by practical constraints, uneven participation, and relational dynamics. Based on these situated findings across the autobiographical design and field deployments, I discuss design implications that may help inform the design of digital family calendars for blended families, highlighting the need for family calendars to support shared awareness through lightweight interactions, and remain usable within and across household contexts, while accommodating asymmetric participation and restricted relationships.

1.1. Research Context

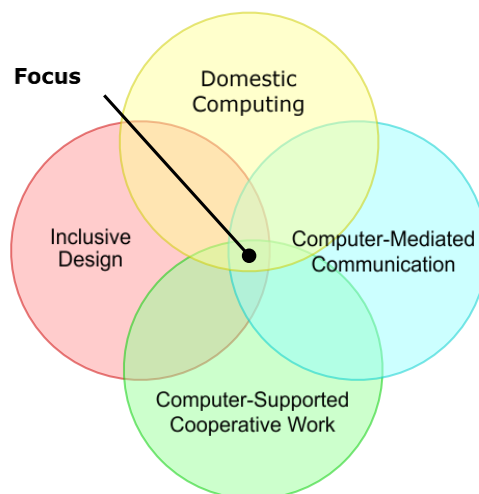


Figure 1.2 Research Context Within Human-Computer Interaction

This research is grounded in the field of Human-Computer Interaction (HCI). HCI is an interdisciplinary field that brings together expertise from computer science, software engineering, psychology, design, sociology, and anthropology to inform the design of useful and usable technologies (*Association for Computing Machinery*, 2025). This work addresses a real-world application of HCI situated at the intersection of multiple areas, including domestic computing, inclusive design, Computer-Supported Cooperative Work (CSCW), and Computer-Mediated Communication (CMC) (see Figure 1.2). From the perspective of domestic computing, it investigates how digital systems are integrated into the everyday lives of blended families navigating complex parenting arrangements. Informed by inclusive design, the study considers how digital calendars can be made accessible and meaningful to family members across ages and with relatively sensitive relationships. Drawing from CSCW, it examines how multiple people in a family coordinate activities and manage scheduling. Finally, through the lens of CMC, this work explores how digital tools can help maintain stable connections in periodical separation. The aim of this work is to integrate insights from these areas to design a digital calendar that supports scheduling and remote connection in blended families, further contributing to a broader understanding of how HCI can support underrepresented complex family structures.

1.2. Research Questions

This thesis investigates the key research question: **How can a digital family calendar be designed to support blended families in scheduling and awareness?** To address this question, this thesis is guided by three sub-questions:

Question 1: What are the scheduling dynamics in blended families?

Blended families experience complex coordination and relationship dynamics (Davies & Cummings, 1994; Furrow & Palmer, 2007; Odom et al., 2010), as well as cross-aged and cross-generational challenges in using digital systems (Neustaedter et al., 2009; Plaisant et al., 2006). Previous work has explored how technology can be better designed to support co-parenting relationships (Odom et al., 2010). Inspired by this, this question aims to understand existing practices, challenges, and tensions in scheduling and maintaining connection.

Question 2: How can a digital calendar be designed to be visible within the home and remotely accessible to family members across ages? Digital calendars have been widely accepted in family life to support collaboration and awareness (Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006). Prior work suggests that shared displays in communal spaces can enhance accessibility and engagement (Crabtree et al., 2003; Neustaedter & Bernheim Brush, 2006). Given the challenges in blended families, existing digital calendars may not adequately address the needs in such contexts. This research question focuses on inclusive design for multi-aged users and enabling ubiquitous access both at home and remotely.

Question 3: How should sensitive relationships within blended families and co-parents (if there is a joint custody arrangement) be considered in the design of digital calendars? In blended families, children living with stepsiblings and stepparents might have sensitive relationships (Furrow & Palmer, 2007). Besides, it is also important to consider dynamics across households (e.g., inter-parental hostility) if there is a co-parenting arrangement (Davies & Cummings, 1994). Even if remote parents are not direct users of the system, they might be unwilling to permit or support their children's use of such systems. Given that most digital tools are designed for cohabiting and extended families (Forghani et al., 2018; Gan et al., 2020; Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006), they might not cover the potential conflicts or boundary management problems resulting from the sensitive relationships (Borrine et al., 1991; Braithwaite et al., 2001). This research question aims to address this gap by exploring sensitivity considerations in design.

Question 4: What design implications can be derived for digital family calendars to support blended families? Building on the insights from the previous questions on how digital calendars can be designed for blended families, this work contributes a more nuanced understanding of how such systems can support this underrepresented family structure. Furthermore, it reflects on how the evolution of calendaring technologies shapes the design of family calendars for contemporary family contexts.

1.3. Research Objectives

My primary goal for this thesis is to explore the design opportunities for a digital calendar to support scheduling and connection in blended families. To achieve this goal, I address the following objectives corresponding to research questions in Chapter 1.2.

Objective 1: Investigate the scheduling and remote connection dynamics in blended families. In Chapter 4.4.1, I present scheduling and connection practices prior to FamilyCanvas in field study families to address Research Question 1.

Objective 2: Design and evaluate a digital calendar to address existing challenges in blended families through an autobiographical design and field study process. In Chapter 3, I design and develop a digital calendar system for real-life use, where I continuously collect feedback from the autobiographical design family to iteratively fine-tune and iterate the design. In Chapter 4, a field study with another two blended families is conducted to learn how additional families might use the calendar and which design features would be most useful given the blended nature of their households, including ubiquitous access both at home and remotely, the varying ages of children, and sensitive relational dynamics. This objective aims to address Research Questions 2 and 3.

Objective 3: Propose design implications for blended families. Based on the results in Chapter 4.4, I discuss design implications for blended families in Chapter 5, including reflecting on how family calendaring design has shifted from a single shared household tool toward coordination spread across multiple tools, homes, and relationships to address Research Question 4.

1.4. Methodological Approach and Justification

To investigate the research questions, this work adopts a combination of autobiographical design (Neustaedter & Sengers, 2012a, 2012b) and a field study. These complementary approaches enable an in-depth understanding of lived experiences, practices, and perceptions surrounding the design of a digital calendar in complex domestic contexts (Creswell & Creswell, 2007).

This thesis was conducted as a single-author research project under faculty supervision. I was responsible for designing and developing FamilyCanvas, conducting the field deployment, collecting and analyzing the data, and writing this thesis. The autobiographical design phase was situated within my supervisor's blended family context. In this configuration, my supervisor was both the faculty advisor for the thesis and a member of the household that used FamilyCanvas during the autobiographical design phase. Other household members participated through everyday use and feedback on the system, but they were not involved in thesis authorship or formal data analysis. My supervisor regularly shared reflections, observations, and feedback regarding the use of FamilyCanvas throughout the deployment.

This work first includes a nine-month autobiographical design deployment situated within my supervisor's blended family household.. Autobiographical design is defined as "*design research based on extensive, genuine use by those creating or building the system*" (Neustaedter & Sengers, 2012a). It involves iterative cycles of design, use, and refinement grounded in lived experience, allowing exploration of both functional and emotional aspects of technology. I chose autobiographical design because the design space involved complex family dynamics, privacy concerns, and ethical sensitivities that would have been difficult to explore through an early-stage deployment with external families alone. The participating household also had a genuine need for a shared scheduling system, making it possible to develop and reflect on the system through long-term, situated use.

At the same time, this configuration required careful reflexive attention. Because the autobiographical design household included my supervisor, the project involved overlapping roles across thesis supervision, system design, household participation, and everyday use and reflection. These dynamics may have shaped how needs were articulated, how design decisions were negotiated, and how the system was interpreted during the early design process. I return to these methodological considerations in Chapters Chapter 3 and Chapter 5, and further discuss their implications in the limitations section (Chapter 6.2).

Building on insights from the autobiographical design, this work further includes a five-week field study with two additional blended families to move beyond a single situated experience (Neustaedter & Sengers, 2012a). The purpose of the field study is

not to generalize findings from the initial design context, but to examine how the system is used, interpreted, and appropriated across various blended family contexts.

Recruitment focused on blended families that included children between the ages of 5 and 18. However, FamilyCanvas was designed as a household technology intended to support participation across family members of different ages and roles, and its use was not restricted to children within that age range.

1.5. Organizational Overview

In Chapter 2, I review multiple strands of related literature to situate this study, corresponding to the research context. This section covers research across four areas: (1) parenting arrangements after divorce, (2) design for divorced families in HCI, (3) remote child-family communication, and (4) digital family calendars.

In Chapter 3, I outline the autobiographical design of FamilyCanvas, including justification and process of the method, system design, expected usage practices, and reflections from the autobiographical use.

In Chapter 4, I describe a field study conducted with two additional blended families to learn how additional families might use the calendar and gather broader perspectives on the design. I also present the results, including existing scheduling and connection practices prior to the introduction of FamilyCanvas, how families used and appropriated the system as a part of everyday life, how shared visibility of the calendar supported the family within their home and remotely, and their participation and calendar maintenance dynamics.

In Chapter 5, I discuss design implications for supporting blended families, including a reflection on how family calendar practices differ from earlier decades.

In Chapter 6, I conclude the thesis by revisiting the research questions, summarizing the contributions of this work, and outlining directions for future research.

Chapter 2. Related Work

In this section, I review multiple strands of related work to situate this study, including parenting arrangements after divorce, design for divorced families in HCI, remote parent-child communication, and digital family calendars.

2.1. Parenting Arrangements After Divorce

Divorce affects a significant portion of families worldwide (Australian Bureau of Statistics, 2024; Department of Justice Canada, 2022; Eurostat, 2024; National Center for Health Statistics, 2022). For example, in Canada and the US, about 40% of marriages end in divorce (National Center for Health Statistics, 2022). After divorce, parents may remain single or form new families, while children will transition into new living arrangements (Department of Justice Canada, 2022; Kelly, 2007). Among them, blended families, comprising two adults, children they share, and those from previous partners (Kumar, 2017; Portrie & Hill, 2005), represent an increasingly common family structure. Canadian survey data, for example, showed that 11.8% of couples with children were step-families, and that this proportion had increased by 17% since 1995 (Cherami Wichmann, 2023).

Parenting arrangements after divorce are not fixed and may be determined by biological parents, or by legal, therapeutic, or court-led decisions in the absence of agreement (Kelly, 2007). For example, in Family Law of Canada, it commonly involves the allocation of parenting time and decision-making duties related to children's well-being, including health, education, culture, religion, and significant extracurricular activities (Department of Justice Canada, 2025).

Historically, post-divorce parenting arrangements often followed rigid visitation models in which children primarily resided with one parent, while the non-residential parent had limited in-person contact supplemented by phone communication (Kelly, 2007; Wallerstein & Kelly, 1981; Yarosh, 2008). This makes it difficult for parents to contribute equally to raising children (Wallerstein & Kelly, 1981; Yarosh, 2008), although most children show desires for more contact (Kelly, 2007). Research in social science and child development over the past several decades has found and verified that the risks associated with the life transitions caused by divorce can negatively impact

children's academic achievement, conduct, psychological adjustment, self-concept, and social relations (Amato, 2000, 2001).

Table 2.1 A Week Joint Custody Parenting Arrangement Example. Father (F), Mother (M).

	Mon	Tue	Wed	Thur	Fri	Sau	Sun
Week 1	F	F	F	F	F	F	F
Week 2	M	M	M	M	M	M	M
Week 3	F	F	F	F	F	F	F
Week 4	M	M	M	M	M	M	M

Table 2.2 A 2-2-3 Joint Custody Parenting Arrangement Example. Father (F), Mother (M).

	Mon	Tue	Wed	Thur	Fri	Sau	Sun
Week 1	F	M	M	F	F	M	M
Week 2	M	F	F	M	M	F	F
Week 3	F	M	M	F	F	M	M
Week 4	M	M	M	M	M	M	M

Given the negative effects of divorce on children, more flexible, research-informed parenting plans have been advocated to better support children's diverse developmental and psychological needs (Bauserman, 2002; Kelly, 2007). Among them, joint custody, where divorced parents share parenting time and decision-making responsibilities (Black & Garner, 2009; Department of Justice Canada, 2025; Torres Perea et al., 2021), has become a preferred model globally (Andrina Hayden, 2011; Nielsen, 2018). Increasing legislative support for this arrangement since the 1980s in the US, for instance, indicates this tendency (Gardner, 1985; Meyer et al., 2022). Research has also consistently shown that children fare better under arrangements that allow them to spend time living with both parents (Baude et al., 2016; Nielsen, 2018). For example, authoritative parenting by noncustodial fathers has been found to predict children's higher academic achievement and lower internalizing and externalizing problems (Amato, 2000). In such parenting arrangements, children are designated to be cared for by one parent during the given period and need to transition between two households periodically (Department of Justice Canada, 2025). During this process, parenting schedules play a significant role in both guiding parents' responsibilities and informing children about childcare arrangements on any given day (Ackerman & Pritzl, 2011; Hartson & Payne, 2006). Examples of week-based and 2-2-3 parenting time schedules are shown in 错误!未找到引用源。 and 错误!未找到引用源。 respectively.

Although joint custody may mitigate some negative effects of divorce on children (Amato, 2000; McHale & Grolnick, 2008), it introduces challenges in daily scheduling and maintaining stable connections, as children must periodically transition between two homes (Department of Justice Canada, 2025). These challenges are further exacerbated in blended families, where there may be mixed custody arrangements. Moreover, potential sensitive relationships between parents (former partners) (Davies & Cummings, 1994) or between children and step-parents or step-siblings (Furrow & Palmer, 2007) often add emotional and privacy complexity.

Given this context, this thesis aims to design a system to help blended families, in particular those with joint custody arrangements, manage their family schedules and maintain stable connections.

2.2. Design for Divorced Families in HCI

HCI researchers have explored ways to support divorced families over the past decades. Prior HCI research suggests that technologies designed for divorced families need to balance two major goals: minimizing cross-household tensions and maintaining parent-child closeness (Yarosh et al., 2013). However, research specifically examining technology design for divorced and blended family contexts remains limited (Odom et al., 2010; Yarosh, Chew, et al., 2009; Yarosh et al., 2013).

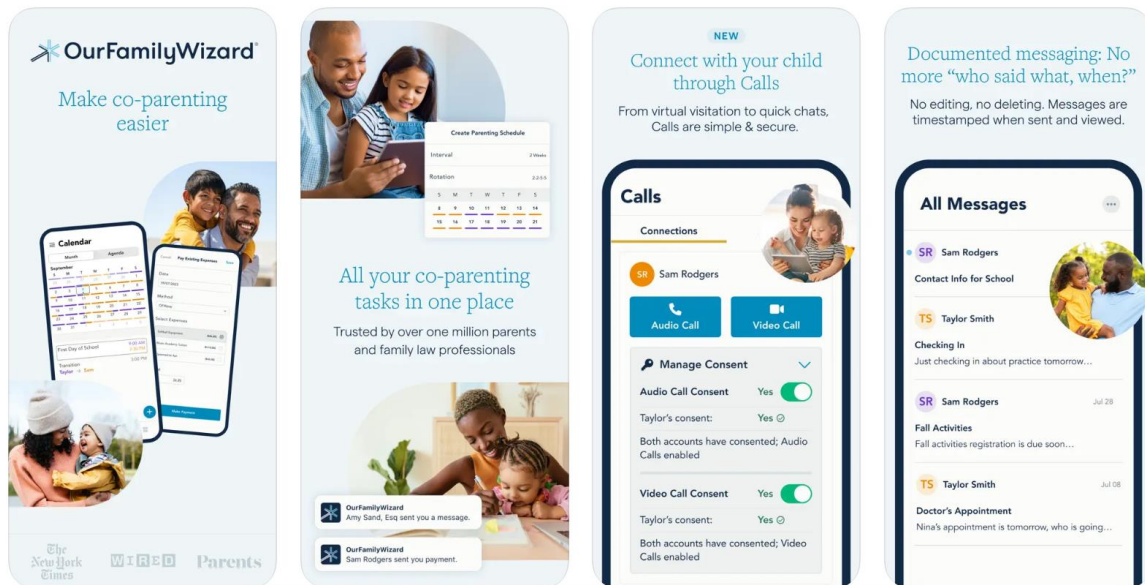


Figure 2.1 The introduction and some examples of the interfaces of the OurFamilyWizard application. Retrieved from the Apple Store (OurFamilyWizard, 2025).

Odom et al. investigated how interactive systems could address the increasing challenges faced by divorced families with joint custody (Odom et al., 2010). Their study focused on inter-parental communication and coordination, as well as children's identity and sense of belonging between two homes. This work points out the design implications in building joint cultures, managing and presenting virtual possessions, and particularly proposes digital calendars to support inter-parental collaboration while avoiding tensions in joint custody. There is also a corresponding commercial application called OurFamilyWizard (in Figure 2.1), which is known for supporting co-parenting during joint custody (e.g., parenting schedules, shared expenses and communication). Different from my focus on both parents and children in blended families, its design is more adult-oriented, emphasizing information sharing and negotiation between parents,

while not being designed to be used by children. Existing work and tools show the potential of utilizing digital calendars in mediating inter-parental issues after divorce, paving the way for my research focusing on exploring the potential of digital calendars in supporting blended families.



Figure 2.2 An example of a parent and child using the ShareTable system at home. Reprinted from *"Almost touching": parent-child remote communication using the sharetable system* (Yarosh et al., 2013). Copyright © Association for Computing Machinery.

Yarosh et al. explored technology's role in parent-child remote communication within single-custody divorced families through qualitative and design studies (Yarosh, Chew, et al., 2009; Yarosh et al., 2013). In this context, children spend most of their time with their resident parents while communicating with their non-resident parents using technology. Results showed future design needs for promoting children's connection with remote parents, such as creating opportunities to provide care for children, making it easier to find conversational topics, increasing asynchronous communication, and enhancing children's autonomy. Based on the qualitative results, they next designed the ShareTable, a system that provides easy-to-initiate video chat and a shared tabletop task space for parents and remote children (Yarosh et al., 2013), as shown in Figure 2.2. This system enables users to share emotional moments and convey a sense of closeness through metaphorical touch. A month-long deployment in four households where the parents had gone through a divorce revealed key usage contexts, including

playfulness, instrumental support, and serving as a shared meeting space. Findings also indicate that the system offers advantages over traditional video chat in enhancing bond quality and ease of use. Finally, it provides design implications for divorced families, including making connections easy to initiate, providing engaging activities, and supporting emotional interactions through the mixture of local and remote spaces. Although the two studies focus on single-custody contexts, many of the design implications inform how to support remote parent-child communication when children in blended families are separated from a parent periodically.

Together, this existing work provides important and foundational insights for designing digital tools for divorced families, mainly focusing on two scenarios: co-parenting issues in joint custody across households (Odom et al., 2010; OurFamilyWizard, 2025) and remote parent-child communication in single-custody situations (Yarosh, Chew, et al., 2009; Yarosh et al., 2013). Designs for blended families need to balance closeness and tension (Yarosh et al., 2013). This involves not only managing inter-parental dynamics emphasized in prior work when joint custody arrangements exist (Davies & Cummings, 1994), but also accounting for sensitive intra-family relationships and boundary negotiation challenges that may emerge between step-parents, step-siblings, and biological family members in blended families (Furrow & Palmer, 2007).

To uncover and address the nuanced challenges in blended families, this work builds on prior research on co-parenting coordination and remote parent-child communication by exploring how a shared digital calendar may support both scheduling coordination and ongoing awareness and connection across blended family households.

2.3. Remote Parent-Child Communication

Beyond divorce (Odom et al., 2010; Yarosh, Chew, et al., 2009; Yarosh et al., 2013), there are some reasons for separation between children and parents, such as remote work (Gan et al., 2020; Pan et al., 2013; Shi et al., 2025; Xu et al., 2025; Yarosh & Abowd, 2011), immigration (Brown & Grinter, 2012), and other personal or family issues. Given that both parents and children can benefit from staying connected (Calmbach et al., 2024), HCI has long focused on supporting remote parent-child interactions. There are multiple research papers focusing on understanding interaction

dynamics and interactive system usage within separated families (Brown & Grinter, 2012; Gan et al., 2020; Kazakos, Howard, et al., 2013; Odom et al., 2010; Pan et al., 2013; Yarosh & Abowd, 2011), as well as designing digital tools to support their remote interactions (Calmbach et al., 2024; Shi et al., 2025; Teh et al., 2009; Xu et al., 2025; Yarosh et al., 2013).

Existing studies exploring remote parent-child communication dynamics primarily focus on separated situations due to work or migration. Yarosh et al. focused on work-separated families and found the experiences and strategies that people use to keep families together (Yarosh & Abowd, 2011), such as supporting real-time interaction among multiple children, enabling direct asynchronous communication between parent and child and accommodating environments with limited infrastructure.

There are also studies exploring the use of mobile phones for remote communication between migrant parents and their remote children, revealing interaction and information sharing dynamics, and multi-stakeholders' roles in caregiving networks (Brown & Grinter, 2012; Pan et al., 2013). For example, Pan et al. focused on how children communicate with their migrant parents and what information they exchange through mobile phones (Pan et al., 2013). Their design implications focus on promoting mobile phone-centered communication between parents and children, as well as coordination and information sharing systems between multi-stakeholders that care for these children. Similarly, Brown et al. have explored how mobile phones are integrated into the complex care networks for children not living with their parents by interviewing multistakeholders, including immigrant parents, guardians, and educators (Brown & Grinter, 2012). They revealed that mobile phones not only facilitate parent-child communication but also introduce challenges by reshaping caregiving responsibilities and reinforcing power differentials within transnational care networks. Their findings highlight that technologies supporting separated families may involve multiple caregivers and complex coordination dynamics beyond direct parent-child communication.

Furthermore, Kazakos et al. explored periodically transitioning families (Kazakos, Howard, et al., 2013), which is more similar to this context of periodical separation between parents and children with joint custody arrangements. They explored the mediating roles of technologies in this context, and highlighted that the design needs to support children's anticipation of reunions, maintain seamless communication across households, and

balance the mediated interaction so as not to undermine in-person engagement upon reunification.

Researchers also designed interactive systems to promote remote parent-child communication, including video chat (Yarosh et al., 2013), wearable systems (Calmbach et al., 2024; Teh et al., 2009), and more recently, generative AI-enabled asynchronous systems (Shi et al., 2025; Xu et al., 2025). One example is ShareTable, a system that combines video chat and a collaborative workspace for children and their non-residential parents (Yarosh et al., 2013). They argued that technology for divorced families should make initiating connections simpler by reducing the effort required to start communication, facilitate engaging shared activities that give parents and children something meaningful to do together, and support emotionally meaningful interactions that help maintain feelings of closeness despite living apart.



Figure 2.3 Huggy Pajama system overview. Reprinted from *Huggy pajama: a parent and child hugging communication system* (Teh et al., 2009). Copyright © Association for Computing Machinery.

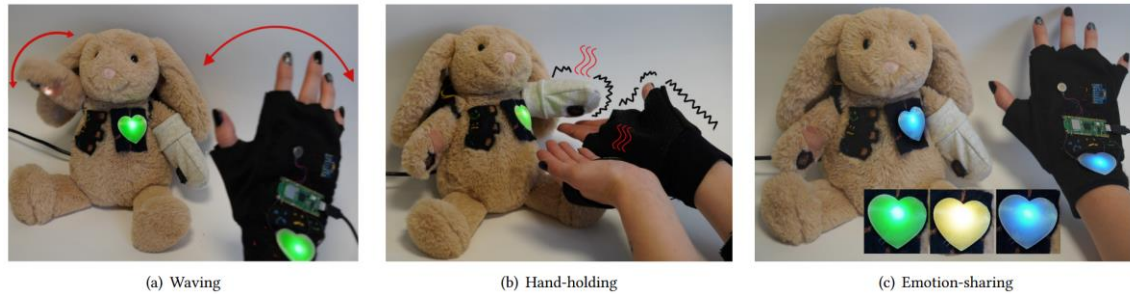


Figure 2.4 Three interactions provided by the ChiParCo and ParChiCo systems. Reprinted from *ChiParCo and ParChiCo: Connecting Children and Parents Remotely With Tailored Tangible Communication Tools* (Calmbach et al., 2024). Copyright © Association for Computing Machinery.

For wearable systems, Teh et al. have designed Huggy Pajama, a novel wearable system, to promote physical interaction in remote communication between parents and children (Teh et al., 2009). To be specific, Huggy Pajama is a small, mobile doll embedded with pressure sensors that detect natural touch, transmitting signals to a haptic jacket which uses air pressure to simulate a hug (Teh et al., 2009). Figure 2.3 shows the overview of the huggy Pajama system. Similarly, Calmbach et al. developed a pair of connected tangible devices: ChiParCo, an interactive plush bunny for children, and ParChiCo, an interactive glove for parents (Calmbach et al., 2024). Together, they enable both synchronous and asynchronous physical interactions that support emotional communication between remote parents and children, as shown in Figure 2.4. Design implication highlights the importance of offering child-friendly, tangible or gesture-based cues that support both real-time and delayed emotional connections. Although different from the focus of this work, it informs design in supporting asynchronous interactions that allow parents and children to communicate without being available at the same time, providing instant and clear feedback so users know when their actions have been received, and enabling bidirectional emotional sharing where both parents and children can express and receive emotional signals.



Figure 2.5 The basic mechanism of the interactive system - Accompany Sleep. Reprinted from *Accompany Sleep: Using GenAI to Create Bedtime Stories for Mediating Parent-Child Relationships in LBC Families* (Xu et al., 2025). Copyright © Association for Computing Machinery.

More recently, there has been an increasing number of systems driven by generative AI for parent-child remote communication for various purposes, such as bedtime storytelling (Xu et al., 2025) and mental health awareness (Shi et al., 2025). For example, Xu et al. developed a system called Accompany Sleep where immigrant parents upload content about daily life through an app, and ChatGPT generates personalized bedtime stories for their children who are not living with them (Xu et al., 2025). This approach extends communication beyond the limitations of scheduled video calls and topics by enabling more flexible and emotionally resonant interactions. Figure 2.5 shows the basic mechanism of the Accompany Sleep. Their design implications highlight the importance of sustained parent-child interaction habits and experience sharing through stories, as well as the unique role of generative AI in family contexts. Although FamilyCanvas does not use generative AI, this work suggests that technologies supporting separated families may benefit from being embedded into recurring everyday routines rather than relying solely on occasional communication events. In this case, I view scheduling itself as a routine-based shared activity that can similarly foster continuous parent-child engagement.



Figure 2.6 The basic mechanism of the DiSandbox System. Reprinted from *"I Need Your Help!": Facilitating Psychological Communication Between "Left-Behind" Children and Their Parents with an AI-Powered Sandbox* (Shi et al., 2025). Copyright © Association for Computing Machinery.

In addition, Shi et al. designed an AI-Powered Sandbox called DiSandbox to promote the psychological communication between children and remote parents (Shi et al., 2025), especially for underserved regions where mental health support is limited by resource scarcity, financial hardship, and low awareness. As illustrated in Figure 2.6, DiSandbox uses AI to guide children's sandbox play, interpret their creations for psychological insights, and generate feedback to help remote parents better understand their children's emotional state. This enables more timely and empathetic parental responses, even across distance and technological barriers. Although situated in a different context, this work highlights the importance of helping separated parents remain aware of children's experiences and emotional states in a timely manner. In blended families, similar awareness challenges can arise when parents and children move between households, making it important to support lightweight mechanisms for sharing activities, schedules, and contextual information across periods of separation.

Although varying in contexts and technical focuses, these qualitative and design studies provide a strong foundation for my study by pointing out design directions, such as enhancing the motivation and autonomy of children; supporting asynchronous and synchronous interactions between parents and children over distance; extending care, activities and emotion in communication; and accommodating multi-stakeholder caring networks for children, such as their grandparents and other caregivers.

Two other important aspects that need to be considered in this design include: intergenerational inclusivity, referring to the ability of the system to support use and participation across different generations and age groups, which is commonly discussed in designing for parent-child interactions (Axtell et al., 2024; Gan et al., 2020; Yarosh & Abowd, 2011), and sensitive relationships, which are crucial in my context but less covered in the existing research (Yarosh, Chew, et al., 2009).

Since parent-children interactions involve multiple generations, this leads to challenges in shared digital environments due to the differing needs and technical abilities of each generation (Axtell et al., 2024; Gan et al., 2020; Yarosh & Abowd, 2011). For instance, Yarosh and Abowd found that both the remote parent and the child rely heavily on a collocated adult to maintain awareness and contact (Yarosh & Abowd, 2011). Similarly, Gan et al. revealed key facilitation work specifically performed by grandparents as a crucial feature of phone calls for connecting parents and "left-behind"

children (Gan et al., 2020). Beyond these exploration studies through interviews, some researchers investigate the multi-generational issues in design processes. For example, Axtell et al. conducted a co-design probe with 12 young children to explore their ideas for independent communication technologies to connect with remote family members (Axtell et al., 2024). Their findings suggest several design considerations to support children's independent, asynchronous communication with distant family members, such as ensuring transparent cross-device connectivity and incorporating opportunities to learn about wireless communication into daily activities (Axtell et al., 2024). This research inspires my work because blended families also experience periods of physical separation when children move between households under joint custody arrangements. However, unlike these systems, which primarily focus on supporting direct communication between geographically separated family members across households, this thesis focuses on awareness and coordination within a single blended household. I draw on this literature because it highlights challenges surrounding remote awareness, access, and connection that remain relevant when children periodically transition between homes, even though the primary design context of FamilyCanvas is a single household.

In addition, the existing research on parent-child communication typically assumes intimate family relationships. In contrast, families affected by divorce (Odom et al., 2010; Yarosh, Chew, et al., 2009; Yarosh et al., 2013) need to consider the balance of closeness and tension in the interactions that technology supports (Yarosh et al., 2013), such as the design of SharedTable used by children and their non-residential parents mentioned in Chapter 2.2 (Figure 2.2). Blended families experience sensitive relationships between children and step-parents or step-siblings, which may create challenges around information sharing, participation, and boundary management (Furrow & Palmer, 2007). If there is a joint custody arrangement, sensitive relationships with former partners (Davies & Cummings, 1994) further complicate parent-child communication during transitions between households. Therefore, it is crucial to take sensitive relationships into consideration when designing for blended families.

To address these gaps, this work aims to create a stable digital space for parents and children in blended families to share information, considering both inclusivity and sensitive relationships. In particular, I focus the design space on a digital calendar shared by blended family members, as sharing of calendar information has been shown

to provide a meaningful window into family members' daily activities over distance (Plaisant et al., 2006). By doing so, I aim to support communication around daily schedules when living together as well as during periodical separations.

2.4. Digital Family Calendars

Managing and coordinating family routines is an ongoing process intertwined with daily life, extending beyond the home to include scheduling while at work or mobile, introducing everyday challenges for many people (Beech et al., 2004; Brush & Turner, 2005; Neustaedter et al., 2009; Sellen et al., 2004). To support family scheduling, there has been extensive research in HCI over the past few decades on understanding family routines and calendar usage dynamics (Bødker & Grönvall, 2013; Crabtree et al., 2003; Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006; Plaisant et al., 2006; Taylor & Swan, 2005; Thayer et al., 2012), and designing digital calendars as a part of family awareness and coordination systems (Forghani et al., 2018; Neustaedter & Bernheim Brush, 2006).

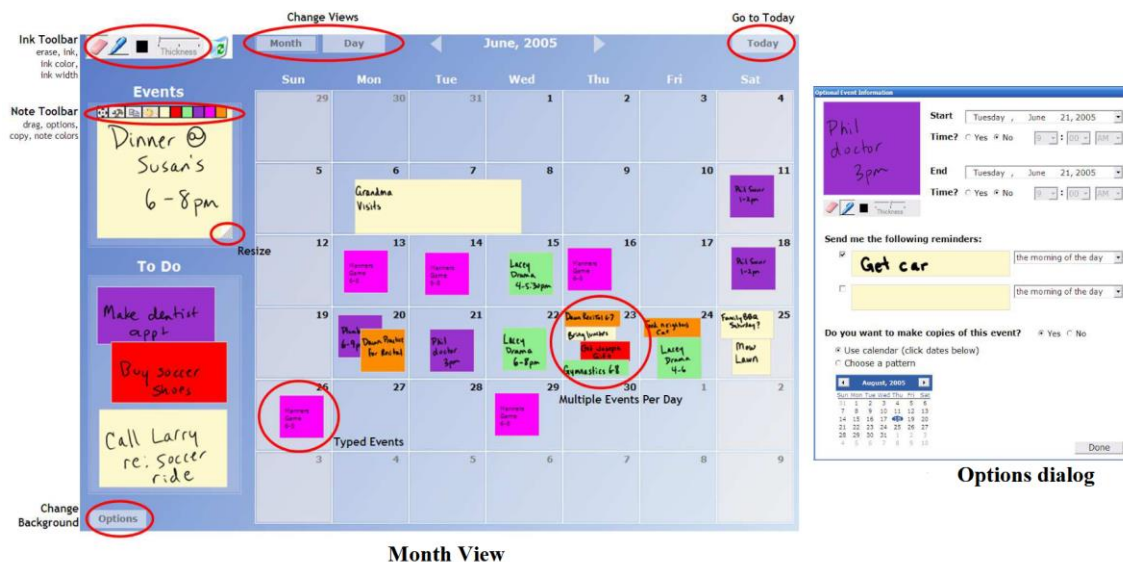


Figure 2.7 User interface of "LINC". Reprinted from *"LINC-ing" the family: the participatory design of an inkable family calendar* (Neustaedter & Bernheim Brush, 2006). Copyright © Association for Computing Machinery.

Some studies focus on designing digital calendars for cohabiting family members. For instance, Neustaedter et al. developed "LINC", an inkable family calendar designed for the kitchen, that helps families organize, plan, and stay aware of the

activities of household members in order to coordinate everyday life (Neustaedter & Bernheim Brush, 2006). The user interface design of “LINC” is shown in Figure 2.7. By using this calendar, users can utilize digital ink and virtual sticky notes to give families flexible, at-a-glance awareness and coordination. For example, a parent clicks “Add Note,” writes “3 PM dentist - Dad” on a virtual sticky note, picks a color, and drags it onto Wednesday in the Month view; the note then shrinks into the date cell. They tap the note’s icon to set a “day-before” reminder, and when another family member sees the colored thumbnail, they click it to open full details in the Day view and adjust its position if plans change. This work was published in 2005 and, given the time period, saw the calendar run on a tablet device. The calendar was accessible for viewing-only from early non-touch screen smartphones with a display roughly 1 inch by 1 inch in size. Findings from this work highlight the importance of simple awareness, flexible coordination, and placing calendars in contextual household locations where they can be routinely seen. These considerations are also relevant to blended families, where family members often need to stay aware of schedules across multiple caregivers, children, and household routines. However, LINC was designed for cohabiting families and did not address challenges that are particularly salient in blended families, such as children’s movement between households, sensitive family relationships, or the need for remote access when family members are apart.

Neustaedter et al. further explored participation paradigms in family scheduling through interviews of 44 different families, and categorized them into monocentric (27%), pericentric (39%), and polycentric typologies (34%) (Neustaedter et al., 2009). Among them, monocentric families involve a primary scheduler with minimal secondary participation; pericentric families are those with occasional secondary involvement beyond the primary schedule; and polycentric families are those with frequent engagement from secondary schedulers while maintaining primary scheduler leadership. Based on the deep understanding of family scheduling dynamics, this work provides design guidelines for digital family calendars to support awareness and coordination in blended families by enabling access from multiple locations, both inside (e.g., public client) and outside of the home (e.g., work, mobile access), where calendar content can be seen at-a-glance by being displayed on a public display in a family’s home (e.g., on a tablet mounted on the wall or set on the counter in the kitchen) (Neustaedter et al., 2009).



Figure 2.8 The prototypes of the digital paper and the pen. Reprinted from *Shared family calendars: Promoting symmetry and accessibility* (Plaisant et al., 2006). Copyright © Association for Computing Machinery.

Other studies focus on designing digital calendars for remote family members with consideration to promote symmetry and accessibility. Plaisant et al. designed a digital calendar to facilitate schedule information sharing between distributed family members, specifically grandparents and their remote grandchildren's families (Plaisant et al., 2006). This work looks deeply into promoting multi-generational symmetry and accessibility, especially addressing the needs of older adults for simple modes of interaction by using digital paper and pen. As shown in Figure 2.9, the grandparents can write on digital paper through a digital pen, and then the writings will appear on the specific day region of the digital calendar on the computer once the pen is placed in its cradle, enabling a simplified interaction mode for older adults.

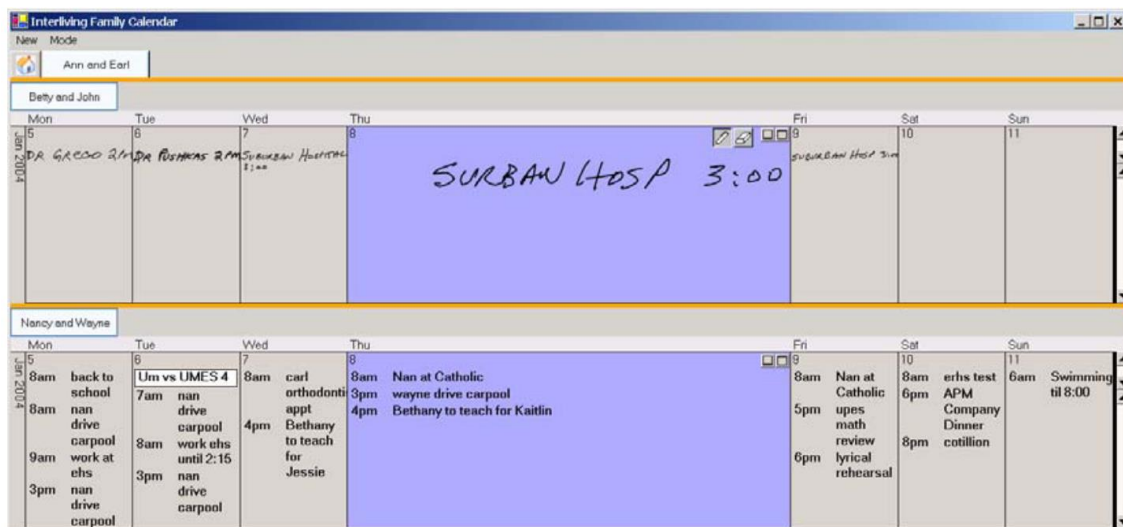


Figure 2.9 User interface of the shared digital calendar on the grandparents' side, who choose to see only their calendar and one of their children. Reprinted from *Shared family calendars: Promoting symmetry and accessibility* (Plaisant et al., 2006). Copyright © Association for Computing Machinery.

It turns out that family members interact with calendars in different modes (i.e., active or passive) but sharing such information provides a meaningful window into the remote family's daily life, thus enhancing the sense of mutual awareness. Figure 2.8 shows one example on the grandparents' side.

These considerations are also relevant to blended families, where family members of different ages may have different motivations, responsibilities, and ways of engaging in coordination practices. Supporting multiple modes of participation may therefore be important for enabling inclusive engagement across household members, rather than assuming that all family members will interact with a calendar in the same way.

Existing studies focusing on digital family calendars offer valuable insights into designs within households or shared by remote family members, and mitigating gaps between generations. Much of this prior work was conducted in the early 2000s, when digital calendars were often designed around shared household displays (Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006; Plaisant et al., 2006). Since then, calendaring technologies have evolved substantially with the widespread adoption of personal calendars, cloud synchronization, and mobile access across devices. These changes may have transformed how family members interact with calendars in everyday life, with many adults and pre-teens/teenagers carrying a smartphone with them when out and about. For example, family members can now access and update calendars remotely, receive notifications in real time, maintain personal and shared calendars simultaneously, and interact with scheduling information across multiple devices. As a result, it remains important to revisit how current calendaring technologies support contemporary family structures and routines.

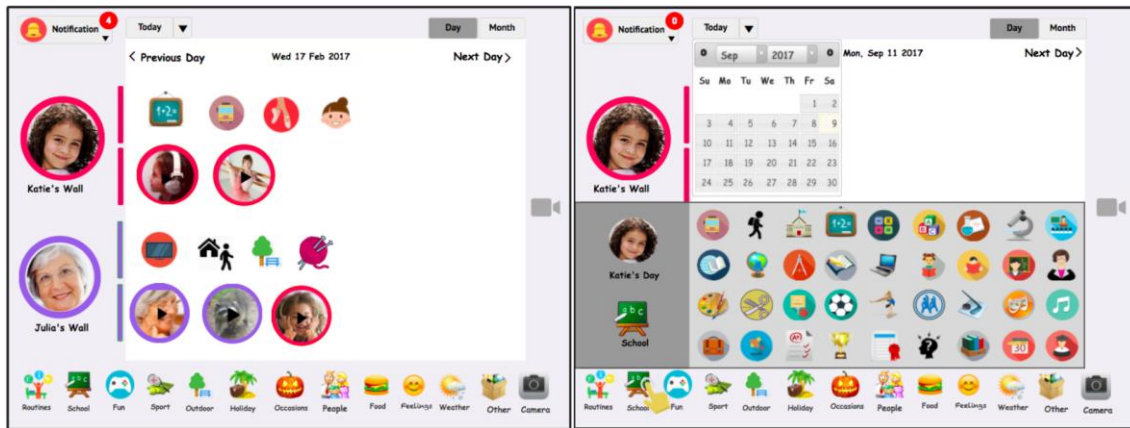


Figure 2.10 User Interface Examples of the G2G system. Reprinted from *G2G: The Design and Evaluation of a Shared Calendar and Messaging System for Grandparents and Grandchildren* (Forghani et al., 2018). Copyright © Association for Computing Machinery.

In addition, while most research focusing on family calendars is adult-centered, there is an initial exploration of designing a digital calendar specifically for children, further promoting the symmetry and accessibility of scheduling (Forghani et al., 2018). Forghani et al. designed a calendar and message system to bridge communication between distributed grandparents and grandchildren through a structured visual interface (in Figure 2.10). In this system, children could select and share predefined activities or routines (e.g., daily events or special moments) on a shared calendar, which would then be visible to grandparents. Grandparents could respond through lightweight messages or acknowledgments, creating a form of asynchronous, routine-based communication grounded in everyday activities. The system emphasized awareness and connection through shared representations of daily life. This resonates with one of the motivations behind FamilyCanvas: supporting awareness for children when they are temporarily away from the household due to joint custody arrangements. However, the two projects differ in important ways. Whereas the system explored direct communication between geographically separated family members, FamilyCanvas focuses primarily on awareness and coordination within a single blended household. The relevance of this literature lies in highlighting challenges surrounding awareness and connection during periods of separation, rather than in supporting direct communication across households.

Furthermore, existing studies also primarily focus on intact and extended families. While many of their findings can be generalized to families after divorce,

scheduling in blended families presents unique challenges. For example, sensitive relationships among step-parents, step-siblings, and former partners can make decisions about information sharing, visibility, and participation more complex. Questions of who should see scheduling information, who should contribute to it, and how boundaries are managed across family members may influence the acceptance and use of calendaring systems (Davies & Cummings, 1994; Furrow & Palmer, 2007). The periodic movement of children between households also creates challenges for maintaining awareness of schedules and family activities across transitions. (Plaisant et al., 2006).

Yet, existing calendars are typically adult-oriented and overlook children's needs, especially given their developing sense of time and limited technical literacy. Children often rely on familiar events and routines to locate experiences in time before gradually developing more abstract and event-independent temporal representations that support reasoning about the past, present, and future and using conventional clock and calendar systems (McCormack & Hoerl, 2017). This development is continuous and may vary across children depending on their cognitive, linguistic, and experiential development, rather than occurring in sharply defined age-based stages (Zhang & Hudson, 2018). Therefore, flexible interactions beyond fixed times and date grids should be provided to accommodate children with different levels of temporal understanding in blended families. For example, children may find it easier to engage with representations grounded in familiar routines, drawings, photos, or handwritten notes rather than formally structured calendar events.

To my knowledge, there has been limited research on family calendars that considers and addresses the challenges in blended families, despite evidence that digital calendars have great potential in supporting parenting and families after divorce (Odom et al., 2010; OurFamilyWizard, 2025). To fill this research gap, this work contributes to the HCI literature through the design of a ubiquitous, child-inclusive digital calendar specifically for blended families.

2.5. Related Commercial Applications

Beyond research in academic fields, there are some commercial digital calendars, including personal calendars (e.g., Outlook Calendar, Google Calendar,

Apple Calendar), family calendars (e.g., Skylight, FamilyWall), and calendars specifically designed for co-parenting that are closer to the context of my study (e.g., OurFamilyWizard).

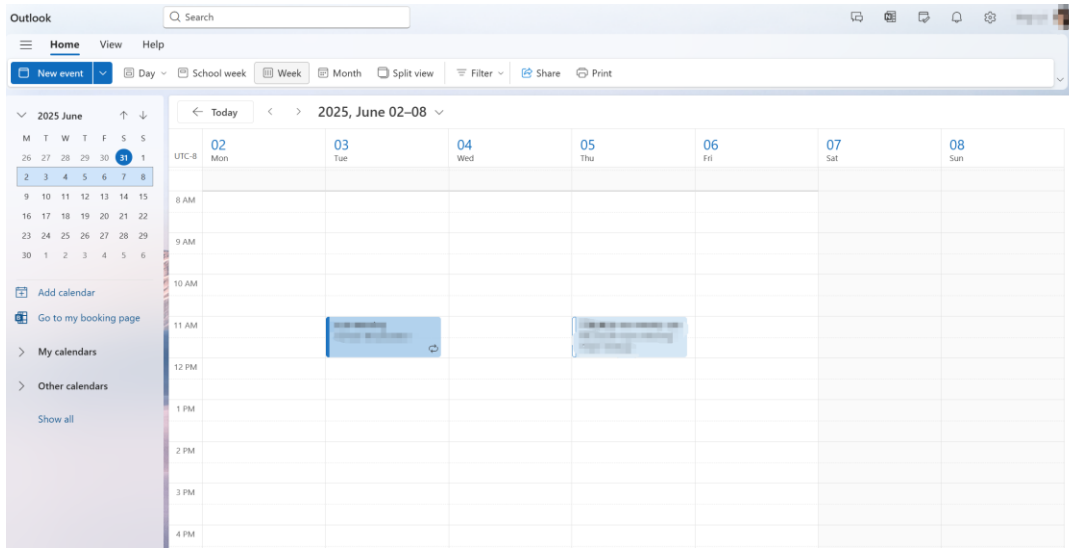


Figure 2.11 The user interface examples of the Outlook Calendar application. Retrieved from Outlook Calendar website (Outlook Calendar, n.d.)

Personal calendars such as Outlook Calendar (in Figure 2.11) are predominantly designed for adult users. They are not just neutral scheduling tools, but embody assumptions about work routines, time management, and interface accessibility that may not align with the needs of children and cross-generational family use. For example, most existing personal digital calendars are designed around work-centric time structures, prioritizing 9-to-5 workdays and formal meetings, which may not align with the needs of children in intergenerational families. Besides, the default interfaces often rely on small fonts, color coding, and dense layouts, making them less accessible to children and elderly users with visual impairments.

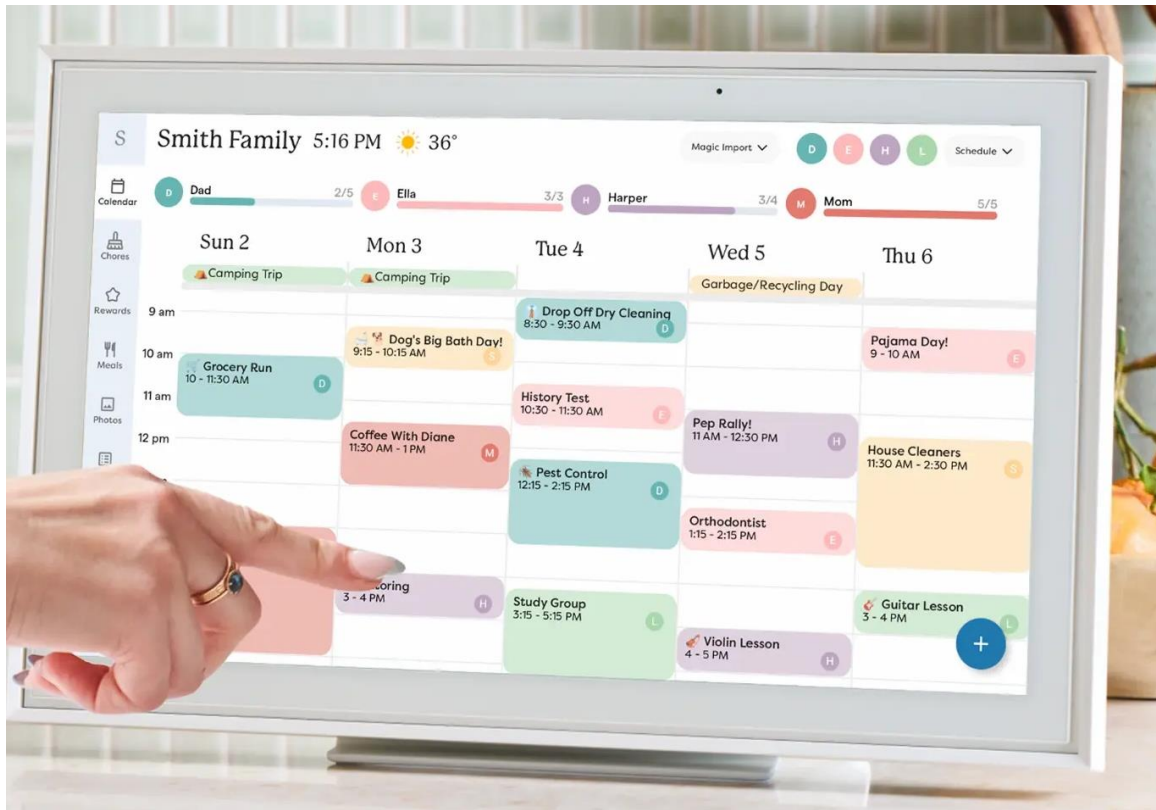


Figure 2.12 The user interface examples of the Skylight Calendar application. Retrieved from Skylight Website (Skylight, 2025).

There are some commercial digital calendars specifically designed for family contexts (*FamilyWall*, 2025; Skylight, 2025). For example, Skylight (in Figure 2.12) introduces more functions to support family-specific tasks, such as events, chores, dinner plans, rewards, and photos (Skylight, 2025). Its user interface is also designed to cater to the family context, such as showing the weather today, supporting individual avatars, and providing more color choices (Skylight, 2025). Although more functions are being empowered in digital calendars to meet family needs, it's not clear if and how easily children of various ages can use the calendar. For example, it still follows traditional grid-based interactions for adding an event, which may be less accessible for younger children who are still developing abstract understandings of time and calendar structures (McCormack & Hoerl, 2017; Zhang & Hudson, 2018)).

There are also digital calendars specifically designed for divorced families. As previously mentioned, *OurFamilyWizard* (in Figure 2.1) supports co-parenting in joint custody situations for inter-parental relationships (*OurFamilyWizard*, 2025). Even without considering the differences between divorced and blended family contexts, such

systems exhibit similar limitations. Specifically, they primarily support parenting schedules, shared expenses, and communication between co-parents, while giving limited attention to children's needs.



Figure 2.13 An example of a commercial whiteboard with a calendar background. Retrieved from an Amazon product listing (Amazon, 2025).

Together, these commercial digital calendars reveal a persistent gap: while they introduce features for adults and even co-parenting use cases for divorced families, they provide limited support for younger children who may still be developing familiarity with calendar structures and abstract time concepts. Instead, paper calendars or whiteboards with a calendar background that are available for home use may offer child-friendly ways for children to view and edit calendar events, as they provide simple and flexible interaction without grid constraints. An example is shown in Figure 2.13. These examples suggest that whiteboard- and paper-based calendaring practices may provide a useful design direction for supporting participation across family members with different ages and levels of calendar literacy.

2.6. Summary

This chapter has reviewed prior work across four areas: parenting arrangements after divorce, HCI research on divorced families, remote parent–child communication, and digital family calendars. Together, these studies highlight key challenges in supporting families after divorce, including managing complex schedules, maintaining

parent–child connections over distance, along with dealing with multi-aged users and sensitive relationships among family members. Existing work also points to important design considerations, such as supporting awareness and coordination, enabling asynchronous and synchronous communication, and designing for multi-generational use. However, prior work mainly focuses on cohabiting or extended families, with limited attention to the unique dynamics of blended families, particularly in terms of children’s participation, sensitive relationships, and coordination across multiple households.

To synthesize the literature reviewed in this chapter, I conducted a thematic analysis of recurring design concerns, opportunities, and challenges discussed across prior work. Three broad design spaces emerged repeatedly: (1) supporting sensitive relationships after divorce, (2) supporting remote parent–child communication, and (3) supporting family scheduling. Within each design space, the tables summarize recurring design considerations rather than fixed requirements. These considerations were derived by grouping related findings from prior work and are intended to provide an analytical lens for understanding how family technologies have addressed coordination, awareness, communication, autonomy, participation, and relationship management across different family contexts.

Table 2.3 summarizes recurring design considerations related to supporting family relationships after divorce, including stability, conflict management, autonomy, and boundary negotiation.

Table 2.3 Supporting Sensitive Relationships After Divorce

Design Consideration	Details (Sources)
Balancing Closeness and Tension	Technologies for divorced families need to support parent-child closeness and connection while avoiding designs that intensify cross-household tension or conflict. (Yarosh et al., 2013)
Supporting Stability Across Households	Support joint cultures in families after divorce (with sensitive relationships) (Odom et al., 2010) Design systems to enable management and presence of virtual possessions to create a continuing digital space for children (Odom et al., 2010)
Managing Conflict and Tension	Adolescents' adjustment was related to the level of perceived family conflict (Borrine et al., 1991). Inter-parental hostility leading to divorce has been shown to not only cause direct stress for children but also disrupt their attachment to parents, resulting in emotional insecurity (Davies & Cummings, 1994)
Supporting Child Autonomy	Design for the child’s autonomy with less parental scaffolding (Yarosh, Chew, et al., 2009)
Managing Privacy and Boundaries	Privacy and boundary management refer to how families control what information, activities, routines, or relationship cues become visible to different family members or households. Individuals who experienced the more constructive trajectories in blended families were more likely to describe successful and flexible boundary management (Braithwaite et al., 2001) Integrating more sophisticated levels of privacy considerations in divorced families (Odom et al., 2010)

错误!书签自引用无效。 summarizes recurring design considerations related to sustaining parent-child communication across distance.

Table 2.4 Supporting Remote Parent-child Communication

Design Consideration	Details (Sources)
Supporting Communication Initiation	Encourage children to initiate conversations with their parents (Pan et al., 2013) Design for structured routine-based communication through a shared calendar (Forghani et al., 2018) Design for mutual awareness to promote conversation through a shared calendar (Forghani et al., 2018) Sharing family calendars can increase mutual awareness and prompt more everyday conversations (Plaisant et al., 2006)
Supporting Child Agency	Design for the child's autonomy with less parental scaffolding (Yarosh, Chew, et al., 2009) Design for children's independent, engaging, and genuine communication with reduced parental scaffolding (Forghani et al., 2018) Design targeted messaging and one-to-one communication for young children (Forghani et al., 2018) Incorporate the idea of a consistent, universal message across systems, and avoid restrictions on what can be considered a message (Axtell et al., 2024) Consider connections between devices as an explicit and constant part of the interaction (Axtell et al., 2024) Support young children's independent use with symmetrical designs across communication devices, supporting conceptualizations of matching gadgets working together, even when devices themselves may differ (Axtell et al., 2024)
Supporting Ongoing Awareness and Communication	Leverage asynchronous communication to increase contact (Yarosh, Chew, et al., 2009) Make use of proxies when contact is impossible (Yarosh, Chew, et al., 2009) Design for synchronous communication with multiple children (Yarosh & Abowd, 2011) Design for direct asynchronous communication between parent and child (Yarosh & Abowd, 2011) Support asynchronous interaction (Calmbach et al., 2024) Maintain seamless communication across households (Kazakos, Howard, et al., 2013) Provide instant, clear feedback (Calmbach et al., 2024) Support parents in timely awareness of children's states and effective communication (Shi et al., 2025)
Supporting Meaningful Shared Content	Make it easy to find topics for conversation (Yarosh, Chew, et al., 2009) Unite children and parents through topics and content of common interest (Pan et al., 2013) Design tools that can recommend content for children and parents to share (Pan et al., 2013) Lower threshold for the child to self-disclose (Yarosh, Chew, et al., 2009) Create opportunities for distributed parents to provide care (Yarosh, Chew, et al., 2009) Support emotional interactions through the mixture of local and remote spaces (Yarosh et al., 2013) Use positive messages and enable bidirectional emotional sharing (Calmbach et al., 2024) Communication focused on activities rather than just conversation (Yarosh et al., 2013) Sharing experiences through stories fosters closer relationships (Xu et al., 2025)
Supporting Care Networks	Design systems that involve not only children and parents, but also other stakeholders (Pan et al., 2013) Design for children's caregiving networks beyond nuclear families (Brown & Grinter, 2012)
Supporting Separation and Reunion	Support artifact-based anticipation during separation (Kazakos, Howard, et al., 2013) Balance mediated interaction to prevent "absence in presence" at reunion (Kazakos, Howard, et al., 2013) Highlight transition moments to reinforce reunion salience (Kazakos, Howard, et al., 2013)
Supporting Diverse Infrastructures	Design for infrastructure-poor environments (Yarosh & Abowd, 2011) Ensure technologies account for broader infrastructures, including financial support and connectivity (Brown & Grinter, 2012) Target low-end phones, consume as little bandwidth as possible, and be easy to use by both children and migrant workers (Pan et al., 2013)

Table 2.5 summarizes recurring design considerations related to family awareness, participation, coordination, access, and privacy in scheduling systems.

Table 2.5 Supporting Scheduling in Families

Design Consideration	Details (Sources)
Supporting At-a-Glance Awareness	Design digital calendars as simple awareness applications (Neustaedter & Bernheim Brush, 2006) Digital calendars should be put in contextual locations (Neustaedter & Bernheim Brush, 2006) The device is dedicated to the specific task of calendaring (Neustaedter et al., 2009) A digital family calendar should provide at-a-glance awareness of activities and calendar changes for easy awareness acquisition (Neustaedter et al., 2009) Remove any access restrictions that would require family members to log in or request access (Neustaedter et al., 2009)
Supporting Inclusive Participation	Design user-friendly input approaches to promote accessibility (Plaisant et al., 2006) Digital family calendars should use pen or touch interactions (Neustaedter et al., 2009) Different family members interact with calendars differently, so designs should support both active input and passive viewing (Plaisant et al., 2006)
Supporting Multi-user Coordination	Design digital calendars as flexible tools for coordination (Neustaedter & Bernheim Brush, 2006) Designs should not support negotiation protocols (Neustaedter et al., 2009) Location-based reminders - must be sent to individuals/locations and actually seen (Neustaedter et al., 2009) Design digital calendars to support complex scheduling of parenting arrangements after divorce, such as helping parents know who's on duty, explicitly note when in charge of an event, or aspects of an event, as well as enabling the family to associate specific equipment with activities and events (Odom et al., 2010)
Supporting Ubiquitous Access	A digital family calendar should be accessible for viewing and editing at work, including user-selectable synchronization, toggle visibility and privacy, and keyboard and mouse interaction (Neustaedter et al., 2009) A digital family calendar should provide a mobile interface for viewing and editing, like on a small mobile devices for easy querying, and input ways should be convenient, like conversation (Neustaedter et al., 2009) A digital family calendar should be accessible from multiple locations at home, where the information displayed may vary, with multiple clients and selectable information display (Neustaedter et al., 2009)
Managing Privacy	Integrate more sophisticated levels of privacy considerations in divorced families (Odom et al., 2010) Provide user-selectable privacy settings for family events (Neustaedter et al., 2009)

While these tables summarize a broader set of design considerations from prior work, not all considerations are taken up equally in the design and analysis that follow. The later chapters focus most directly on the considerations that became central to the FamilyCanvas design and field deployment: supporting shared awareness, enabling situated and remote access, supporting inclusive but uneven participation, managing privacy and boundaries, and coordinating across fragmented household routines and tools. Other considerations, such as emotionally expressive remote communication or infrastructure-poor environments, remain part of the broader related work context but are not the primary focus of this thesis.

Chapter 3. Autobiographical Design

This chapter addresses Research Questions 2 and 3 and Objective 2 by presenting the design and development of FamilyCanvas through an autobiographical design process. Next, I introduce the autobiographical design method, the system design, outline expected usage practices, and reflect on insights from its use within the autobiographical design family.

3.1. Autobiographical Design Method

3.1.1. Research Configuration

I utilized autobiographical design to explore the potential of designing a digital calendar for supporting blended families. Autobiographical design is defined as “design research based on extensive, genuine use by those creating or building the system” (Judge & Neustaedter, 2015). It involves iterative cycles of design, use, and refinement grounded in the lived experiences of those involved in creating and using the system, allowing exploration of both functional and emotional aspects of technology.

I chose autobiographical design because the design space involved complex family dynamics, privacy concerns, and ethical sensitivities that would have been difficult to explore through an early-stage deployment with external families alone. This method is particularly appropriate for studying complex, dynamic, and emotionally embedded domestic contexts (Neustaedter & Sengers, 2012a), which require situated, long-term engagement. In contrast, involving participants with sensitive relationships in a long-term, exploratory design process can introduce emotional burden and relational tensions. By working within a research-connected household context, the study minimizes risks while maintaining a detailed design investigation. The goal of the autobiographical design work was not to generalize findings, but rather to identify key design challenges, assumptions, and tensions that could inform later field deployment and future work.

3.1.2. Participants and Researcher Positioning

Autobiographical design can also involve multiple actors within a research group and household context (Desjardins & Ball, 2018).

In this project, I served as the sole thesis author, system designer, developer, and primary researcher responsible for conducting the study, collecting data, and analyzing the findings. The autobiographical design deployment took place within my supervisor's blended family household. In this configuration, my supervisor simultaneously acted as a faculty advisor, a household participant, and a reflective intermediary who regularly shared personal reflections, observations, and family feedback related to the ongoing use of FamilyCanvas. Other household members participated primarily through their use of the system and informal feedback shared within the household, but they were not involved in thesis authorship or formal data analysis.

This blended family consisted of two parents and five children spanning a broad age range and living arrangements. The father's biological children included two sons under weekly joint custody arrangements (age 11 and age 19), and one daughter who resided with her mother (age 16). The mother had two biological children (age 10 and age 15), both under weekly joint custody arrangements. Because the children transitioned between households on different days within the same week, the family experienced substantial scheduling complexity across households and caregiving routines.

Prior to FamilyCanvas, the parents already relied on a shared digital family calendar to coordinate activities, transitions, and caregiving responsibilities. The presence of children and young adults at different developmental stages also reflected the broader goal of FamilyCanvas as a shared household technology rather than a system designed for a single age group.

3.1.3. Design Process and Deployment

My initial design of FamilyCanvas was used for a period of five months within the family home. I iterated on the design throughout this period based on emerging needs

and observations from everyday use, gradually introducing new features as requirements became apparent.

Participation in the design process also differed across household members. Some participants, such as the parents, engaged more actively through ongoing discussions and feature suggestions, while the children primarily participated through their use of the system.

Design decisions were developed collaboratively between me as the system designer and thesis author and my supervisor as the primary household participant and long-term user of the system. As the thesis author, I was responsible for implementing and documenting design changes throughout the deployment. Major design decisions that emerged during the deployment are discussed in more detail in Chapter 3.2.

Following design iterations, the family used the system for an additional four months within the home. Thus, the autobiographical design deployment spanned a total of nine months.

3.1.4. Data Collection and Reflection

The study employed ongoing observations and record-keeping surrounding everyday system use, similar to other situated HCI methodologies. To support this process, I maintained a document throughout the deployment to record observations shared with my supervisor, usage patterns, reflections, feature requests, and tensions that emerged around the system over time.

These records were periodically updated throughout the deployment and served as a shared repository of observations and reflections. The analysis was primarily reflective and interpretive in nature. Rather than applying a formal qualitative coding process, my supervisor and I reviewed the records throughout the deployment to identify recurring patterns, emerging tensions, unmet needs, and opportunities for design refinement. Insights from these reflections informed subsequent design iterations and helped shape the evolution of FamilyCanvas over time.

3.2. FamilyCanvas Design

I designed and developed FamilyCanvas, a functional web-based family calendar system built from scratch around a whiteboard metaphor (Figure 1.1).

FamilyCanvas was built around a whiteboard metaphor because the design challenge extended beyond scheduling alone to include awareness, lightweight communication, and participation by family members of different ages. During the autobiographical design process, early discussions and observations suggested a need for a shared family surface that could support these activities within a single household.

Alternative approaches were considered, including structured digital calendars and communication-oriented systems. However, structured calendars primarily support event management, while communication systems focus on message exchange rather than maintaining persistent visibility of family activities.

In contrast, a whiteboard provides a flexible shared space where schedules, reminders, drawings, notes, and photos can coexist within a single view. It also offers a more accessible interaction style for family members of different ages, particularly children, compared to the rigid event-entry structures common in commercial digital calendars. These qualities made the whiteboard metaphor particularly suitable for exploring coordination and awareness practices in blended family households.

The features described below were not specified in advance. Rather, they emerged iteratively through the autobiographical design process as observations, challenges, and opportunities for refinement arose during everyday use. In the following sections, I describe the design features and explain how the design evolved based on autobiographical design usage.

3.2.1. Location and Device

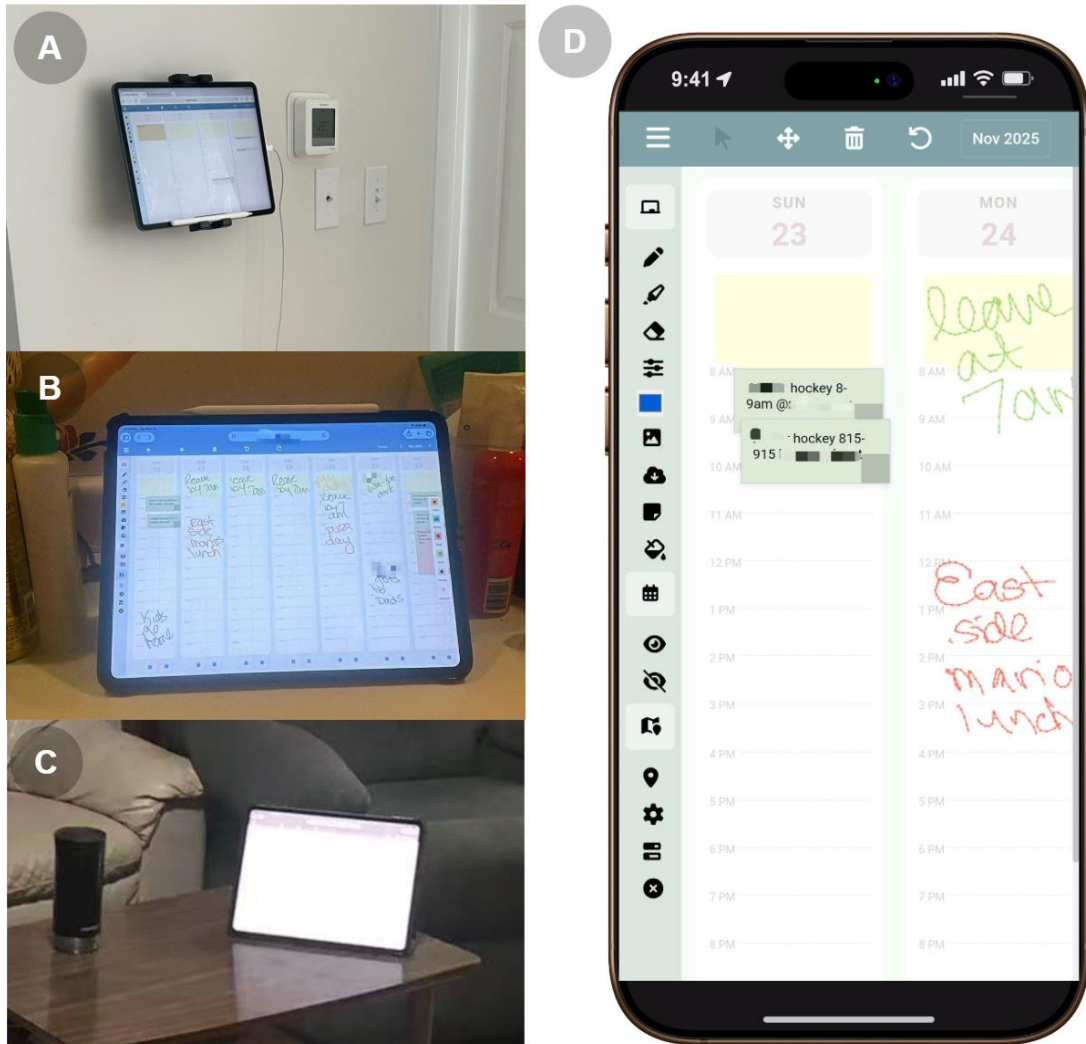


Figure 3.1 FamilyCanvas deployment contexts supporting shared awareness in high-traffic home areas at home and remote access. (a) Wall-mounted display; (b) Bathroom counter display; (c) Coffee table display; (d) Phone access.

The FamilyCanvas was designed to be part of everyday life at home. With an iPad stand or case, users can place it almost anywhere in their home. I first deployed it on a wall-mounted, always-on iPad placed in a high-traffic area of the home - a wall in a hallway near the front door of the house and next to the kitchen and stairs to upstairs bedrooms (Figure 3.1 A). This setup supports at-a-glance awareness through physical presence (Australian Institute of Family Studies, 2023; Neustaedter & Sengers, 2012a); that is, family members could simply walk by the calendar on their way from their bedroom to the kitchen in the morning, or on their way to the front door as they come

and go from the house. I also designed the FamilyCanvas to be accessible anywhere. Family members can use it at home, at work, and when living apart. For example, children can access FamilyCanvas through a mobile phone (Figure 3.1 D). To support this, I designed and built the system as a website and deployed the server in the cloud, allowing access across devices and locations. This aspect of the design assumed that individual family members had access to a suitable device. Children without smartphone access could still participate through the shared household display, but could not independently access FamilyCanvas while away from home. This setup remained the same throughout the study.

Note that FamilyCanvas was deployed only within the participating blended family and was not connected to the co-parent's home. This decision reflects relational sensitivities and coordination boundaries documented in prior work on co-parenting relationships, where communication between households may be constrained. Rather than assuming direct inter-household integration, the design aims to support awareness within the home and remotely when children are away at the ex-spouse's home.

3.2.2. Whiteboard Metaphor

As shown in the interface of the FamilyCanvas (Figure 1.1), my system consists of a calendar in week view overlayed with a whiteboard on top of it. In addition, there are various tools on the left that allow a person to interact with the calendar. The bottom layer provides time-related structure, schedule and location information, while the top whiteboard layer allows users to write, draw, or place items freely. These layers support both structured scheduling and open-ended expression. In the next subsections, I describe each layer and how they work together in detail.

Whiteboard Interaction Layer

I initially considered building a calendar that had similar interaction features as commercial digital calendars, e.g., highly structured event entries, dropdown menus, and small touch targets. Yet I felt that such features would be difficult for younger users and make it more challenging for a family with users of multiple ages to adopt and use the system. In contrast, I felt that children would be more comfortable using whiteboard- or paper-based tools. Thus, in order to make scheduling more accessible for all family members, especially children of varying ages, I chose the whiteboard as the main

interaction format (Figure 1.1). Users can freely place and move three types of elements—notes, photos, and drawings—as events on the calendar using touch interaction or with a digital pen. Each item can be selected with the buttons on the left sidebar. For notes, users can add a note, change its color, and type text. For photos, users can select photos from the device. For both notes and photos, users can resize and move them on the whiteboard freely. The drawing icons provide a pen, marker, and eraser, along with options to adjust the stroke thickness and color.

With this design, users can visually arrange events and drawings on the whiteboard in their own way, without relying on structured forms or typed input alone. I felt that this would make the interface more intuitive and flexible for younger users. For example, Figure 1.1 shows how different element types are used to represent family activities in everyday planning (by one of the field study families). On Nov 16, two inserted photos of sports schedules are positioned in the morning portion of the day. On Nov 21, a blue drawing reading “[one child] goes to Dad’s” appears in the afternoon area, informally marking the child’s transition to Dad’s house. On Nov 22, a green note reading “Pickup food ...” is placed between 1-4 pm as a quick household reminder.

Calendar Information Layer

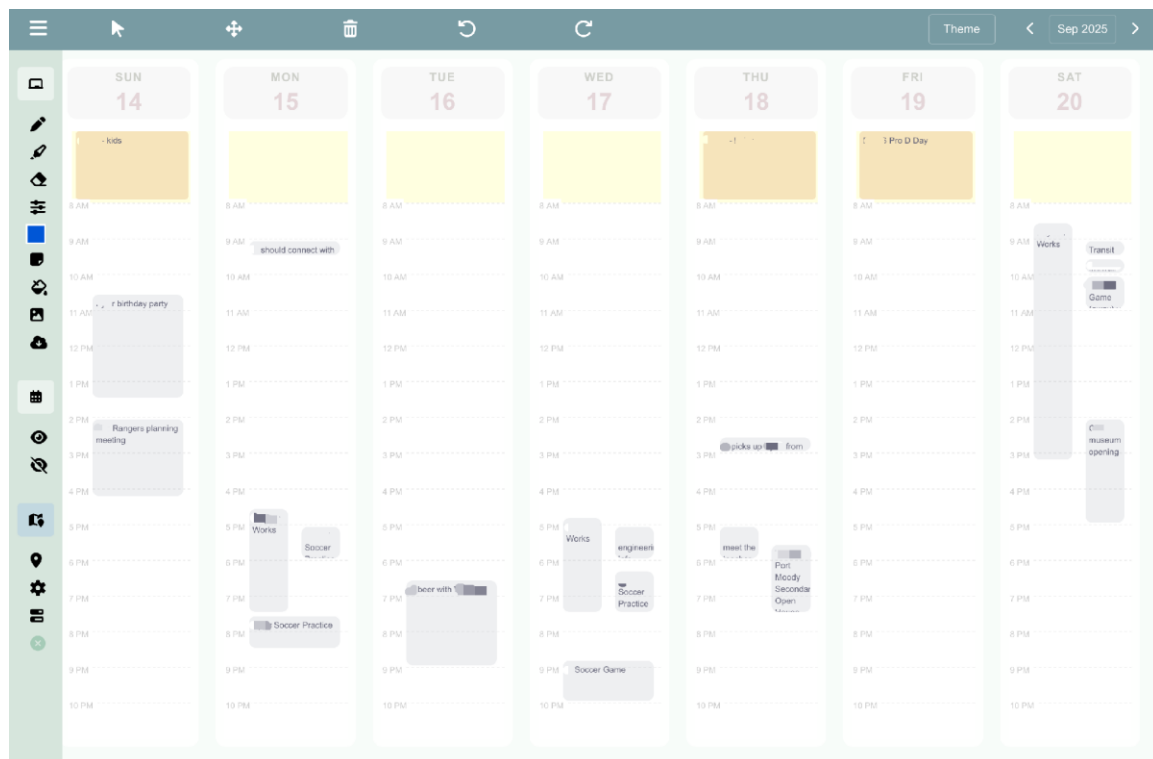


Figure 3.2 The calendar information layer of FamilyCanvas.

I added a calendar week grid underneath the whiteboard to provide visual time cues and scheduling references (Figure 3.2). Users can move between weeks and months using the buttons in the top right corner of the screen. When loading, the system automatically transitions to the current week and time. Users can also choose to turn on or turn off the calendar grid layer through the buttons on the left sidebar of the screen.

Time Details. To help users better understand when events occur, I added time labels and visual markers to the calendar background. In my initial version, the calendar background only showed seven-day columns spanning from Sunday to Saturday without time labels. The rest of the space was blank to give users freedom in placing items. However, this made it unclear when events happened, especially for parents who were used to hour-based schedules. To make the calendar easier for all family members to use, I added hour-based references such as time labels and subtle visual lines. While this layout resembles commercial calendar grids, the main difference is that users are not constrained by it when they enter events. They could, for example, write across several days at a time, much like a paper calendar. They could also write handwritten messages for other family members on the calendar. The time cues are just background hints and do not break the whiteboard into rigid time blocks. This preserves the freedom of interaction for all users.

Auto-Scrolling to Today. The calendar shows seven-day columns visible on the iPad screen at home, while a one-/two-day column is visible on mobile phones. During the autobiographical design deployment, I observed that family members typically glanced at the calendar while passing by rather than actively navigating through it. Because FamilyCanvas was intended to support lightweight, at-a-glance awareness in shared household spaces, requiring users to manually scroll to the current day introduced unnecessary effort and reduced visibility of upcoming activities. To address this issue, I added automatic horizontal scrolling. Whenever possible, today's column is positioned near the center of the visible display. The system automatically scrolls to the current day when loaded, reducing the need for manual navigation. Aligned with the “at-a-glance awareness” principle for digital calendars (Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006), this design helps users quickly see what’s coming up as they walk by.

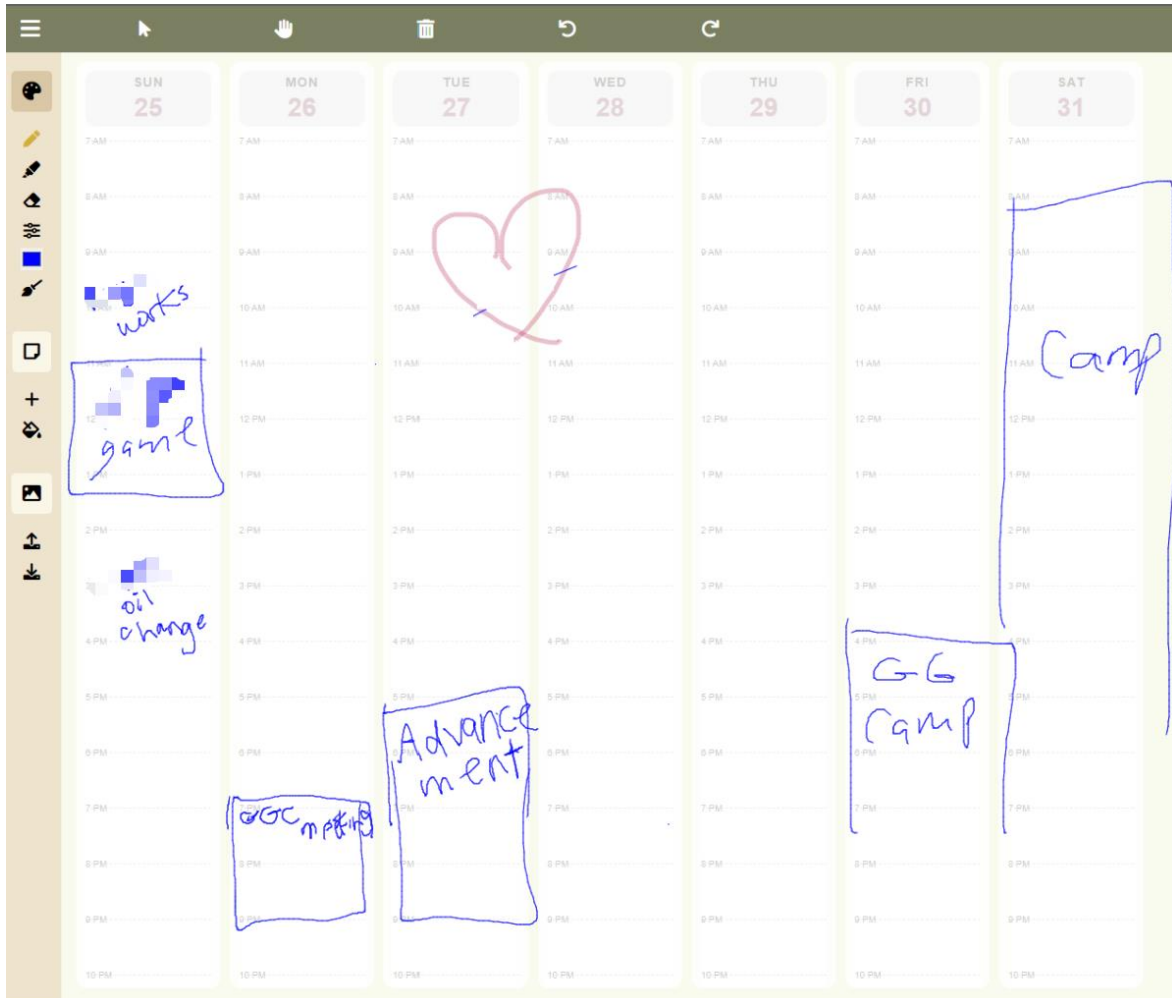


Figure 3.3 In a version among the iterations, the mother tried to draw the events from the existing Outlook calendar on the FamilyCanvas.

Synchronizing an External Calendar. If users already utilize a different calendar that holds personal or family events that they want to show family members in the home, they can connect to an external calendar (e.g., Google Calendar, Outlook) and events are populated in the calendar grid layer. Initially, I hoped the FamilyCanvas could fully replace the parents' existing shared calendar. However, in the autobiographical design usage, I found that the parents preferred to integrate their existing Outlook calendar that already contained family events as a 'base layer', which was already easily visible for them at work but not visible for the kids. In Figure 3.2, 'full-day' events appear as orange blocks in the upper yellow sections of the days, while other scheduled items are rendered with standard time-aligned grey blocks. As a base layer, parents could then annotate the calendar on top with ink annotations, photos, and notes. This also reduced the need for the parents to manually copy events from their

existing calendar onto the FamilyCanvas for their children to see. Figure 3.3 shows an observed instance prior to the introduction of calendar synchronization, where the mother from the autobiographical design family manually recreated events from an existing Outlook calendar directly onto FamilyCanvas using ink annotations.

Location Information Layer

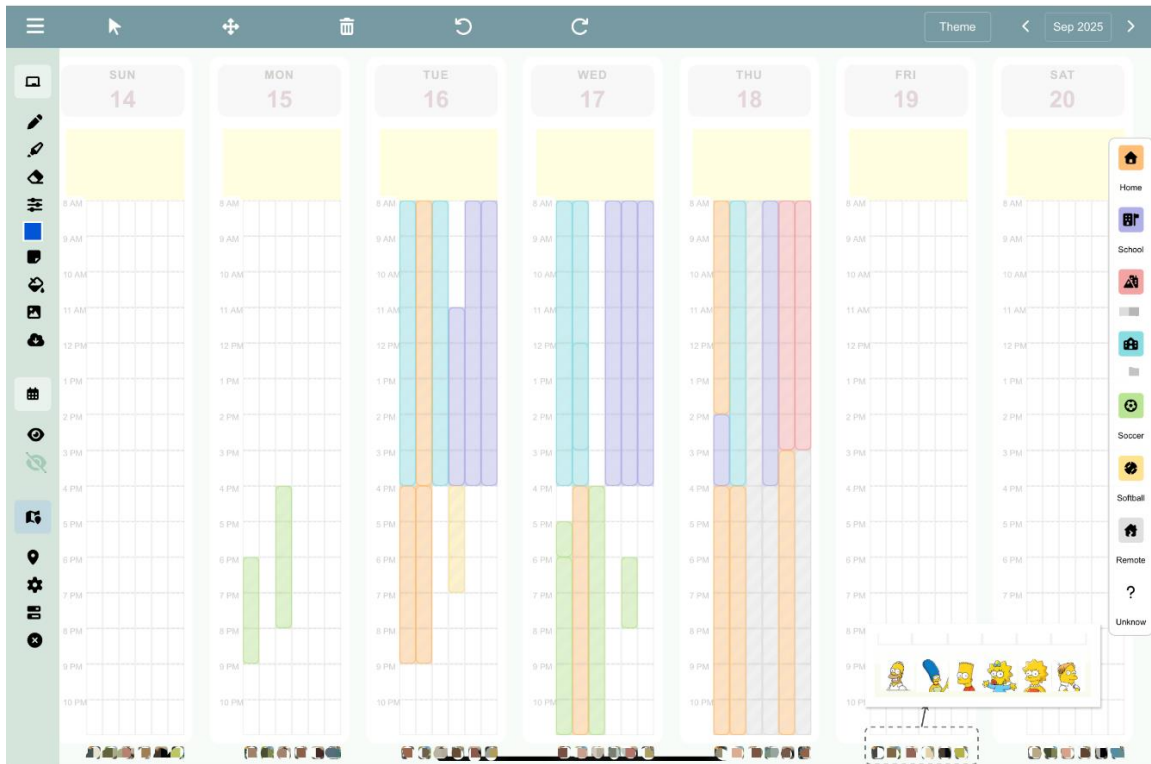


Figure 3.4 The location layer in the FamilyCanvas. Each day column includes family members' avatars aligned beneath their respective columns to indicate whose location timeline is displayed. The bottom-right inset magnifies this area for clarity. Avatars are replaced with cartoon characters to improve legibility and preserve anonymity.

To extend the FamilyCanvas from a purely temporal representation toward a spatiotemporal family overview, I added a location layer beneath the whiteboard layer (Figure 3.4). It makes family members' locations visible within the calendar and supports anticipation of moments of co-presence or separation. Users can toggle between viewing, editing, rule-setting, and hiding this layer via the left sidebar.

Location Grids. Approximately three months into the autobiographical design deployment, I observed that children were less interested in shared events but more curious about where family members were, both at present and in the coming hours.

For example, one child wanted to know where the parents were in case she wanted a ride to a friend's house. These observations led us to develop a spatial, location-based extension of the calendar, inspired by the Whereabouts Clock (Sellen et al., 2006), which supported lightweight awareness of family members' location. Given the family's needs, I added a location layer that allowed family members to enter where they planned to be each day. Each day contains a grid that displays each family member's location (represented by avatars at the bottom) across the day's hours. A color-coded legend on the right lists predefined locations (e.g., home, school, work, the other home). Users can indicate and plan their locations by selecting a color and "drawing" directly on their personal column using touch or pen input, representing continuity or transition of location over time. This approach supports at-a-glance awareness and flexible, low-effort input. For example, Figure 3.4 shows the week view of the location layer. Within each day, family members occupy individual vertical columns aligned with the calendar timeline. On September 16, the first column corresponds to the father, with a blue band indicating planned presence at work during those hours. Columns 4, 5, and 6 correspond to a child, where the purple band denotes school attendance between 8:00 and 16:00.

Create Recurrence Rule

1 cells selected

Start
Aug 12, 2025

End (optional)

Frequency
Weekly

Days (week)
☐ Sun ☐ Mon ☒ Tue ☐ Wed ☐ Thu ☐ Fri ☐ Sat

Note: Exceptions are managed via Delete → "Delete this".

Cancel Apply

Figure 3.5 The window for rule setting.

Rule-setting for Recurring Location. I also observed that many location patterns were highly repetitive. For example, children often attended the same school during weekdays, while parents followed regular work schedules. Manually entering the same locations each week created unnecessary maintenance work and reduced the practicality of the location layer for long-term use. To reduce the maintenance burden associated with repeatedly entering the same locations, I added a recurrence pattern

similar to that of setting recurring schedule events in commercial digital calendars. Users need to select the rule setting mode first, and similar to the editing mode, users can choose a location color button and draw a line on the location grids in their personal place. Once finished, a window for rule setting pops up (Figure 3.5) and allows users to set the recurrence pattern (e.g., daily, weekly, monthly). For example, as shown in Figure 3.5, a user can set a location rule to recur weekly on selected days (e.g., Tuesdays) starting from a specific date.

Annotating on the Calendar

Users are able to annotate the whiteboard layer of the calendar by drawing and writing to provide additional information or communicate changes (e.g., schedules, locations). I incorporated annotation because prior studies of family calendaring have shown that informal markings, handwritten notes, and lightweight annotations are commonly used to communicate changes, reminders, and contextual information that may not fit well within structured calendar entries (Neustaedter & Bernheim Brush, 2006). These informal annotations can support family awareness and coordination by drawing attention to changes in routines and activities. Building on this work, I designed annotation as a lightweight mechanism for communicating schedule or location changes within the household. Annotation was also intended to create opportunities for children to participate in family calendaring practices through drawing, marking important dates, or adding personal content. Such interactions could potentially help children engage with family activities and schedules in a more personal and accessible manner.

3.3. Expected Usage Practices

Through the autobiographical design process, I developed expectations about how the FamilyCanvas might be used in everyday family life. These expectations were shaped by prior research on family calendars as shared household artifacts, as well as personal experiences with paper calendars and commercial digital calendars. In particular, the whiteboard metaphor, hallway placement, and remote accessibility were intended to support lightweight family awareness and collaborative scheduling across household members.

Based on these design intentions, I anticipated several forms of usage:

- ***At-a-glance awareness.*** Because the calendar was placed in a high-traffic location, chosen by the family themselves (i.e., near the kitchen and front door), I expected all family members to glance at it regularly when moving through the home.
- ***Remote access when children were away.*** Given that the system was accessible via mobile devices, I anticipated that children might occasionally check the calendar remotely when staying at the other parent's home. That is, I thought they may be interested in knowing what was happening at one of their homes when they weren't there (due to joint custody and living in two different homes), or what was upcoming in their schedule once they were back.
- ***Informal family communication.*** The whiteboard layer allowed writing and drawing that was not tied to specific events. I expected family members to use this space to leave messages or reminders for one another.
- ***Collaborative calendar maintenance.*** I expected that maintaining the family calendar would become a shared household practice, where multiple family members, including both parents and children, would contribute to adding, updating, or checking activities as part of everyday family routines.
- ***Sharing photos to show activities at home.*** The system allowed photos to be placed on the calendar. I expected family members might share photos of activities happening at home so that children who were presently at the other parent's home could remain aware of what was happening in the household.

3.4. Reflections from Autobiographical Use

During the nine-month autobiographical design usage, many of these anticipated practices did not emerge in the ways I expected. For example, while the calendar was placed in a central hallway location to encourage frequent glancing, family members rarely stopped to look at it during everyday movement through the home. The children were less interested in looking at the calendar to see what might be upcoming. Instead, they continued to routinely ask the parents about activities or use their understanding of previous weeks to know about events for the current week (e.g., recurring soccer practices on Monday evenings).

Similarly, although the system allowed collaborative event entry, most scheduling actions were carried out by the parents rather than by the children and the children did not draw or write on the calendar or leave other information as I had expected. I also anticipated that the children might occasionally check the calendar remotely when staying at the other parent's home, reflecting the parents' thinking that the children would be interested in knowing what was happening at the other home when they weren't there or what was upcoming. Instead, remote access did not occur and I found that the children focused primarily on activities in the home they were currently residing in, rather than what was happening in the other household. I also expected that family members would use the whiteboard layer to leave informal messages or share photos. However, this, too, did not occur.

These observations highlighted gaps between my design expectations and actual family practices. At the same time, they provided an early sense of how families might appropriate the system in everyday life or the ways in which they would not. In particular, my observations suggested that calendaring practices in blended families may be more organizer-centered and less collaboratively distributed than I initially expected. Moreover, they suggested that while the parents thought that remote access to the calendar by the children would be valuable when they were at their other home, it may not represent a strong need. These early reflections informed my subsequent field study, where I explored how other blended families might similarly adopt the system. I was curious whether the experiences and usage I saw as a part of the autobiographical design work were more prevalent, especially given that I had designed the FamilyCanvas based on prior literature that suggests these design features would be valued and used by family members, including children. As such, I wanted to use a field study to see if findings with the autobiographical design family were exhibited by other families not connected to the research team and what implications this would have for the design of digital family calendars.

By this stage, FamilyCanvas had evolved through multiple iterations into a stable and functional system that supported everyday use within the autobiographical design household. Rather than treating the system as a finalized solution, I used it as a research instrument to examine whether the usage patterns and practices identified during the autobiographical design deployment would also emerge in other blended family contexts.

3.5. Summary

This chapter described the autobiographical design process through which FamilyCanvas was developed and refined during a nine-month deployment in a blended family household. FamilyCanvas combined a shared household display, remote access, a whiteboard-based interaction layer, calendar synchronization, and location information to support lightweight awareness and participation among family members of different ages.

Reflections from autobiographical use revealed important gaps between expected and actual practices. Calendar maintenance remained largely parent-led, children rarely contributed or accessed the system remotely, and the shared display did not automatically become part of everyday household routines. The resulting system was subsequently deployed with two blended families to examine how they appropriated it in everyday life and what broader design considerations emerged in practice.

Chapter 4. Field Deployment

I wanted to understand how FamilyCanvas would be used by a broader set of families beyond the autobiographical design household, so I conducted a field study with two blended families. The autobiographical design family described in Chapter 3 did not participate in the field deployment and is not included in the findings reported in this chapter.

My goal was not to generalize findings from the autobiographical design process, but rather to examine how blended families appropriated the system in everyday life and how broader design considerations emerged in practice. In particular, I was interested in how families managed participation across adults and children, how awareness and coordination were maintained within and across households, how privacy and visibility concerns influenced use, and how FamilyCanvas fit alongside existing scheduling and communication practices. The field study therefore focused less on evaluating individual features and more on understanding the social, relational, and practical factors that shaped family coordination and connection through the system.

This chapter addresses Research Questions 1, 2, and 3 and Objectives 1 and 2 by examining how FamilyCanvas was used in real-world settings through a field study with two blended families. Next, I introduce the field study process, including recruitment of participants, data collection and analysis, as well as the results.

4.1. Recruitment and Participants

I recruited two additional blended families from social media. Potential families who answered my study advertisement were asked initial questions to allow me to learn about them and their scheduling patterns with their blended families. The two field deployment families used the FamilyCanvas within their homes over a period of five weeks. All families were told to set up and use the FamilyCanvas as they naturally saw fit. This included selecting its location and using the system as desired. All families were located in North America.

Family	Parents	Biological Children	Age	Custody / Living	Children's Smartphone Use	Calendar
Family 1	Father	Daughter	9	Joint custody (bi-weekly weekend)	No	Mother keeps a private personal calendar
		Son	11		Yes	
	Mother	Son	9	Full custody (visit father occasionally)	Yes	
	Shared	Son	8	Full custody	No	
		Son	1.5		No	
Family 2	Father	Son	22	Living independently (visit father on weekend)	Yes	Personal calendar
	Mother	-	-	-	-	Paper calendar
	Shared	Son	13	Full custody	Yes	Textbook memo

Table 4.1 Overview of the demographic information of the two blended families participating in the field study.

Table 4.1 shows the demographic information of the two blended families. While recruitment focused on blended families with children, FamilyCanvas was designed as a household technology intended to support awareness and participation across family members of different ages and roles. As a result, participating households included family members across a broader age range, including younger children and adult children.

Children were included not only as sources of data about family life, but also as household members who could potentially benefit from access to shared scheduling information. FamilyCanvas was intended to provide children with greater awareness of what was happening and what was coming up in their household, while offering opportunities to contribute their own activities, reminders, and preferences. Such participation could support age-appropriate agency in family coordination and help children gradually develop familiarity with scheduling and planning. For younger children who might not yet understand abstract calendar structures, lightweight interactions such as drawings, photos, and handwritten notes provided more accessible ways to engage with family activities and routines. These benefits were understood as opportunities

rather than assumed outcomes, as children's interest, understanding, and participation could vary across ages and families.

Family 1. This blended family consists of two parents and five children. The parents share two biological children and live with them full-time. The father has two biological children from a previous relationship, who stay with him every other weekend under a joint custody arrangement. The mother has one biological child from a previous relationship, who primarily lives with her and visits his father occasionally without a fixed routine. The family lived in a multigenerational household with the maternal grandparents, sharing the living room and kitchen while having a separate washroom primarily used by the nuclear family. To manage family schedules, the mother keeps a private personal calendar that is not shared with other family members.

Family 2. This blended family consists of two parents and two children at different life stages. The blending in this family arises from the father's involvement with children from different relationships. The father has one adult son from a previous relationship who lives independently and visits him on weekends, and one younger son shared with his current partner. Calendar practices in this family are fragmented: the father relies on a personal digital calendar to manage his schedules, the mother uses a paper calendar to manage family schedules, and the shared child primarily tracks school activities through a textbook memo.

4.2. Deployment Procedure and Setting

Following recruitment, each family participated in an initialization session where FamilyCanvas was introduced and installed on a shared iPad. During this session, I demonstrated the main functions of the system, and families were encouraged to ask questions and familiarize themselves with the system.

Families were asked to place the shared iPad in a high-traffic location within the home where they felt it would be visible and accessible for everyday family use. No specific placement requirements were imposed, and families selected the location themselves based on their household routines and spatial constraints. Participants were encouraged to use FamilyCanvas as they naturally saw fit and were free to incorporate it into their existing scheduling and communication practices.

The deployment lasted five weeks. During this period, families continued their normal routines while using FamilyCanvas in their homes. I conducted four semi-structured interviews with each family: one during the first week of use, one during the second week, one at the end of the five-week deployment, and a follow-up interview one week later. These interviews were used to understand evolving usage practices, perceptions, and challenges over time.

4.3. Data Collection and Analysis

Data were collected through semi-structured interviews, system usage logs, and logistical communication with families during the deployment. All interviews were conducted by me via Zoom, while research group members reviewed and refined the interview protocol. Each interview lasted approximately 30-60 minutes. Example questions asked about families' existing scheduling and communication routines, how and why different members used (or did not use) FamilyCanvas, moments of confusion or breakdown, if and how the system supported planning and staying connected, and suggestions for improvement.

The interview protocol was developed iteratively based on the research questions, insights from the autobiographical design phase, and prior literature on family calendaring, remote communication, and blended family relationships. Questions focused on understanding existing scheduling and communication practices (RQ1), experiences with visibility and access across household members and devices (RQ2), and sensitivities surrounding cross-household coordination and information sharing (RQ3). Additional follow-up questions were introduced later in the deployment to probe unexpected findings from the autobiographical design and early field deployment, such as informal communication, remote awareness, and cross-household visibility. The complete interview protocol is provided in Appendix F.

Interviews were conducted with the family member most engaged with the system use, while allowing opportunistic contributions from others when appropriate. In Family 1, the mother served as the primary interview participant, as she was the main household coordinator and the most consistent system user. Children were occasionally present during interviews but did not serve as primary respondents. Perspectives on other family members' usage and reactions were reported through the mother's

accounts when relevant. In Family 2, the younger child (aged 13) was the primary interview participant, as the system was closely tied to his daily routines. His father was present during interviews and contributed occasionally when the discussion related to household coordination.

Between interviews, I maintained contact with families via Facebook Messenger for logistical support (e.g., troubleshooting technical issues and scheduling interviews), rather than for systematic data collection. System usage logs were also collected throughout the study to capture interaction patterns.

Each family received a \$200 honorarium for participation. All interviews were audio-recorded and transcribed verbatim in English. I conducted open and axial coding on interview transcripts and usage data, generating codes that reflected a range of usage patterns. Through iterative comparison across interviews and families, related codes were grouped into higher-level categories. These categories were then combined through a selective coding process to create the themes reported in the results. Not all interview questions resulted in reportable findings. Rather than treating interview questions as predefined analytic categories, questions served as prompts to elicit participants' experiences and reflections. Themes were generated inductively across interviews and data sources, and only those that were sufficiently supported by recurring observations, interview accounts, or usage patterns were included in the reported findings.

System usage logs were used primarily as contextual and triangulation data. They helped verify patterns reported in interviews, such as feature adoption and participation across family members, and were consulted when interpreting interview accounts. To enhance credibility, emerging interpretations and findings were discussed regularly with my supervisor throughout the analysis process. This process helped challenge assumptions, refine interpretations, and identify consistencies and discrepancies across data sources.

This study, including the autobiographical design phase, self-usage, and field deployment, received approval from the Research Ethics Board of SFU. Adult participants provided informed consent, while assent forms were obtained for participating children. Participation was voluntary, and families and children were not

required to use particular features or contribute in predetermined ways. All data was anonymized to remove identifying information.

4.4. Results

4.4.1. Scheduling and Connections Prior to FamilyCanvas

To address RQ1, I first characterized the scheduling and connection practices of the two blended families prior to adopting FamilyCanvas. Participants described demanding routines, uneven coordination responsibilities, asymmetric information visibility, and fragile cross-household communication. I will elaborate on these points next.

Heavy and Uneven Scheduling Labor

Across the two field study families, I was told that, prior to the start of the study, family scheduling required substantial day-to-day effort, such as keeping daily routines on track, tracking children's activities, and coordinating transitions across households under co-parenting arrangements. However, this labor was not evenly distributed. In Family 1, scheduling was strongly mother-centered and spanned multiple parenting arrangements, placing sustained coordination demands on her. Reflecting on the family's scheduling practices prior to the deployment of FamilyCanvas, the mother described how *"it ends up being me managing a schedule and just having to tell and remind everybody else about what it is on"*, with other family members relying on her to keep plans aligned, including the father frequently asking her about family arrangements rather than proactively tracking plans or contributing to family-level coordination. In contrast, Family 2's scheduling labor was more distributed, as the adults maintained their own personal digital calendars and a younger child (aged 13) used a school planner, while the mother managed a shared paper calendar placed in a common space at home. Despite a simpler family structure, coordination work remained necessary, particularly when plans changed or required negotiation among family members. For example, family members still needed to verbally confirm activity times, coordinate pick-ups and drop-offs, arrange a family dinner with the non-residential adult child (aged 22), and reconcile information across various calendars when discrepancies or last-minute changes arose.

Asymmetric Scheduling Information Visibility

Across both families, scheduling information was unevenly visible across family members prior to the introduction of FamilyCanvas, and especially across household boundaries in co-parenting contexts (e.g., between the two homes that the children resided in). Children often did not have direct access to shared scheduling information and instead relied on parents to interpret, relay, and confirm upcoming plans. In Family 1, co-parenting arrangements complicated visibility, as scheduling information was shared through separate communication channels across households. In practice, each co-parent household maintained its own calendaring systems and routines, and these were not integrated into a shared calendar. As the mother described, *“my ex-spouse will make plans with [our son], but they won’t necessarily tell me until the last minute”*. The father from Family 1 also coordinated separately with his former partner about their children, and these arrangements were likewise not routinely communicated to the mother. As a result, the mother who managed most day-to-day scheduling at home sometimes planned family activities without knowing key commitments involving the stepchildren or ex-spouse, learning about them only after or shortly before they occurred. These parallel coordination channels without transparent visibility increased last-minute surprises and additional coordination efforts. In Family 2, scheduling information was distributed across multiple personal and shared artifacts, including adults’ personal digital calendars, a child’s school planner, and a shared paper calendar managed by the mother primarily as a personal reminder rather than used by other family members, resulting in fragmented visibility of family schedules rather than a single shared view. Thus, family members confirmed plans through conversation even when entries existed elsewhere, often resulting in coordination breakdowns.

Unstable and Restricted Remote Connection

Remote communication across households (of the divorced parents of the children) was often unstable and constrained by both relational and technological factors. In Family 1, participants described how co-parenting dynamics limited opportunities for sustained remote connection, particularly when the ex-spouse was unwilling to keep communication open. The mother noted that, *“[her husband] doesn’t really get to communicate with his kids. His ex does not like to keep the communication open, so he kind of gets vague messages now and then to know what’s going on, but for the most part, we kind of get updates from [the kids] when they actually get here”*. The

children also only became aware of activities in the other home, but only *“if they explicitly asked”*. This resulted in limited access to updates and communication with the stepchildren (aged 9 and 11) and her son (aged 9) outside of residential periods. Practical barriers further contributed to a lack of access, including situations when children’s mobile phones were unavailable, broken, or uncharged when they were in the other household. As the mother shared, *“that was part of the problem, my ex kept breaking his phone, or whatever, and then I couldn’t get a hold of my son, and sometimes I do notice they will conveniently forget to charge [my son’s phone] when he’s there so that [my son] can’t use it as much, but for the most part, he doesn’t restrict it very much.”* These constraints made remote connection fragile and situational, highlighting that challenges in cross-household coordination stemmed not only from a lack of shared tools, but also from relationship structures and everyday challenges. In contrast, the father in Family 2 described using messages and calls to negotiate schedule changes with the son who did not live with them (aged 22), reflecting how remote communication can be more viable when relationships and access conditions are less restricted.

4.4.2. FamilyCanvas Usage and Appropriation

Throughout the field study, the two families did not make use of the full features of FamilyCanvas. Instead, they prioritized lightweight and flexible whiteboard-based interactions that were easy for both parents and children to engage with, and integrated the system alongside other existing calendaring tools rather than treating it as a standalone system. I will elaborate on these points next.

Whiteboard Interactions are Central.

I began my design process and self-use with the assumption that lightweight, flexible, and child-friendly interaction would be important in the design. This was implemented with the whiteboard interaction layer. I saw this emerge in the study families as being true, where, across families, what mattered most in everyday use was whiteboard-based interactions that lowered the threshold for participation. Such input was repeatedly valued, including handwritten annotations, color-coded notes and pictures, as a quick way to externalize plans without the interaction overhead typical of

structured calendar input in conventional digital calendar systems (e.g., clicking and selecting time slots, typing event entries).

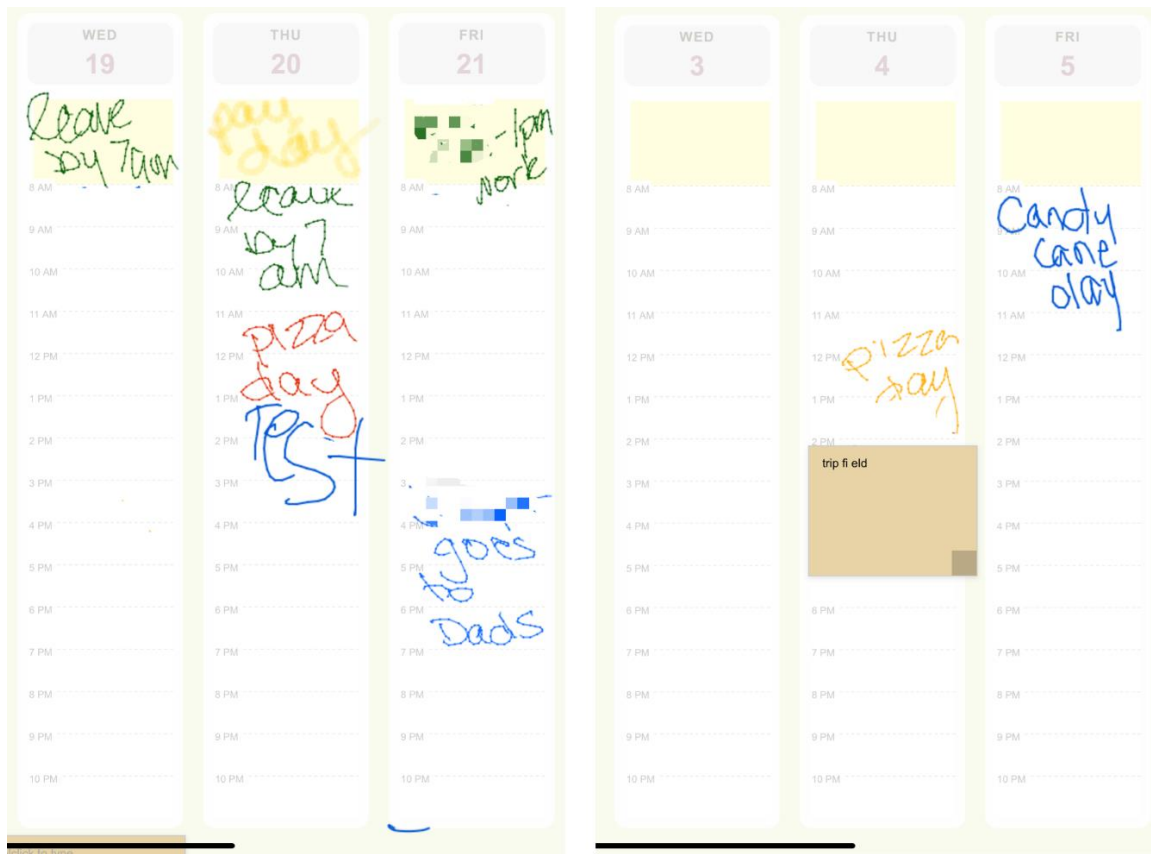


Figure 4.1 Examples of a child adding schedules to the calendar. A child added a test reminder on Friday by drawing directly on the calendar (left), and a field trip reminder on Thursday by adding a note (right).

I had designed FamilyCanvas to simplify interactions for children, while maintaining usability for adults. Importantly, the goal was not to shift primary scheduling responsibilities from parents to children. Rather, the design sought to lower the threshold for participation, allowing children to contribute lightweight annotations, reminders, and personally meaningful information while parents might remain the primary coordinators of family activities. I saw that this design feature was valued across both families. In Family 1, the mother engaged the system through various ways, while the children started using the drawing and notes functions to write down events that were happening. The mother described: “[my son] liked to review it and added his own stuff just by hand, recording personally meaningful items such as a test reminder” (Figure 4.1). In Family 2, the child (aged 13) used the notes function mostly, describing scheduling events through

keywords. In particular, he highlighted the convenience of editable digital writing compared to his paper notebook, which was used as a school planner. He noted FamilyCanvas was *“really easy to just write something, and if you make a mistake, you just erase it and there won’t be any pencil marks”*. This pattern differed from my earlier autobiographical design experience. In the autobiographical family, children rarely interacted with the calendar directly and did not draw or write on the whiteboard layer as I had expected. In contrast, children in the field study families engaged with these lightweight interactions, using drawing or short notes to record personally meaningful events.

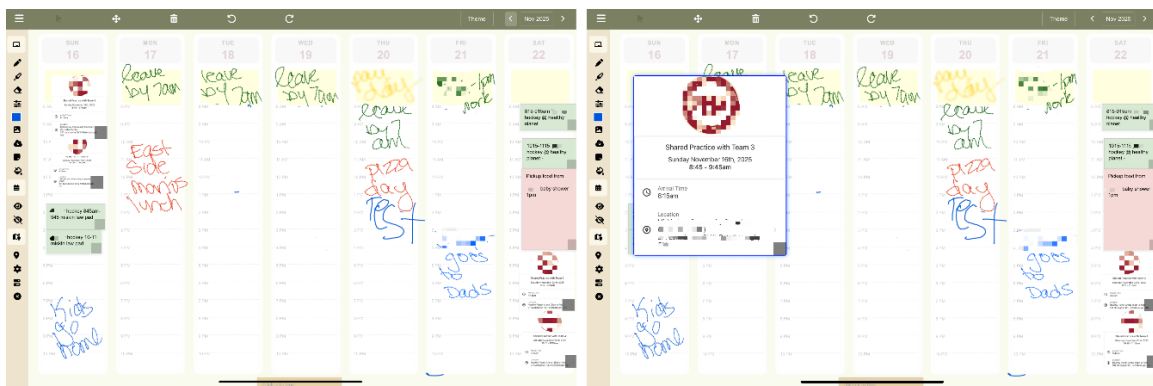


Figure 4.2 An example of using photos to carry scheduling information. A poster of the sports schedule has been added directly to the calendar (left) and can be enlarged to view detailed information such as time and location (right).

FamilyCanvas also enabled low-effort and immediate input through photos as lightweight information carriers, without demanding complex input. That is, instead of rewriting detailed information, people could use photos to display information or indicate events. This feature was used in Family 1, where the mother added the posters for sports events to the corresponding date and time to the calendar directly. She shared that, *“it was easier for me to add the photos, and they [family] could zoom in to check the exact time and location when needed”* (Figure 4.2). This practice revealed the preference for immediate interaction and quick awareness. These interaction practices and preferences were related to age and usability, while also reflecting everyday family coordination more broadly. In blended families, complex and dynamic schedules may further increase the value of whiteboard-like input by reducing the effort required to edit or check information in the calendar. Such simple and easily editable interactions made

it easier for children to contribute and allowed family members to adjust plans that might change later without requiring much effort.

I also expected informal communication through the whiteboard layer that was not tied to specific events. That is, I thought family members might leave handwritten messages or reminders for one another, akin to how one might write a note on paper and leave it out for a family member to see. Participants across families saw value in this function. For example, the mother in Family 1 left a message saying *“mom working late”* on one specific day. She explained that such a note helped her children anticipate changes in her routine, especially when the exact timing was uncertain. This was particularly important for supporting her child’s emotional regulation, as knowing that she would be home later helped reduce anxiety and provided a sense of predictability. Similarly, the father in Family 2 emphasized that such messages could serve as non-intrusive reminders embedded in the home environment, noting that they could be placed in a visible location and *“seen whenever people pass by”*, rather than being delivered through direct interruptions like phone calls or messages. This made them especially useful in situations where immediate communication might be inappropriate (e.g., when someone is sleeping or in a meeting). In addition, compared to instant messaging, participants highlighted further distinct advantages of whiteboard-based informal communication. While instant messaging allows direct and immediate delivery, it was not always effective for children who did not consistently check their messages. The mother in Family 1 noted that the shared display occasionally attracted more attention because of its novelty and visibility in the home. The father in Family 2 similarly noted that it enabled a form of persistent and ambient awareness, where *“information could be repeatedly encountered in a conspicuous shared space”*.

However, several practical constraints limited the use of such informal communication. In Family 1, the calendar interface was often perceived as already busy, which discouraged adding extra notes. The mother noted that, *“I sometimes avoided adding informal messages because I was unsure whether others would read them clearly”*. In Family 2, people were already accustomed to using instant messaging group chats for everyday communication. This suggested that the perceived usefulness of informal communication on FamilyCanvas did not necessarily lead to real-life practices that were influenced by practical constraints, such as interface design and existing communication habits.

Field study families similarly did not use the location awareness features very often, if at all. For example, the mother in Family 1 explained, “*When I’m not at home, all the kids are not at home*”, making additional tracking of locations unnecessary. A similar observation occurred in the autobiographical design phase. Location awareness of the parents was thought to be important for teenage children, but after designing the feature, it was rarely used.

Function Within Calendar Ecology.

I began the design process and self-usage with the assumption that FamilyCanvas might serve as a shared household calendar that could complement or potentially consolidate existing calendaring practices. To support this possibility, the system allowed events to be added through multiple forms of input and also supported integration with external digital calendars so that family schedules could be surfaced into a shared display. Across field study families, FamilyCanvas did not replace existing scheduling practices and, instead, became part of a broader calendaring ecology. Participants continued to rely on commercial digital calendars, paper calendars, and school-issued planners for personal or institutional needs, while turning to FamilyCanvas when household-level visibility was needed. For example, the mother in Family 1 emphasized that her personal calendar was used mainly for reminders of recurring tasks, whereas FamilyCanvas made it easier to externalize household plans in a form the children could access. Similarly, the younger child in Family 2 described using a planner for school issues, while turning to FamilyCanvas to keep activities visible to other family members.

External digital calendars information remained largely personal in the two field study families and was not integrated into FamilyCanvas because they were seen as individually owned and less relevant to family coordination. This contrasts with the earlier observations in the autobiographical design usage, where the parents maintained a shared digital calendar and integrated it into FamilyCanvas for visibility by the children.

Therefore, rather than serving as a central or authoritative calendar, FamilyCanvas functioned as a complementary layer within families’ existing tool repertoires. It was used to surface selected plans into a shared domestic space, while other tools continued to support other scheduling expectations. This pattern shows that

family scheduling practices were distributed across multiple artifacts within a calendaring ecology, each serving distinct coordination roles.

4.4.3. Shared Household Awareness in the “Hallway”

Because families selected where FamilyCanvas would be placed within the home, the location of the shared display became an important factor shaping everyday awareness practices.. Given this placement, I anticipated that family members would regularly glance at the calendar as they moved through the home, checking upcoming plans as part of their daily routines and interacting with it when passing by. In practice, this expectation was partially realized in the field study families, suggesting that high-traffic placement could support routine checking in some cases, yet it was far more limited than I anticipated. In Family 1, the iPad was placed on the counter in a washroom (Figure 3.1 B) that the mother described as *“the best communal space we have that we would all go by and see”*. As they lived in a multigenerational household with extended family members, it was particularly suitable given the limited dedicated shared space. The mother reported that it became part of their routine that the children checked the system every morning when brushing their teeth. In Family 2, the iPad was placed on a coffee table in the living room (Figure 3.1 C) as *“everybody comes to the living room”*, supporting routine checking when passing by. For example, the child (aged 13) checked the system every morning when leaving home and every evening when back home.

This shared household visibility supported several aspects of everyday family life. Firstly, it enhanced communication effectiveness. In Family 1, the system reduced repetitive verbal check-ins by allowing family members to independently consult upcoming plans. The mother explained that FamilyCanvas *“solved my kids asking me what time it is, or when we are doing this”*, because they *“could just see the calendar”*. In this way, FamilyCanvas supported independently checking routines and reduced some of the emotional burden of repeated reassurance, particularly given co-parenting arrangements where children’s schedules spanned multiple households and were subject to frequent transitions.

Shared household visibility also supported smoother collaboration by reducing avoidable potential coordination errors, particularly when family members lacked access to others’ schedules previously. In Family 2, the child (aged 13) added many personal

extracurricular and family activities in FamilyCanvas. He described that the calendar provided a place where his schedules could be seen by others when needed. He contrasted this with prior coordination breakdowns, noting that before using the calendar, his dad *“would forget to send me to one of my extracurricular classes because he doesn’t know that I have a class”*, but with shared visibility, *“he checks it,”* and *“he wouldn’t forget”*.

Additionally, the calendar served as a useful resource for children themselves, helping them keep their minds in order, given their limited sense of time. In Family 1, the mother described how the calendar was particularly meaningful for reducing the anxiety of one child (aged 9). According to her, the calendar helped him *“calm down”* because, with scheduling information displayed in a public place within the household, he could check schedules independently or sometimes went to his mother *“just to confirm”*. Similarly, in Family 2, the child (aged 13) described a confirmation-first pattern as a novel usage pattern that suited his sense of schedules. Instead of planning everything in advance, he tended to add items after ensuring an activity would happen if plans were uncertain or frequently changed, or even after something had happened. Such usage for retrospective logging or verification reflected a strategy that helped children maintain a sense of order when schedules were fluid, even if other family members might not consistently consult the calendar.

However, while these observations suggest that high-traffic placement supports visibility, it did not necessarily lead to comfortable or frequent participation. For example, the washroom chosen by Family 1 raised questions about whether the space was accessible for all family members anytime, given its time-pressured and private nature. The mother also noted that the fixed location sometimes made updating harder, noting that, *“I plan to add something later and then forget”*. That is, access depends on whether one is physically near the system at the right moment. In the later stage of deployment, Family 2 also reflected that the kitchen may be a better place for more frequent interaction with FamilyCanvas compared to the living room. This was because the kitchen was found to be a high-traffic space in their daily routines, where family members naturally gathered and passed through more often. As the child explained, *“I think it’ll be in the kitchen, there’s a lot of people. Right now, I think people go to the living room less because our paper calendar is on the fridge.”* This suggests that

placements aligned with existing household routines and artifacts (e.g., the fridge as a calendaring surface) may better support ongoing participation.

These observations might help explain my earlier autobiographical design experience. In the autobiographical design family, although the calendar was placed in a hallway that everyone passed through daily, children rarely interacted with it, and I did not observe routine glancing behaviors. This suggests that high-traffic placement alone was insufficient to establish shared engagement without alignment with existing routines and practices.

Overall, shared household awareness through FamilyCanvas emerged in more limited and uneven ways than I had originally expected. While the calendar improved communication efficiency, helped reduce coordination breakdowns occasionally, and supported children's own awareness of schedules, it did not consistently function as a shared reference point for all family members. Despite these limitations, participants still valued the shared visibility the system provided. At the end of the field study, the mother in Family 1 gradually transitioned plans into a portable paper planner to cope with the loss of FamilyCanvas. She expressed a preference for the system and explained that the planner was more like a private calendar and could not be shared with other members, just like how FamilyCanvas functions.

4.4.4. Remote Awareness Across Households

Beyond the shared iPad placed in the home, FamilyCanvas also supported remote access through mobile devices. Given this design, I anticipated that children might occasionally check the calendar remotely when staying at the other parent's home. That is, they might be interested in knowing what was happening in one household when they weren't there (due to joint custody and living in two different homes), or what was upcoming in their schedule once they returned.

Participants perceived potential value in remote awareness. For example, the mother in Family 1 suggested that being able to view the family calendar remotely could help children feel more included in and connected to the household, even when they were not physically present. She described how such access could allow them to stay aware of ongoing activities, *"My stepson got a phone for Christmas. I know he would be*

more integrated within the family if he had something that would tell him what we were all doing. He would probably be like, 'oh, hey, I see you guys are doing this...' It might also potentially motivate participation and give them the opportunity to say, *"hey, I see what you're doing. I want to be there"*, such as attending a sibling's hockey game or seeing grandma on her birthday. Similarly, the father in Family 2 perceived the benefits for his son (aged 22) when living remotely during the weekdays. He noted that, compared to instant messaging, the calendar made it easier to see *"what is happening and when it is happening"*, providing a clearer temporal overview of household activities. He described this as offering a more structured and stage-based form of awareness, which he considered more effective than fragmented message-based communication.

However, in practice, remote access rarely became part of everyday use during the field deployment, consistent with what I observed in the autobiographical design study. Although children could log into the system, they seldom actually checked the calendar remotely. Several factors contributed to this limited adoption, which I describe next.

One-track-mind.

First, limited remote use was related to children's attentional patterns. The mother in Family 1 explained that children tended to focus on their immediate environment and often forgot about the other household when they were away. As she described, *"if the system was not right in front of them, they did not remember to check it."* She further noted that children were *"one-track-minded"*, meaning that when they were in one home, they rarely thought about the other, and thus did not actively seek out information about it. As a result, although they technically had access to the system, remote awareness did not emerge as a habitual practice, as it required deliberate effort rather than being embedded in their everyday attention. The mother further suggested that this pattern might change as children get older, as their attention and awareness of both households may develop over time.

Relational Constraints.

Relational dynamics within blended family contexts further constrained remote awareness across households. In Family 1, for example, communication with stepchildren (aged 9 and 11) was limited due to tensions with the co-parent, which

restricted opportunities for maintaining shared awareness. As a result, even when children had access to personal devices, communication channels were not consistently available. Similarly, the biological child of the mother (aged 9) occasionally brought his phone to his father's home, but the device was left uncharged. These dynamics were similar to the unstable remote communication patterns described prior to the introduction of FamilyCanvas (Chapter 4.4.1). In addition to access restrictions, concerns around privacy and conflict shaped what information could be shared. The mother in Family 1 expressed hesitation about making detailed household schedules visible in another home, noting that such visibility could trigger disputes between co-parents (e.g., conflicts over overlapping plans). She emphasized that these concerns were not only about privacy but also about avoiding potential conflict. She explained, *"I don't want my husband's ex to know exactly what we're doing and where we are... I can also see her starting a fight because we planned something that she wanted to do. Like, 'oh, I see you guys planned to go to the museum, but I wanted to take them to the museum.'"*

These considerations led to preferences for selective sharing. At one level, participants differentiated what information could be visible when the household calendar was accessed from another home. For example, the mother suggested that sharing children's activities (e.g., sports or lessons) would be acceptable and useful, while adult schedules were considered more sensitive and less appropriate to expose. At another level, participants also reflected on the possibility of negotiating with co-parents to share schedules across households. Thus, while the idea of a shared calendar with co-parents was seen as beneficial for coordinating children's activities, it was only considered feasible under constrained visibility (e.g., limited to children's events), due to concerns about privacy and potential conflict.

Practical Usability.

Practical usability constraints further reduced the likelihood of remote use of the FamilyCanvas. The mother in Family 1 noted that interacting with the system through a mobile browser was less convenient than using a dedicated application. In Family 2, the child (aged 13) explained that he did not access FamilyCanvas outside the home due to limited Wi-Fi access and because *"it's pretty hard to do on the phone as it's so small."*

Beyond interface limitations, the physical placement and visibility of the system also influenced engagement. The mother in Family 1 suggested that children were more

likely to use the system when it was consistently present in their environment. For example, she noted that having a dedicated device (e.g., an iPad placed in the child's room in the other household) could increase the likelihood of remote use, as it would make the system more visible and integrated into their daily routines. As she explained, children are more likely to engage with devices that are part of the immediate environment, *“because that’s where they are the majority of the time.”*

Overall, these findings suggest that remote awareness was shaped by a combination of attentional limitations, relational constraints, and practical usability issues. While these factors limited the use of remote access in practice, they also point to potential opportunities for supporting awareness across households through alternative, lightweight forms of sharing. One such possibility is the use of photos as lightweight awareness artifacts embedded within the calendar. Given this design, I expected that families might use photos to support remote awareness, allowing children in the other household to remain aware of ongoing activities. However, this type of use did not emerge during the field study. While photos were occasionally used within the home as convenient carriers of scheduling information (Chapter 4.4.2), they were not used to communicate experiences across households during the field deployment.

Despite this, participants expressed openness to such practices. The mother in Family 1 indicated that she would be comfortable with sharing photos of activities across households, and was also open to children sharing content between homes. However, she also noted underlying concerns around privacy mentioned above, *“Again, like, I mean, there is the fear of privacy. But I think I would be okay with the child sharing things from our house, like pictures of our house, and sharing activities with their other parents, if that’s what they wanted to do.”* In Family 2, such sharing was already part of everyday family practice through existing communication channels. The father described regularly sharing activities and experiences in a family group chat, regardless of whether family members were living together or apart. He emphasized that family members often engaged in different activities and were not always present together, noting that *“even if we see each other every day, I still share things like my work interests or club activities.”* In this context, sharing photos and updates was not considered sensitive, but rather a routine way of keeping each other aware of what others were doing. He further noted that integrating such sharing into the calendar (e.g., attaching photos to specific times or events) would be *“a very good idea”*, as it could link these shared moments to when they

occurred. This suggests that FamilyCanvas could extend an existing practice by providing a more temporally structured way of organizing and presenting shared activities.

4.4.5. Participation and Calendar Maintenance

While Chapter 4.4.2 focused on interaction practices and how families adopted specific features of the system, this chapter examines participation in maintaining the calendar as a household practice. Rather than focusing on usability or interaction, I consider how existing family routines and coordination roles shaped who contributed to the system and how scheduling responsibilities were distributed. Here, I expected that maintaining the family calendar would become a shared household practice, where multiple family members, including both parents and children, would contribute to adding, updating, or checking activities as part of everyday family routines.

Yet during the field deployment, the two field study families were quite different with respect to such expectations. In Family 1, the mother remained as the primary organizer who managed most household plans shared on the system, while a child (aged 9) emerged as the secondary active contributor. The child (aged 9) used the calendar for personal reassurance and self-organization, but other children engaged less due to their partial residency, as much of their daily coordination occurred outside the household (aged 9 and 11), or when young ages limited understanding or interest in planning or family schedules (aged 1.5 and 8). The father's participation remained minimal as he continued to rely on the mother for confirming schedules rather than using the system to maintain awareness by himself. The mother noted that her husband remained uninterested in checking the display, *"just gonna continue to ask me what time everything is"*. The arrangements made by her ex-spouse and the child, or made by her husband and his ex-spouse, were still not consistently communicated to her or added to the system.

In Family 2, participation was child-led, and the calendar functioned as a shared surface for making personal or family schedules visible to others. Thus, the availability of FamilyCanvas in the home meant that now the 13-year-old child was engaged in calendaring activities. This saw him use FamilyCanvas primarily to track his weekly extracurricular and family activities. Family activities mainly referred to weekly dinner or

sports events involving his older brother (aged 22, from the father's previous relationships). Because he lived independently and only came at weekends, he did not participate in using FamilyCanvas. Parents in Family 2 kept using their own digital or paper calendars, and their engagement in FamilyCanvas was intermittent and supportive. They primarily used the system to check schedules, remind the child about activities, and support coordination when needed. For example, as described earlier, the child noted that his father previously forgot to drive him to extracurricular activities because he was unaware of them, whereas FamilyCanvas provided a shared place where such activities could be visible and checked when necessary.

In the field deployments, FamilyCanvas involved some collaborations within a household, but calendaring did not become a fully shared responsibility across family members. Such uneven participation made the benefits from enhanced visibility and awareness limited since not everybody was looking at the calendar regularly. For example, in Family 1, the contrast of communication around schedules between the mother and child, and between the mother and husband, clearly reflected this situation. Similarly, in Family 2, the parents participated primarily as readers and assistants rather than active contributors, while the adult child continued to communicate directly with the father about weekly family activities instead of checking the FamilyCanvas by himself. This pattern was also consistent with my observations in the autobiographical design study, where calendar maintenance remained largely parent-driven, with only limited participation from children.

Therefore, the enhanced visibility provided by the FamilyCanvas improved communication and coordination to some extent, reducing some burdens of the primary contributor and preventing certain coordination failures. However, it did not fundamentally rebalance existing uneven labor around schedules within the household.

4.4.6. Summary

Overall, the findings contribute to answering the research questions in several ways. **RQ1:** First, they reveal that scheduling and connection in blended families involve substantial coordination work, fragmented information visibility, and constraints on cross-household communication, particularly when co-parenting arrangements are involved. **RQ2:** Second, they show that shared household visibility and lightweight whiteboard-

based interactions can support participation across family members of different ages, although their effectiveness depends heavily on household routines, placement, and existing practices. **RQ3:** Third, they highlight how relational dynamics, privacy concerns, and potential conflict shape what information can be shared across households and how remote awareness may be supported. Collectively, these findings provide insights into the opportunities and challenges of designing digital family calendars for blended families.

Together, these findings suggest that lightweight visibility and awareness may be valuable design directions for digital calendars in blended families. More broadly, the results highlight the importance of designing systems that can fit within existing household routines, tool ecologies, and relationship dynamics rather than assuming they will replace or fundamentally transform existing coordination practices.

Chapter 5. Discussion

The design process began with an autobiographical design study, through which I developed a set of initial assumptions and identified several surprising observations about family calendaring. I then conducted a field study with two blended families to examine how these observations would hold in broader contexts. Across the field deployments, some of these early observations were reinforced, while others were challenged or refined. These continuities and divergences form the basis of the design implications I discuss next.

5.1. Design for Shared Awareness through Lightweight Externalization

Findings suggest that calendars for blended families may benefit from being designed to support shared awareness rather than comprehensive scheduling. In both field study families, FamilyCanvas was appropriate to make a limited set of coordination-relevant plans visible at home, support quick checking, and reduce avoidable coordination breakdowns, rather than to track all events or replace existing personal calendars. Instead, it functioned as a shared layer that surfaced selected information when needed, while other scheduling work remained distributed across personal calendars, school planners, paper artifacts, and direct communication. Engagement also remained selective and was most likely when interactions were low-effort and provided immediate coordination value. Rather than replacing existing calendaring practices, FamilyCanvas functioned as a shared awareness layer that complemented existing scheduling tools and helped make selected plans visible to other household members.

This framing aligns with prior HCI work showing that family calendars often function as awareness supports embedded in family routines, where glanceability, accessibility, and placement matter (Bødker & Grönvall, 2013; Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006; Plaisant et al., 2006). In the study, this was further reinforced by the value participants placed on whiteboard-like interactions, including handwritten notes, lightweight annotations, and photo-based additions, which made it easier to externalize plans without the overhead of formal calendar entry. These interactions were not always tied to specific calendar events, but instead functioned as a

form of informal information communication, allowing family members to externalize reminders, updates, and contextual information in a shared space. This made it possible to communicate in a low-effort, non-intrusive manner, where information could be noticed opportunistically as part of everyday routines. Such awareness did not replace direct communication for time-sensitive coordination needs, but complemented it by reducing the need for repeated reminders and routine schedule checking.

Designing for shared awareness in this context may therefore involve supporting lightweight interactions that allow plans to be externalized without requiring complete or fully structured entry. Rather than assuming that a single system should capture all scheduling information, systems may better support blended families by enabling selected plans to be surfaced into a shared space, while allowing broader scheduling practices to remain distributed across existing tools.

5.2. Design for Situated and Ubiquitous Access

Findings suggest that access to a family calendar, whether at home or remotely, does not automatically translate into sustained use in blended family life. Participants perceived clear benefits in having FamilyCanvas available in shared household spaces and, in principle, accessible across distance. Yet in practice, these forms of access only partially became embedded in everyday routines. This indicates that access is not simply a technical matter of supporting multiple devices, but a situated condition shaped by domestic routines, physical placement, attention, and relationships.

At home, the shared display supported awareness not simply because it was visible, but because its placement intersected with existing household routines and practices. In both field study families, participants described using the display opportunistically for quick checking, which aligns with prior work showing that family technologies become meaningful through where they are placed and how they fit into existing household practices (Crabtree, 2003; Sellen et al., 2006; Taylor & Swan, 2005). Similar to prior family calendar research, participants valued having scheduling information available in shared household locations where it could be noticed during everyday routines, supporting glanceability, accessibility, and lightweight awareness (Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006). As in family calendaring more broadly, visibility alone was insufficient to sustain engagement. In

blended families, engagement depended not only on placement and existing routines, but also on responsibilities and movement across households, extending prior work that primarily examined single-household settings.

While both families placed the display in locations they considered high-traffic, ongoing engagement depended on how well the display aligned with existing routines and calendaring practices. Participation remained uneven, and updating was often deferred when the system was not available at the moment coordination work occurred. Similarly, the autobiographical design deployment showed that hallway placement alone did not lead to routine engagement by children. In this sense, situated access was only partly successful: it supported glanceable awareness, but did not consistently integrate calendaring into everyday family practice.

Remote access was even harder to embed into daily life. Although children could technically access the system on mobile devices, remote checking rarely became a habitual practice. This was not only related to practical access barriers such as device availability, Internet access, or browser usability, but also reflected broader attentional and relational dynamics within blended family life. As shown in the results, children often focused on the household they were currently in and did not actively think about checking the other one when away. Interestingly, this pattern first emerged during the autobiographical deployment and was later observed again in the field study, suggesting that remote awareness across households may not be a naturally occurring practice for many children, even when technological access is available. Remote access, therefore, required deliberate effort rather than fitting naturally into immediate routines. In addition, access across households could be constrained by co-parenting dynamics and the practical instability of devices and communication channels. These findings suggest that ubiquitous access in blended families is not simply a matter of making the same calendar available everywhere, but of recognizing that awareness across households is fragile, uneven, and contingent.

This observation also echoes prior work on remote family communication, which has shown that maintaining awareness across distance often depends on existing family routines, caregiving structures, and relationship dynamics rather than technological access alone (Brown & Grinter, 2012; Gan et al., 2020; Pan et al., 2013; Yarosh et al., 2013). Similar to these studies, technological availability did not guarantee

communication or awareness. However, findings further suggest that children in blended families may not actively seek awareness across households even when access is readily available, highlighting how divided living arrangements can shape attentional priorities and awareness practices. In this way, the findings extend prior work by showing that awareness across households may not simply be difficult to maintain, but may also be deprioritized within children's everyday routines.

More broadly, these findings also speak to the awareness and coordination considerations summarized in Table 2.6, suggesting that such considerations remain important in blended family contexts but may be achieved through a combination of shared calendars, contextual information, and existing family routines rather than through a single scheduling system alone.

5.3. Design for Asymmetric Participation

Findings show that, despite being designed as a lightweight and accessible system for all family members, FamilyCanvas was not adopted evenly. Instead, its use remained dominated by individuals whose roles already aligned with existing coordination routines. This suggests that reducing interaction effort alone does not necessarily lead to broader participation. Rather than enabling equal contribution, the system was integrated into pre-existing divisions of labor within the family.

Across the deployments, coordination work remained unevenly distributed. A primary organizer continued to be responsible for most of the upkeep, while other members, particularly those less invested in planning, participated mainly as readers and continued to rely on established habits. Children's contributions, when present, were typically limited and self-oriented, such as adding reminders to track their own activities. As a result, participation took the form of role-differentiated engagement rather than collective adoption. This reflects a pattern documented in family calendaring more broadly, where coordination work is often unevenly distributed rather than taken up equally by all members. In blended families, this pattern may be further intensified by partial residency and cross-household coordination (Chapter 4.3.5).

This finding extends prior work on domestic calendaring, which has shown that family coordination often depends on how responsibilities are distributed and sustained

within the household (Bødker & Grönvall, 2013; Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006). In blended families, however, such asymmetry may be further reinforced by mixed custody arrangements, partial residency, and differences in motivation across members. Importantly, this does not suggest that unequal labor distributions are desirable. Instead, it highlights that systems need to remain usable and sustainable under conditions where coordination work is uneven by default.

While asymmetric participation has been observed in family calendaring more broadly (Neustaedter et al., 2009), findings suggest it may be particularly pronounced in blended families due to mixed custody arrangements, partial residency, and differing levels of involvement across household members. First, systems should accommodate different levels of involvement without forcing all members into the same role. Designs that assume universal participation risk overburdening primary organizers or leading to abandonment when expectations are unmet. Instead, systems may support a spectrum of roles, where some members act as maintainers, others as occasional contributors, and others primarily as viewers, while still enabling shared awareness.

Second, contribution mechanisms should lower the threshold for participation, especially for peripheral users. In blended families, plans are often provisional or subject to change due to cross-household dynamics. Requiring structured inputs (e.g., time, location, recurrence) can increase both effort and perceived commitment, discouraging engagement. Supporting lightweight and informal inputs, such as handwritten notes or photo-based additions, can make it easier for less-involved members, including children, to externalize relevant information without needing to fully engage in calendar management. In the study, most children did not participate as full maintainers of the calendar, but they did engage meaningfully through lightweight, self-relevant actions such as adding reminders, checking upcoming activities, and using the display to confirm uncertain plans. Rather than acting as equal contributors to calendar maintenance, children primarily used FamilyCanvas as a way to gain visibility into family activities and exercise agency within existing scheduling practices. This suggests that designing for different ages is not only a matter of interface usability, but also of supporting age-appropriate forms of participation that allow children to contribute to shared awareness and have input into family coordination without taking on the full burden of maintaining the calendar.

These findings also revisit the participation-related considerations summarized in Tables 2.5 and 2.6. Prior work on remote parent-child communication (Table 2.5) highlighted child agency and children's independent participation, while prior family calendaring research summarized in Table 2.6 emphasized inclusive participation across ages and roles. The field deployment suggests that these considerations remain important, but participation emerged in different forms depending on family members' responsibilities, motivations, and living arrangements rather than through equal contributions from all household members.

5.4. Design for Coordination Under Restricted Relationships

Findings suggest that calendaring in blended families cannot assume stable or complete information sharing, either across or within households (Chapter 4.4.1, 4.4.4). In the study, coordination breakdowns occurred not only between co-parents in different households but also within the same household, where information about plans was not consistently communicated between family members. For instance, changes in co-parenting arrangements could appear as last-minute surprises, and children's activities with one caregiver were not always shared with the other. As a result, coordination did not rely on a single, shared understanding of schedules, but instead emerged from fragmented and uneven information flows across family members.

This extends prior HCI research on divorced families that highlights how coordination is shaped by relational tension and negotiation (Odom et al., 2010; Yarosh, Chew, et al., 2009; Yarosh et al., 2013), and how calendaring can function as relationship work rather than simply schedule entry (Thayer et al., 2012). Commercial systems also reflect the reality that co-parents' coordination is often constrained and procedural rather than fully collaborative (OurFamilyWizard, 2025). However, findings further show that coordination challenges are not limited to cross-household relationships. Even within a household, communication may be partial, selective, or inconsistent. This suggests that calendaring systems should not assume that information will be reliably shared through interpersonal communication.

Designing for blended families, therefore, requires supporting coordination under conditions of fragmented information sharing. One key implication is to support selective

visibility of scheduling information between co-parent households. In practice, this means that calendars should not treat all events as equally shareable. Instead, systems could allow children's activities, such as lessons, sports, or custody-related transitions, to be visible across households, while keeping adult schedules, household routines, or other sensitive plans private to the local home. This would differ from FamilyCanvas as currently designed, where information placed on the calendar was generally visible within the shared display without fine-grained control over what could be selectively exposed across households.

Such selectivity matters because, in the study, participants saw value in sharing children's schedules across homes for coordination, but were hesitant to expose broader household information. Even child-centered information, however, could still become a source of conflict, for example, when one caregiver interpreted visibility into activities as interference or grounds for disagreement.

This finding echoes prior work highlighting the importance of privacy management and boundary negotiation in families after divorce, where technologies must balance awareness and coordination with concerns about conflict, visibility, and control over information sharing (Braithwaite et al., 2001; Odom et al., 2010). Similar to prior work, participants expressed concerns that increased visibility could create tension, unwanted scrutiny, or opportunities for conflict between caregivers. However, findings further suggest that these concerns emerged even around seemingly neutral child-centered scheduling information. This extends prior work by showing that the challenge is not only determining what information should be shared, but also anticipating how shared information may be interpreted within existing co-parenting relationships.

More specifically, these findings revisit the privacy and boundary-management considerations summarized in Table 2.4 and the privacy considerations for family scheduling systems summarized in Table 2.6. While prior work often discussed privacy as a design concern, the field deployment illustrates how privacy became an ongoing negotiation surrounding schedules, locations, and household visibility across blended family relationships.

Together, these findings suggest that systems should provide families with flexible control over what is shared, with whom, and in which context. Systems may

therefore benefit from offering scoped views or sharing modes, such as a child-activity view for cross-household coordination and a fuller household view for in-home awareness and coordination.

5.5. Family Calendar Usage Compared to Decades Ago

Finally, the findings provide an opportunity to revisit assumptions embedded in earlier family calendar research when considering contemporary blended family contexts. Prior work on household scheduling documented how families managed routines through shared, often co-located artifacts, and how coordinating everyday life was tightly coupled with domestic routines (Brush & Turner, 2005; Sellen et al., 2004). Early family calendar systems treated the calendar as a central household surface that supported awareness and coordination within a single home (Neustaedter et al., 2009; Neustaedter & Bernheim Brush, 2006).

Blended families reflect a different set of assumptions about family coordination. First, children's lives often span mixed parenting arrangements across multiple households, making scheduling and connection more complex and fragmented (Chapter 4.4.1). Second, although technologies now provide more channels for communication and access, remote awareness is not guaranteed, but instead shaped by relational conditions that determine whether communication can occur at all (Chapter 4.4.4). Third, findings suggest that coordination in blended families is often distributed across multiple tools, family members, and households. In our study, participants relied on combinations of personal calendars, school planners, messaging tools, and FamilyCanvas, each serving different coordination purposes. This distribution was closely tied to household arrangements, visibility needs, and relationship dynamics rather than convenience alone. Beyond personal preferences or convenience, the use of multiple tools reflects and reinforces fragmented coordination within and across households. These findings suggest that, in blended family contexts, family calendaring may be better understood not only as a shared artifact within a household, but also as a distributed and negotiated practice shaped by multiple tools, people, and household boundaries.

This interpretation also helps connect several recurring considerations synthesized in Table 2.6, including awareness, coordination, access, and privacy. Rather than appearing as independent design considerations, the findings suggest that

these concerns were deeply interconnected and collectively shaped how calendaring practices were negotiated across people, tools, and household boundaries.

More broadly, these dynamics are not limited to blended families alone. Many contemporary households already experience increasing complexity in coordination, expectations of awareness across distance, and the use of multiple artifacts and communication tools. However, blended families make these conditions more visible and more consequential, as coordination routinely operates across household boundaries, relational constraints, and uneven access to information. In this sense, blended families serve as a particularly revealing case of broader transformations in domestic contexts.

Overall, findings suggest rethinking how family calendars are designed for blended and other complex families. Rather than assuming a digital family calendar as a single scheduling and awareness tool functioning smoothly at home, the study shows that calendaring is shaped by existing routines, habits, and potential tensions within and across households. In many situations, it functions alongside existing tools and intersects with everyday practical and relational conditions based on various family structures. Design should therefore move beyond treating calendars as purely functional tools, and instead account for these everyday conditions so that systems can remain meaningful and usable in practice.

5.6. Reflecting on Autobiographical Design Configurations

The autobiographical design process provided situated and long-term access to everyday scheduling and coordination practices within a blended family context. Through this deployment, I was able to observe how assumptions about calendaring, awareness, and participation were reinforced, challenged, or refined through ongoing household use. In particular, the autobiographical deployment revealed several mismatches between my initial expectations and actual family practices, such as children's limited engagement with remote awareness features and the continued concentration of coordination work among primary organizers. These observations became important starting points for the later field deployment and helped shape the broader research questions explored in this thesis.

At the same time, the autobiographical design process also shaped which assumptions and needs became most visible during the early stages of the project. Many of the initial expectations surrounding remote awareness, collaborative maintenance, and cross-household connection were strongly informed by the perspectives of the adult organizers within the household, who were already heavily engaged in coordination work. These assumptions emerged from multiple sources. Expectations surrounding remote awareness and calendar-supported connection were informed by prior work reviewed in Chapter 2, which suggested that shared calendars can support awareness across distance and help family members remain connected to everyday activities (Forghani et al., 2018; Plaisant et al., 2006). Other expectations, particularly around collaborative maintenance and active participation, emerged more strongly through the autobiographical design process itself and were shaped by the perspectives of the adult organizers within the household, who were already heavily engaged in coordination work.

However, both the autobiographical deployment and later field study showed that these assumptions did not always align with how children themselves engaged with the system. Rather than treating these mismatches as failures, they became important methodological insights that revealed tensions between anticipated and actual family practices. This reflects Desjardins and Ball's discussion that autobiographical design configurations both support and constrain the design process by shaping which perspectives, routines, and concerns become most visible during system development (Desjardins & Ball, 2018).

The later field deployment with two additional blended families therefore played an important role beyond extending the study context. It allowed me to examine which observations from the autobiographical deployment appeared across additional families, which assumptions did not hold beyond the original deployment context, and how FamilyCanvas was interpreted outside the initial research-connected household configuration. In this sense, the field study functioned not only as a deployment evaluation, but also as an opportunity to reflect on the situated nature of the autobiographical design process itself.

5.7. Summary

Overall, this chapter discussed design implications for supporting blended families through digital family calendars. Such systems should not be designed only as complete scheduling tools, but as supports for shared awareness that help families surface selected plans through lightweight and flexible interactions. They should also fit into families' existing calendaring practices, since FamilyCanvas was used alongside existing tools rather than replacing them. Access should be designed as part of everyday routines: shared displays need to be placed where family members naturally encounter them, while remote access needs to account for children's attention, device availability, usability, and relationship constraints. The discussion also highlights that participation in family calendaring is often uneven, with some members maintaining the calendar while others mainly check or contribute occasionally. For children, this means supporting age-appropriate and low-effort forms of participation without expecting them to take on much coordination work. Systems must further account for restricted relationships, where information sharing may be incomplete, selective, or contested. These challenge the common assumption that a family calendar functions as a single scheduling and awareness tool functioning smoothly at home, and instead highlight how calendaring is shaped by coordination across households, tools, and relationships. Overall, these implications suggest that digital calendars should be designed to work within real family practices, such as existing tools, routines, uneven participation, and relational tensions.

Chapter 6. Conclusion

In this concluding chapter, I summarize the research contributions made in this thesis. I present my research findings relevant to each research objective articulated in Chapter 1. Next, I acknowledge the limitations of my research and suggest opportunities for future work on designing digital calendars for blended families and broader family contexts.

6.1. Contributions

The core contribution of my research is the design and evaluation of a digital calendar system for scheduling and connections in blended families. In Chapter 1, I outlined three research objectives that motivated my design inquiry and user study. Here, I review each objective and how it was achieved through my research to summarize the contribution of my work.

Objective 1: Investigate the scheduling and remote connection dynamics in blended families.

First, this work provides an empirical account of scheduling and connection dynamics in blended families. Prior work in HCI has examined coordination and communication in divorced families, focusing primarily on two contexts: co-parenting coordination between adults under joint custody (Odom et al., 2010) and remote parent-child communication in single-custody settings (Yarosh, Chew, et al., 2009; Yarosh et al., 2013). These studies have highlighted the importance of balancing coordination and relational tensions, as well as supporting communication across distance.

This thesis extends this body of work by examining blended families, where there are children from previous relationships, and multiple parenting arrangements coexist in one household. Compared to prior contexts, this introduces additional layers of complexity, including information visibility and coordination at home and remotely, interactions among multi-aged family members within the same household, and the presence of sensitive relationships within blended families and between co-parents.

My research findings show that scheduling in blended families is often heavy and unevenly distributed, with coordination work concentrated on specific individuals. Scheduling information is unevenly visible across family members and fragmented across tools and households, rather than shared through a single system. In addition, remote communication across households is not only a matter of technological support, but is often unstable and constrained by relational conditions, such as limited willingness to share information.

Overall, these insights extend prior work by showing that challenges in blended families are not limited to supporting communication between two separated parents or between a parent and a remote child. Instead, scheduling and awareness emerge as distributed and negotiated practices across multiple households, tools, and relationships. This provides a more comprehensive account of family coordination that incorporates cross-household dynamics, multi-aged participation, and relational constraints that were not fully addressed in prior research.

Objective 2: Design and evaluate a digital calendar to address existing challenges in blended families through an autobiographical design and field study process.

Second, this thesis contributes to the design and evaluation of FamilyCanvas, a digital calendar created to support scheduling and connection in blended families. This work builds on prior research on digital family calendars while extending it to the blended family context that has received limited attention (e.g., mixed parenting arrangements, different-aged users, sensitive relationships). Rather than simply extending prior digital family calendar systems, this work also examines how existing design assumptions hold, or break down, when applied to the more complex context of blended families.

Prior work on digital family calendars, such as LINC, has demonstrated the value of shared household displays, flexible input, at-a-glance awareness, and contextual use in supporting coordination among cohabiting family members (Neustaedter & Bernheim Brush, 2006). FamilyCanvas adopts similar design principles, including whiteboard-like interaction and shared household visibility. My research findings support the continued value of these principles, as participants valued lightweight whiteboard input and used the display to make selected plans visible at home.

However, findings from the families in this study suggest that these principles did not always operate as expected in blended family contexts. Shared household awareness did not consistently become a stable or collective practice. Visibility was uneven, participation remained limited, and engagement depended on how well the calendar fit with household placement, routines, and existing habits. This was partly related to children moving between households and therefore having less consistent exposure to the shared display. However, other factors, including existing routines, attention patterns, device access, and relational constraints, also shaped engagement. In addition, when children were in one home, they tended to focus on activities in that home and paid less attention to what was happening in the other one. This extends prior work by showing that shared displays and flexible input can support awareness, but their usefulness depends on the family's everyday practices and participation patterns, especially in households shaped by blended family dynamics.

In addition, prior work has explored how shared calendars can support awareness across distance, providing remote family members with a window into everyday activities. Plaisant et al. showed that shared calendar information could offer remote family members a meaningful window into everyday life across generations between grandparents and grandchildren living in different homes (Plaisant et al., 2006), while Forghani et al.'s G2G explored calendar-based communication between grandparents and children through structured routine sharing (Forghani et al., 2018). FamilyCanvas builds on this idea of calendars as awareness tools, but shows that remote awareness in blended families is more fragile. While participants in my study also perceived such potential, remote access in practice remained limited. It was shaped by children's attention, device availability, mobile usability, and relational constraints across households. This suggests that supporting remote awareness is not only about making the calendar accessible on multiple devices. Instead, designs need to consider when and how family members are likely to check the calendar, what devices they actually have access to, and what information they are willing or allowed to share across households.

Furthermore, this study extends prior understandings of family calendaring practices. Neustaedter et al. showed that family scheduling involves different participation patterns, with primary and secondary schedulers playing different roles (Neustaedter et al., 2009). My findings show that similar asymmetries persist in blended

families, but are further shaped by structural conditions such as partial residency, age differences, and cross-household coordination. At the same time, FamilyCanvas did not replace existing calendaring tools or rebalance scheduling labor. Instead, it was used alongside personal calendars, school planners, paper calendars, and direct communication as a shared surface for selected household information. In this context, digital calendars may be most useful not as central systems with evenly distributed maintenance, but as complementary layers that surface selected information within already fragmented coordination practices.

Overall, the design and evaluation of FamilyCanvas contribute to a more grounded understanding of how digital family calendars are actually used in complex family contexts. Rather than confirming existing design principles, this work highlights the gaps between design assumptions and real-world use. Several assumptions that emerged during the autobiographical design process were later challenged, refined, or reinterpreted through field deployment (see Chapter 5.6), illustrating how calendaring practices are shaped by routines, uneven participation, and relational constraints.

Objective 3: Propose design implications for blended families.

Third, this thesis proposes design implications derived from the study of FamilyCanvas in blended family contexts. Building on findings from the field study, the work identifies key design considerations, including supporting shared awareness through lightweight externalization, enabling situated and ubiquitous access, accommodating asymmetric participation, and accounting for restricted or sensitive relationships across households. These implications extend prior work on family calendaring and domestic coordination by highlighting situations in which assumptions derived from earlier family calendar research did not fully align with the practices observed in the families studied here.

More broadly, this work contributes to a shift in how family calendaring is conceptualized. Rather than treating digital family calendars as centralized tools that support smooth coordination within a single household, my research findings suggest understanding calendaring as a distributed and relational practice that spans multiple tools, households, and social relationships. In this view, coordination is shaped not only by interaction design, but also by everyday routines, existing tool ecologies, uneven

responsibilities, and relational tensions. Overall, these contributions advance design knowledge for supporting scheduling and connection in blended families, while also offering broader insights into how family coordination technologies can better account for complexity in contemporary domestic life.

6.2. Limitations and Future Work

While this study provides in-depth insights into how a digital calendar can be designed to support scheduling and connection in blended families, its scope is shaped by methodological and deployment-related constraints.

First, my study only involved a small number of field deployment families alongside an autobiographical design process. While this approach enabled a rich, situated understanding of everyday domestic coordination and allowed us to explore a sensitive and complex family context, the scale of participation remains limited. In addition, the autobiographical design process itself shaped which assumptions, needs, and opportunities became visible during the early stages of system development. As discussed in Chapter 5.6, several expectations that emerged from the autobiographical deployment were later challenged, refined, or reinterpreted through the field study. While this process generated valuable methodological insights, it also means that the design was initially influenced by the routines, perspectives, and coordination practices of a particular household, especially those of the adult organizers who were most actively engaged in scheduling work. Future work could combine autobiographical design with broader participatory approaches earlier in the design process to surface a wider range of perspectives and design possibilities. As such, my findings should be interpreted as exploratory rather than representative of all blended families. Future research should examine how the patterns manifest across a broader range of family structures, cultural contexts, and custody arrangements, and through longer-term or larger-scale deployments that can capture evolving practices and diverse relational conditions.

Second, my interview data primarily reflect the perspectives of the most engaged family members. Some family members used the system infrequently or chose not to participate in interviews, meaning their experiences were often represented indirectly through others' accounts. This may have reduced visibility into low-engagement, resistant, or peripheral forms of use, and may not fully capture intra-household

differences in perception. Future work could incorporate methods that more directly capture diverse household perspectives, such as diary reporting or other lightweight feedback mechanisms that allow less-engaged members to express experiences without formal interviews.

Additionally, the children represented in my study were concentrated within a limited age range, and not all children had access to a smartphone. Because FamilyCanvas's remote access design depended on access to a suitable personal device, only a small number of children were able to use the system independently while away from home. Children without smartphone access primarily engaged through the shared household display. Therefore, the limited remote use observed in this study should not be interpreted solely as a lack of interest or need, as it was also shaped by unequal device access. Future work should examine how participation and awareness practices differ across broader developmental stages and explore forms of remote access that do not depend on children having personal smartphones.

Finally, although participants raised usability concerns and feature suggestions during the field deployment, I intentionally did not implement iterative system changes during the study in order to maintain a consistent system version across families and avoid introducing uneven expectations or experiences. As a result, the deployed system represents an early-stage prototype rather than a fully refined design. Future studies could adopt staged or iterative deployment models that progressively refine the system.

Overall, these limitations frame my study as an initial step toward understanding calendaring and coordination practices in blended families. The combination of autobiographical design and field deployment provided both situated design insights and opportunities to challenge those insights in practice, but future work is needed to examine how these findings transfer across a wider range of family contexts. While further work is needed to broaden contexts, perspectives, and system maturity, the patterns identified here offer a foundation for rethinking family calendaring as shared awareness infrastructure under conditions of distributed tools, uneven labor, and partial cooperation.

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Appendix A. Study Recruitment Poster



SIMON FRASER
UNIVERSITY



The Connections Lab at Simon Fraser University is interested in exploring how families schedule and stay connected when children are frequently away from home. Our goal is to use the knowledge we gain to design digital calendar technologies that are visible within a home and remotely to family members across ages.

We are looking for families with children aged 5-18 and their parents to participate in a 5-week field study where you will try out a digital family calendar system in your home. The study includes a 60 minute setup session and four follow-up interviews of 30-60 minutes each. To be eligible, families should include children who are frequently away from home. Participation in this study will be compensated with \$200 CAD for the family unit.

You should feel in no way obligated or pressured to participate due to an existing or prior relationship with me or the University. If you do feel a sense of obligation or pressure, you should decline to participate.

For more details or to participate, please email [REDACTED] at

[REDACTED] Feel free to share this information with others who might be interested!



Appendix B. Consent Form of Autobiographical Design Study



FACULTY OF COMMUNICATION, ART AND TECHNOLOGY
School of Interactive Arts + Technology

Simon Fraser University Surrey
250 – 13450 102nd Avenue, Surrey, BC
Canada V3T 0A3

TEL 672.551.3266

Informed Consent Form

Title: Digital Calendar Design for Families

Ethics Application Number: 30003059

Version: March 29, 2025

Investigators:

- [Redacted]
- [Redacted]

This consent form, a copy of which is made available to you, is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, you should feel free to ask the investigator(s). Please take the time to read this carefully and to understand the information.

Purpose: This research will investigate the scheduling and connection dynamics in families where children are frequently away from home, and their use of digital tools in managing these aspects. Based on their experience, challenges, and expectations, we will design and evaluate a digital calendar to support their needs, especially ensuring visibility both at home and remotely for family members of different ages.

Participant Recruitment and Selection: The recruited participants should be in the same family, including both parents and children. You should live together and meet the situation that children are frequently away from home. The children should have ages from 5 to 18. All of you should be without severe health issues.

Study Method: After obtaining written consent from the parents and verbal assent from the child, we will conduct a home visit. You, parents and children, will be interviewed together in person about your practices with daily scheduling and remote connection, along with your digital tool use in managing these aspects, where we will ask you about your experiences, challenges, and expectations. You may choose to only share details that you are comfortable with the study investigators knowing about.

We will then design an initial digital calendar system and deploy it in your house for future iterative prototype testing. In detail, we will firstly introduce the features and functions of our system to you, and conduct an initial prototype testing until you get familiar with it. After that, we will deploy this system in your house for real-life use for at least two months. During this period, we will interview everyone several times throughout the study deployment (approximately 2-3 times), depending on your usage. These interviews will be conducted over Zoom while you have this system in front of you so you can refer to specific posts or days, about the usage behavior, experiences of using it, the benefits and challenges you face along with anything interesting from the logged data we notice. We will update the system's features as needed throughout the study.

After the iterative design process, we will conduct a post-interview in person with your families together on the experience, benefits you feel, effectiveness of some features/functions and future expectations about the last version of our design.

The pre-interview and post-interview will be conducted in person at participants' house, lasting approximately 2 hours and 1 hour respectively. During the iterative design process, the initial introduction and guidance will last about half an hour. The periodical interviews will last about 1 hour each time.

Data Collection and Storage: Interview responses will be audio-recorded and transcribed. With your permission, we will record videos of you and the digital calendar interfaces when you share and discuss them. Video data is essential for understanding how you interact with the system to schedule family life and stay connected.

All research data will be kept confidential, and you will not be required to provide any personally identifying information. Transcribed data will be anonymized and de-identified, and participant names and personal details will not be linked to the data. Audio and video data will be anonymized and de-identified, such as using mosaics to mask face and identifiable calendar information, or any other details in the video, and use voice alteration strategies to process voice in the media.

These data will be securely stored on a protected server at SFU Surrey, a secured office computer, or SFU OneDrive. Only the project researchers will have access. Appropriate security measures, including access controls and secure transmission methods, will be in place to prevent unauthorized access.

Audio and code data will be retained for two years before being permanently destroyed. Video data used in research publications and presentations will be preserved, while other video data will be retained for two years and then deleted, ensuring it is only maintained for dissemination purposes. Note that original calendar data will not be shared publicly, and only the collected part with consent will be shared in our publication and presentation publicly with de-identification.

Benefits and Risks: You may not directly benefit from your participation, you will contribute to broader scientific knowledge and understanding. Since it is an autobiographical study conducted within our project team, no compensation will be provided. There are some potential risks for all family members but expected to be minimal with our protection.

1. Questions are mostly mundane details about your scheduling and remote connection experiences, and challenges and expectations of managing these aspects. There is a chance that you may feel a bit of embarrassment when describing some experiences or challenges; however, you are able to perform only what you are comfortable with.
2. There is potential risk to privacy and confidentiality since the data in our publication and presentations will be publicly shared and remained in the public domain; however, all data will be de-identified.
3. The calendar data saved in the safe server also has a potential risk to privacy and confidentiality; however, we will try our best to protect it, such as storing it in a protected server at SFU Surrey.
4. We acknowledge that, in theory, pixelation could be reversed if someone gained unauthorized access to the videos; however, we will implement strict data security measures and de-identification techniques to minimize this risk.

Acceptance of this Form: By completing this form you: 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research participant. In no way does this waive your legal rights nor release investigators or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time within **30 days** after the study. You should feel free to ask for clarification or new information throughout your participation.

☐ I am consenting to participate in the research.

☐ I am not consenting to participate in the research (the study will not take place if you choose this option).

☐ I am consenting for my child to participate in the research.

☐ I am not consenting for my child to participate in the research (the study will not take place if you choose this option).

☐ I agree to have my audio and video recorded for study purposes.

☐ I do not agree to have my video recorded for study purposes.

To accept this form, please sign your names and your children's names below, and date the form.

Participants' Names (Parents): _____

Participants' Names (Childrens): _____

Date: _____

The research team will abide by the latest provincial health guidelines in relation to the COVID19 pandemic.

Questions/Concerns:

If you have any questions about the study, please contact _____

If you have any concerns about your rights as a research participant and/or your experiences while participating in this study, please contact the Director, Research Ethics and Security at hreb@sfu.ca or 778-782-6593.

Appendix C. Assent Form of Autobiographical Design Study



FACULTY OF COMMUNICATION, ART AND TECHNOLOGY
School of Interactive Arts + Technology

Title of Study: Digital Calendar Design for Families
Ethics Application Number: 30003059
Investigators: [REDACTED]
Department, School or Faculty: School of Interactive Arts & Technology, SFU
Document Version: February 20, 2025

ASSENT FORM – Read to child participant

Welcome to the family calendar study!

We are asking you if you want to help us with a study. We are trying to learn about how kids like you use calendars to keep track of your plans and stay connected with your family when you are away from home.

You do not have to be in the study.

It's up to you if you want to be in the study. No one will be mad at you if you do not want to be in the study, and you can stop at any time if you decide you don't want to later.

What will happen if you say yes?

If you decide that you want to be in the study, we will ask you some questions about how you like to plan your day and how you stay in touch with your family when you're not at home. We will also ask you to try using a special family calendar on a screen at home or on a device. We will check in with you a few times over the next two months to see how you feel about using the calendar and if there's anything you would like to change or add to make it better. At the end, we will ask you how you feel about the whole experience.

Could anything bad happen to you in the study?

We do not think that anything in the study could be bad for you. You do not need to do or talk about anything that you don't want to.

Who will know you were in the study?

Only your parents/guardian know that you are in the study, and we will not tell anyone else.

Please circle yes or no (experimenter will ask verbally):

Has somebody explained this study to you?	Yes / No
Do you understand what the study is about?	Yes / No
Have you asked all the questions you want?	Yes / No
Have you had your questions answered in a way you understand?	Yes / No
Do you understand it's OK to stop at any time?	Yes / No
Do you want to be in the study?	Yes / No

If any answers are 'no' or you don't want to take part, please let me or your mom/dad know! I will only write your name down if you do want to participate.

Child's Name: _____

Today's Date: _____

The researcher who explained this study:

Researcher Full Name: _____

Researcher Signature: _____

Today's Date: _____

Appendix D. Consent Form of Field Study



FACULTY OF COMMUNICATION, ART AND TECHNOLOGY
School of Interactive Arts + Technology

Simon Fraser University Surrey
250 – 13450 102nd Avenue, Surrey, BC
Canada V3T 0A3

TEL 672.551.3266



Informed Consent Form for Field Study

Title: Digital Calendar Design for Families

Ethics Application Number: 30003059

Version: June 26, 2025

Investigators:

- [Redacted]
- [Redacted]

This consent form, a copy of which is made available to you, is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, you should feel free to ask the investigator(s). Please take the time to read this carefully and to understand the information.

Purpose: This research will investigate the scheduling and connection dynamics in families where children are frequently away from home, and their use of digital tools in managing these aspects. Based on their experience, challenges, and expectations, we will design and evaluate a digital calendar to support their needs, especially ensuring visibility both at home and remotely for family members of different ages. This stage focuses on field study with broader participants.

Participant Recruitment and Selection: We will use online communities and snowball sampling to recruit participants. Potential participants who answer our study advertisement will be asked initial questions to allow us to learn about their family composition, basic scheduling and connection patterns, and technology usage. We will select participants who we think will provide interesting and different relationship dynamics. Recruited families should include both parents and children. Participants should live together and meet the situation that children are frequently away from home. The children should have ages from 5 to 18. All of the participants should be without severe health issues.

Study Method: After obtaining written consent from the parents and verbal assent from children, we will start the study with an introductory interview about family scheduling and connection dynamics, and provide assistance to each family to setup the digital calendar in their home. We will introduce features and functions of the system, and conduct a training session with examples until participants become familiar with the system. We will also tell them to set up and use our system as they naturally see fit, such as selecting its location as desired. The system will be deployed in each family's house for about five weeks.

We will interview each family approximately four times throughout the field study process to collect usage data. One each during the first and second week of usage, one at the end of five weeks, and a follow-up interview a week later. Software usage will also be logged throughout the study.

Interviews will be conducted over Zoom or in-person while participants have the system in front of them so they can refer to specific posts or days. We will talk with them about their usage behavior, experiences of using the design, the benefits and challenges they face along with anything interesting from the logged data that we notice.

The introductory interview and setup will last about 1 hour. Each interview during the deployment phase will last approximately 30-60 minutes. Emails and phone calls will be made as needed for technical support.

Data Collection and Storage: Interview responses will be audio-recorded and transcribed. With your permission, we will record videos of you and the digital calendar interfaces when you share and discuss them. Video data is essential for understanding how you interact with the system to schedule family life and stay connected.

All research data will be kept confidential, and you will not be required to provide any personally identifying information. Transcribed data will be anonymized and de-identified, and participant names and personal details will not be linked to the data. Audio and video data will be anonymized and de-identified, such as using mosaics to mask face and identifiable calendar information, or any other details in the video, and use voice alteration strategies to process voice in the media.

These data will be securely stored on a protected server at SFU Surrey, a secured office computer, or SFU OneDrive. Only the project researchers will have access. Appropriate security measures, including access controls and secure transmission methods, will be in place to prevent unauthorized access.

Audio and code data will be retained for two years before being permanently destroyed. Video data used in research publications and presentations will be preserved, while other video data will be retained for two years and then deleted, ensuring it is only maintained for dissemination purposes. Note that original calendar data will not be shared publicly, and only the collected part with consent will be shared in our publication and presentation publicly with de-identification.

Benefits and Risks: You may not directly benefit from your participation. You will contribute to broader scientific knowledge and understanding. We will provide \$200 CAD per family unit upon completion of the study. There are some potential risks for all family members but expected to be minimal with our protection.

1. There is potential risk to privacy and confidentiality since the data in our publication and presentations will be publicly shared and remained in the public domain; however, all data will be de-identified.
2. The calendar data saved in the safe server also has a potential risk to privacy and confidentiality; however, we will try our best to protect it, such as storing it in a protected server at SFU Surrey.
3. We acknowledge that, in theory, pixelation could be reversed if someone gained unauthorized access to the videos; however, we will implement strict data security measures and de-identification techniques to minimize this risk.

Acceptance of this Form: By completing this form you: 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research participant. In no way does this waive your legal rights nor release investigators or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time within **30 days** after the study. You should feel free to ask for clarification or new information throughout your participation.

☐ I am consenting to participate in the research.

☐ I am not consenting to participate in the research (the study will not take place if you choose this option).

☐ I am consenting for my child to participate in the research.

☐ I am not consenting for my child to participate in the research (the study will not take place if you choose this option).

☐ I agree to have my audio and video recorded for study purposes.

☐ I do not agree to have my video recorded for study purposes.

To accept this form, please sign your names and your children's names below, and date the form.

Participants' Names (Parents): _____

Participants' Names (Childrens): _____

Date: _____

Questions/Concerns:

If you have any questions about the study, please contact [REDACTED]

If you have any concerns about your rights as a research participant and/or your experiences while participating in this study, please contact the Director, Research Ethics and Security at hreb@sfu.ca or 778-782-6593.

Appendix E. Assent Form of Field Study



FACULTY OF COMMUNICATION, ART AND TECHNOLOGY
School of Interactive Arts + Technology

Title of Study: Digital Calendar Design for Families
Ethics Application Number: 30003059
Investigators: [REDACTED]
Department, School or Faculty: School of Interactive Arts & Technology, SFU
Document Version: June 26, 2025

ASSENT FORM – Read to child participant in field study

Welcome to the family calendar study!

We are asking you if want to help us with a study. We are trying to learn about how kids like you use calendars to keep track of your plans and stay connected with your family when you are away from home.

You do not have to be in the study.

It's up to you if you want to be in the study. No one will be mad at you if you do not want to be in the study, and you can stop at any time if you decide you don't want to later.

What will happen if you say yes?

If you want to be in this study, you will try using a special family calendar on a screen at home or on a phone or tablet. We will check in with you a few times over the next few weeks to see how you feel about using the calendar, and if there's anything you like or hard to use.

If something doesn't work right or you have a problem using the calendar in your daily life, you can tell your parents. They can help contact us by email or phone.

If you have other thoughts about using the calendar, you can tell your parents, or talk to us when we chat. Your family has one diary to share. You can ask your parents to write down what you say, or you can help by saying what happened.

Could anything bad happen to you in the study?

We do not think that anything in the study could be bad for you. You do not need to do or talk about anything

that you don't want to.

Who will know you were in the study?

Only your parents/guardian know that you are in the study, and we will not tell anyone else.

Please circle yes or no (experimenter will ask verbally):

Has somebody explained this study to you?	Yes / No
Do you understand what the study is about?	Yes / No
Have you asked all the questions you want?	Yes / No
Have you had your questions answered in a way you understand?	Yes / No
Do you understand it's OK to stop at any time?	Yes / No
Do you want to be in the study?	Yes / No

If any answers are 'no' or you don't want to take part, please let me or your mom/dad know! I will only write your name down if you do want to participate.

Child's Name: _____

Today's Date: _____

The researcher who explained this study:

Researcher Full Name: _____

Researcher Signature: _____

Today's Date: _____

Appendix F. Interview Questions of Field Study

Pre-interview (~20 min)

For parents

Can you share some typical routines of your family? Do you keep a family calendar?

Can you share some experience (and challenges) about how your family manages its schedule?

Can you share some experience (and challenges) about how your family members communicate with each other when not co-located at home?

For kids

Tell me what a normal day is like for you.

How do you remember your plans and activities? Do you keep a personal calendar?

When you're not at home, how do you talk to your family about your activities?

Mid-Interview (~30 min × 3 session)

Week 1/2/5

How did your family use the system this week? Can you share any stories of moments or uses that stand out in your mind?

Who in your family used it the most and the least? Why? What did they do?

Were there moments when someone wanted or didn't want to use it? Why?

Do you feel this system fits into your daily routine? Why or why not?

Did anything feel confusing or hard to use? If so, please explain.

Did the system help you plan family events? How?

Did the system help you keep in touch when someone was away, or communicate with family? How?

Have you noticed any other ways the system affected your family's routines or communication? Please tell me any stories that come to mind.

Were there any situations where the system didn't do what you needed it to do? Why?
What would you want changed to better support you?

Where did you place the device at home now? Was that a good spot? Would you prefer a different location?

What kinds of devices did your family use the system most on (e.g., public tablet, mobile phone, personal computer)? How did the experience differ across devices?

Week 5 added

Looking back over the past few weeks,

What changed in how you used the system?

Have you developed any new routines or habits around the system?

Which feature(s) have you found most valuable or most used by your family? Why?

Post-Interview (~30 min)

How has it felt not having the system this past week? Do you miss any aspect about using the system (when you think about planning or staying in touch)? Why?

Do you notice any changes in how you schedule or stay in touch as a family?

What lasting impressions or habits did it leave you with, if any?

Is there anything you wish the system could do differently or better?

Would you want to use something like this in the future? Why or why not?

Added Questions

Informal communication

We imagined people might use the whiteboard space to leave informal notes or reminders where some may not necessarily be tied to calendar items. Do you think that would be useful in your family? Why or why not?

Why do you think this kind of informal communication happened very little in practice? I noticed that you leave a message "mom works late" in the calendar.

What kinds of information could feel more appropriate for FamilyCanvas, and what kinds feel more appropriate for text messages or calls?

Remote awareness and cross-household visibility

When children are staying at the other household, do they usually know what is happening in this home? If so, how?

Do you think seeing the family calendar remotely or notes written on it would help them feel more connected to the family here? Why or why not?

How do you feel knowing that your child could access the calendar from the remote home?

When children are at the other household, would they realistically check the calendar remotely? Why or why not? If not, that's alright, we just want to understand things more deeply.

Are you concerned about the other parent seeing this activity or the calendar's contents? Why or why not?

Would you ever want to share a calendar across households with the other parent's home? For example, a calendar that shows activities for the kids while they are in both households. Why or why not? What level of visibility would you be comfortable in sharing, if any?

If the child could bring an iPad to the other home to see the calendar and leave it in their bedroom for private viewing, do you think that would make it so they actually used it when remote? Why or why not? How comfortable would you be with having your household's calendar on an iPad like this in the other home?

If the child could actually use the calendar at the remote home, would you like to share photos of activities happening at your home so that the child could remain aware of what was happening in your home when they aren't there (or other reasons)?