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Synchronizing multi-perspectival data of children's digital play at home

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ABSTRACT

Studying digitally mediated play presents challenges in terms of how to view and record both the on-screen action and player's bodies in physical space. Carrying out this research in a socially and technologically diverse range of family households poses further challenges, common to ethnographic media research in general. In this paper, we describe a method for generating richly detailed views of 6–8 year old children's digital play with the game Minecraft, on a range of devices and in a range of household configurations. We explain the process undertaken in our own research, highlighting the need for flexibility and a collaborative approach between participants and researchers. We argue that collecting multi-perspectival recordings of digital play provides data that has the potential to greatly aid understanding of digital playworlds.

KEYWORDS

Digital games; video recording; children; methods; Minecraft

Introduction

This paper provides a detailed methodological account of how we achieved rich, synchronized data on children's digital Minecraft play within the home. The work described is part of a larger research project that formed the first author's PhD thesis. The project's overall aim was to document children's engagement with digital games, using Minecraft as a case study, and in wider social, family and discursive contexts. The methodological innovations described in this paper build on broader work in ethnographic approaches to research within digitally connected homes, by focusing specifically on the production and performance of children's Minecraft play as it unfolded within the dense sociotechnical spaces of contemporary home life. By asking what children actually do when

they play Minecraft, rather than what the pedagogical or developmental outcomes of this play are—common in learning or health discourses—this research sought to consider digital play for its own sake by commencing with the ethnographic principle of observation in order to provide detailed descriptive accounts of children's play in Minecraft.

Being situated within the everyday leisure time engagements that children have at home with games like Minecraft, demanded a methodological design that could account for the often taken for granted, mundane, yet also detailed and complex interactions children have within digital play spaces and their embeddedness within the social and spatial dynamics of the home. The goal of capturing rich descriptions of Minecraft play within

children's social, technical and physical contexts, necessitated development of data collection from multiple perspectives, including on-screen action and children's bodies in physical space. Thus, the methodological innovation we sought to achieve, and which we describe in this paper, was one that sought to synchronize the capturing and analysis of multi-perspectival data. This paper details our collaborative approach to data collection with participants and argues for the value of persisting through technical difficulties given the richness and depth of data generated. The paper also notes the challenges of this method for synchronizing observation of children's digital play at home and situates it within visual and digital ethnography literature. We present two key take-aways in this paper: First, the value of flexibility in process and expectations around data generation in diverse household settings, and second the importance of building relationships with participants as contributors to a collaborative research effort.

Background: studying children's play at home

Digital ethnography and the home

Children's digital play in the family and home life fits within a broader area of household media and digital ethnography research, which has sought to gain access to households in order to develop a better understanding of 'digital domesticity', and the "intimate histories" of how we live with a variety of media' and other technologies (Morley 2007, 204; Kennedy et al. 2020). This research approach to examining technologies in use, in situ within the home, builds on traditional ethnographic methods of participant observation in physical places, combined with more recent developments in 'digital ethnography', which Christine Hine notes, '... transfers the ethnographic tradition of the researcher as an embodied research instrument to the social spaces of the

Internet' (2008, 257), or other social spaces or forms of technology interaction.

This, however, is more easily said than done. Homes are familial, intimate and bounded spaces that prove difficult for researchers to explore in detailed ways. The presence of a researcher recording the everyday activities of family life in the private sphere of the household, ideally for extensive periods of time, is often both impractical and invasive (Hine 2000; Mackay and Ivey 2004). A key challenge encountered by researchers then is the question of accessing homes, where certain 'narratives, practices and sensory experiences [are] not usually available for public view' (Pink 2004, 1). Applying direct observation methods in the home can be difficult and intrusive to peoples' mundane and personal home life, whilst hearing the voices of diverse household members can be difficult. Interviews are one way of cultivating this voice; however, the unique challenges presented by the home as a private space, and by the dynamism and complexity of the digitally connected home, call for additional methodological approaches and processes. Not surprisingly then, ethnographic research of technology use in homes has tended to focus on single technologies and 'snap-shot' approaches. This, however, neglects the ethnographic importance of studying the interrelations of social and technical life in domestic settings (Kennedy et al. 2020).

In contrast, a range of digital ethnographic approaches have emerged exploring virtual, online and digitally mediated communication as a way to access and analyse the contexts and meanings of everyday digital play (e.g. Nardi 2010; Rheingold 2000). In one sense, these approaches are a pragmatic response to the problem of access, with digital environments offering a wealth of archival, interpersonal and experiential information. Yet, such online digital ethnographies of play have also tended to erase the spatial, temporal, physical and cultural contexts in which digital play takes place. In particular, the interrelation of

the domestic space as an ordinary yet significant site of everyday digital consumption, practice, and meaning has been marginalized through this decontextualization. Our research methods, which we describe in this paper, seek to build on efforts to resolve these tensions, and studies that have sought to contextualize digital technology use in domestic spaces and family life, by combining established ethnographic data collection techniques with more novel forms of digitally-mediated data collection.

Household digital ethnography approaches include the deployment of digital media devices and software, such as tablets and cameras in homes, and include participants as active collaborators in creating and interpreting their use of technology in the home (see Kennedy et al. 2020; Nansen et al. 2015, 2016). Indeed, including participants as research collaborators by enrolling them in the process of data collection and analysis, particularly in the absence of the researchers, reinforces the principles of digital ethnography for capturing the embedded, embodied and everyday contexts of mediated social life (Hine 2015; Horst 2016). Research methodologies based upon digital ethnography approaches, have for example, involved householders in the use of mobile devices, digital ethnographic software and creative data collection activities in order to overcome requirements for researchers to always be present in the field. We extend these insights by noting the importance of combining multiple perspectives in the data collection process—what Markham (2016) refers to as remixing research methods—through the combination and layering of digital spaces such as Minecraft, and other children’s digital play spaces within the physical and social contexts of the home by synchronizing the digital and physical through multiple simultaneous recordings.

Our digital ethnographic methods were underpinned by Taylor’s (2009) assemblages of play theory. Studying digital play from an assemblage approach means seeing moments

of play as co-constructed by human and non-human actors (Giddings 2014). This perspective allows for a ‘postdigital’ conceptualization of digital play (Jayemanne, Nansen, and Apperley 2015) and avoids ‘myopic attention’ to either ‘the digital’ or ‘the analogue’ (Marsh 2019, 157). Such an approach rejects a binary digital vs non-digital dichotomy and recognizes that for children, boundaries between on and off-screen are fluid and porous (Arnott 2016; Kevin, Verenikina, and Rivera 2015; Squire and Steinkuehler 2017). This approach to play, therefore, requires dedicated researcher attention to both the digital play space (the on-screen action) and the physical space (children’s bodies, their manipulation of controllers, and the immediate social setting of play). Getting a view of both the human and non-human actors as they work together to produce moments of play requires decision making around what will be recorded and how, and where researcher gaze is directed throughout the observed instance of play (Aarsand 2016). Further, in this study, we sought to document digital play in household settings, as opposed to school settings which are dominant in existing work on children’s digital play, resulting in a gap in understanding of children’s everyday digital play, despite this being where much of children’s play happens (Giddings 2014). In everyday, household leisure time settings children are freer to direct their own play, away from the institutional oversight that is present in school settings and without an explicit pedagogical or developmental goal in mind (Tudge 2008). Studying play in homes reduces the need for researcher-imposed restrictions on the types of play that are ‘acceptable’, for example, disallowing player vs player (PvP) interactions (Burnett and Bailey 2014) and potentially transgressive play (though, not entirely, as we found children conscious of the approval of parents). It also reduces the need for restrictions on noise levels (from children and devices), or school policy-imposed safety settings (Burnett and Bailey 2014; Wohlwend and Kargin 2013).

Outside the home, children's play practices have also been studied in physical spaces such as playgrounds and public spaces. Observing children's play in physical space may involve ethnographic approaches such as spending time on the sidelines of play, taking notes, talking to children and recording what children do (e.g. Opie 1993; Richards and Burn 2014; Willott et al. 2013). Given that children's play may appear to an outside observer as messy, chaotic, fast-paced and dynamic with frequent flickering between pretence and reality, documenting play in physical spaces is not necessarily a straightforward task. However, as noted above documenting play in the privacy of homes, or documenting play that takes place in digital spaces, poses further challenges related to the distributed nature of play that happens simultaneously across physical and digital space.

Capturing children's digital play

The challenges of capturing children's play when it is distributed across private physical and digital spaces has been addressed by research combining traditional methods such as interviews with the use of visual recordings (e.g. Dixon and Weber 2007). Researchers have utilized video recordings in the study of children's digital play as part of a range of methodologies, not necessarily as a form of primary data (Aarsand 2016). Video recordings have usually been used in conjunction with other methods such as interviews, play tours (e.g. Plowman et al. 2012) and fieldnotes. Recording of play allows for close analysis of data away from the immediate demands on the researcher's attention in a field setting such as interactions with participants and note-taking. In studies using video recording, there is variation in field sites and who is responsible for operating the recording equipment. In some, researchers have done the recording while at field sites including homes (e.g. Hjorth and Richardson 2020; Marsh et al. 2018; Schneier and Taylor 2018), game

clubs at schools (e.g. Burnett and Bailey 2014; Fields and Kafai 2010), and hospital rooms (Hollett and Ehret 2015). This allows for researchers to ask questions and note salient information that may not be captured in recordings, and it allows for in-the-moment decisions about where to point the camera. However, as with all direct observation research, the presence of the researcher may have an impact on the type and flow of play (Burnett and Bailey 2014). This issue also applies to methods where the researcher plays the game with the participant thus immersing themselves within a shared play environment (e.g. Schneier and Taylor 2018). Some researchers have employed GoPro cameras strapped to the chests of players (e.g. Marsh 2019; Marsh et al. 2018), attached to players' heads, carried by them or placed on a desk directed at a computer screen (Bailey 2016) as a means of capturing the screen. Bailey (2016) in a study of school-based Minecraft.edu play, also collected screen recordings from a subset of participants.

In other studies, recording equipment has been left with families and the filming has been done by parents (e.g. Aarsand 2010; Given et al. 2016; Kervin, Verenikina, and Rivera 2015; Stephen, Stevenson, and Adey 2013). In the Children, Technology and Play study, recording was done by both researchers and parents (Marsh et al. 2020). Asking parents to collect data in this way, as Stephen, Stevenson, and Adey (2013) note, allows for a 'naturalistic' research setting and observations that are 'congruent with real life activities' (32), while acknowledging that 'it would be naive to think that [researcher] presence in family homes did not have an impact on behaviour' (32). Asking participants to collaborate in the research process by recording play also raises issues around burden to participants, and variety in the type and amount of data collected. Each of these issues will be discussed below. The video recordings collected in our study constitute data in and of themselves and

therefore our method can be described as a form of digital visual ethnography (van den Scott 2018). This data was analysed, coded and then interpreted within the context of other data (in our case, interview transcripts and photographs of playthings) and with reflexivity on the part of the researcher. Video recording is well suited to the study of children's play because filming via smartphones of mundane or special occasions, the replaying and viewing of this footage and the viewing of video content on platforms such as YouTube are commonplace, 'everyday' practices for many (though by no means *all*) children and are often embedded in family practices. The cultural value, acceptance of and familiarity with video recording as a means of record keeping and representation make this method particularly appropriate for studies of home-based children's digital play (Pink 2021).

The use of video recording in digital ethnographic methods has limitations, including the scope of view able to be obtained from a single recording source (cf. Bailey 2016) and more practical difficulties with, for example, the quality of audio output, meaning children's voices are difficult to hear (Burnett and Merchant 2019) and problems with GoPro cameras slipping, or children moving and therefore shifting the screen out of view (Marsh et al. 2018). Additionally, given the popularity of tablet-based play for children (Chaudron 2015; Mavoa, Carter, and Gibbs 2018), the digital component may be on a small screen held in the hands of players. Getting a view of the screen necessitates sitting closely next to the child, at a table or on a sofa, or on the floor, and looking down at the device. Apart from being uncomfortable for the researcher, this potentially poses quite an intrusion on play. Alternatively, researchers may observe, and record tablet play from a distance, standing or sitting close enough to get a view of both screen and child. But this risks a lower fidelity view of the screen and reduces the possibility of being able to account for the intricacies of

what occurs in the technological component of play, in concert with the child's movements, facial expressions, interactions with spectators, and so on. Touch-screen interfaces also present challenges to visibility as hands and fingers may obscure the view of the screen. Further, the mobility of these devices means that children may move around while playing, taking the device with them. Shifts in position or location may mean that the screen comes in and out of view.

Where play happens via a console connected to a TV, the view of the screen captured by a single camera may be clearer due to the larger size of the screen, but the player may be some distance from it. This means that researcher gaze via a single camera frame may not be able to encompass both the screen and the child simultaneously and thus important detail in both may be missed. Where play happens via a computer monitor, these difficulties are reduced because the researcher and/or recording equipment can be positioned behind or to the side of the child in a way that captures both the screen and the child's body. In some households, depending on furniture and room configurations, it may be that this is sufficient to get a good view of all relevant spaces (the child, their immediate surroundings and the screen). But in others, decisions need to be made about whether to focus on the screen, the child or their surroundings and whether a view of the child's back is sufficient. Of most relevance to the goals of our study, is that these methods generally involve filming either only the screen or the child, or both in one frame with a resulting lack of clarity of one or the other. Further, in analysing this kind of data, primacy is often given to the human actors in recordings. The on-screen action tends to be secondary, and this precludes an effective view of play as something that is produced by both the player and the digital component. This may suit some research objectives, for example, an investigation of the haptic aspects of mobile play

(Hjorth and Richardson 2020). But where the aim is a situated multi-modal view of how humans achieve digital activities in conjunction with technology, as was the case with our study, there is a need to have a clear view of both the screen and the human actors. In our study, we achieved this by collecting both recordings of the screen and of the players and then synchronizing them in a side-by-side view for analysis.

The aim of our study was to produce rich, contextually sensitive descriptions of Minecraft play within children's social and physical contexts. Given the challenges to studying children's digital play in the home mentioned above, it was necessary to develop a method that allowed a clear view of activity both on-screen and in the physical space in which play occurred. This was achieved in a way that was sensitive to each family's technological and household set-up and to the desires of the children whose play was being recorded. Core to the method we developed was the collection of two recordings in each household where possible. One recording was produced via a camera directed at players and the space surrounding them, and one was produced via either the screen recording function of the device used for play or via a second free-standing camera directed at the screen. Given the variety in devices used by the participating children to play Minecraft, and various other factors such as the presence of infants intrigued by camera tripods, the method involved collaborative effort from families and flexibility on the part of the researcher to find workarounds in each household so that the most appropriate data in each could be collected (Nansen et al. 2015; Pink 2007).

Methods: field procedure for data collection using multiple recording devices

The data collection described here was part of a larger study using additional methods—

interviews with parents and children, and play tours. We aimed to account for Minecraft play as not isolated from other play or household habits, routines and parenting practices. Therefore, while this paper focuses on the video recording collection method, the data it generated was only part of the overall view that the research ended up presenting. Further, it is not just the mode of recording that is relevant here, indeed dual recordings were not obtained in all cases, but also the conscious attention to both the screen and player(s) as co-contributors to constructing moments of play.

Ten families in Melbourne, Australia were recruited via social media networks (Facebook posts in the first author's personal and local school community groups). Each family had at least one child between the ages of 6–8. Because we wanted to obtain screen recordings in cases where children played on devices that facilitated this (iOS devices with software version 14 or higher), it was necessary to have conversations with parents very early on in the recruitment process about the devices that children used to play Minecraft and to be upfront about what we were asking of them in terms of the type of footage we wanted to obtain. When necessary, parents were asked to update their iPad or iPhone software to the version that has the screen-record function, and we provided links to walkthroughs of how to do this. This was not possible in cases where the device was not new enough to be able to run the required software version. Following recruitment, each family was visited three times by the first author. Visit one was to interview parents, have children conduct play tours and to set up researcher supplied recording equipment. Visit two was brief and involved only the collection of recordings. At the third visit, children were interviewed about their Minecraft and other play, and about their recorded play sessions. All participating families were given a \$50 shopping voucher at the end of the third visit as a recognition of their time commitment to the study.

On the first visit, children took the researcher on a ‘play tour’ of their house (Plowman et al. 2012). This allowed children to describe what their overall ‘playworlds’ (Lindqvist 2003) consisted of, without restriction to site or form of play. During the play tours photographs were taken, with the child’s consent, of particularly meaningful objects or sites of play, such as a child’s current Lego build; bikes; soft toy collections; book collections; computers and gaming consoles; trampolines; arts and crafts areas; play scenes set up with small plastic toys and makeshift furniture and so on. Following the play tour, one or more parents were interviewed about their thoughts on play in general, and digital play specifically, their own videogame histories, household strategies for managing ‘screen time’, and their thoughts on Minecraft in particular. At the end of the first visit, families were shown how to operate the recording equipment and written and verbal instructions for screen recording were provided.

At this point, the research effort became collaborative between parents and researchers. We talked through and tested where cameras and tripods could be set up and checked that they were capturing what was desired (the TV or computer screen and/or where the child would sit while playing). In the two households with toddlers also present, finding a suitable place for the tripod camera was challenging. It could not be placed where it might pose a hazard to toddlers. In one case, this was resolved by recording play in a room where the door was closed and in the other a more elaborate workaround was employed. In this household, there was a space behind the couch in the family’s media room that the toddler could not reach. The mother in this family was an amateur cake-maker and arranged a tower of varying sized cake tins in this nook which the camera was placed on top of. It took some time to get the exact right height of the tower so that the camera was able to capture just the TV screen.

Printed instructions for setting up cameras and tripods, and for recording both physical and on-screen activity were provided to make the process flow smoothly and reduce the amount of effort required of families to operate unfamiliar equipment. It was explained that there was no set number or length of recordings required, but that they should aim for two recordings of 10–20 minutes in length. This was added as a ‘rough guide’ so that families had some idea of the scope of desired data collection. The instructions stated: ‘We want to record play sessions in as most natural a way as possible, so if your child plays for longer or shorter – please adjust recording length as required’. Importantly, we also provided instructions to participant families about how to synchronize recordings from two cameras:

Because we’re recording the same thing from two different cameras, we need a way to synchronize the videos when we watch them. When you have both cameras recording, please do a clap or identifiable sound near the start of recording, so that we can use this as a cue to match the videos together.

We acknowledged that it would be difficult to capture entirely ‘normal’ everyday play given that children were fully aware of being recorded. However, we explained that the aim was to see how children play in everyday settings.

The recording configuration for each family is shown in [Table 1](#). For children playing on iOS devices with the inbuilt screen recording function, the resulting two recordings were one internally produced by the device and one from the researcher supplied camera which captured a view of players and their immediate surroundings. Where children played on a computer, one camera was positioned behind the child so that the screen and child’s body were both captured. In one recording of family 5, the father had installed screen record software on the computer that was used in one Minecraft play session, so we had two recordings of this play. Xbox play was recorded with one camera

Table 1. Summary of participating family recording devices, set-up and production.

Family	Device(s) used for Minecraft	View of screen captured by:	View of player(s) captured by:	Number and length of recordings
1	Xbox	Camera on tripod to left of players, pointed at TV	Camera on tripod to left of TV, pointed at two players on couch	1 recording of 35 minutes
2	Xbox	Camera on tripod to right of player(s), behind couch	Camera on tripod to right of TV, pointed at player(s) on couch	3 recordings on different days (36, 42, and 26 minutes long)
3	iPad	First play session recorded with iPad screen record function; second session recording failed	In first recording camera in front of child sat on his bed; in second, camera in front of two players sat on the floor	2 recordings of 11 and 43 minutes
4	iPad and iPhone	Screen recording of Dad's iPhone	Camera on tripod behind coffee table pointed at players on couch	2 recordings of 15 minutes and 24 minutes
5	iPad and PC	iPad sessions recorded with iPad screen record function; PC session recorded with screen recording software	iPad session 1: camera on tripod behind left shoulder of player on couch; iPad session 2: camera on tripod behind coffee table pointed at both players sat on couch; PC session: camera on tripod behind and to the right of player sat at computer	3 recordings, 18, 17 and 21 minutes long
6	Laptop and Desktop PC	All recordings with one camera only, capturing screen, profile view of player's face and shoulders, arms and hands on keyboard	All recordings with one camera only, looking over the shoulder of player, capturing screen, profile view of player's face and shoulders, arms and hands on keyboard	3 sessions of 34, 35, and 38 minutes
7	Mum's iPhone	iOS screen recorder function	Camera on tripod behind dining table; frontal view of player sat resting iPhone on table and mother sat next to him when called	1 session of approximately 20 minutes recorded
8	iPad	iOS screen recorder function	Camera on tripod in front of couch where player was sitting capturing frontal view of player and sister	3 sessions, 43, 14 and 18 minutes long
9	Xbox	Camera on makeshift stand made of cake tins in corner behind right of couch	Camera on entertainment unit to right of TV pointed at players on couch	3 sessions, 7, 29, and 63 minutes long
10	iPad	Camera on tripod behind and slightly to the side of player, pointing down towards screen on lap of player	Same camera captured hand movements across screen, sometimes player's face but not position of player's body in room	3 sessions (all on same afternoon) of 27, 14 and 23 minutes long

directed at the TV screen and another at children as they sat on couches to play. Recording equipment was left with families for 1–2 weeks, and then at the second visit was collected along with the screen recording files

from devices. After files were synchronized (described below), and then the researcher visited families for a third time to interview children, with reference to recordings where necessary.

**Figure 1.** Final recording view for family 1 with children playing on an Xbox.

Discussion: editing and analysis procedure for synchronizing multiple perspectives

The next part of the process was editing footage captured simultaneously from two sources so that both were synchronized and could be viewed side-by-side. This was done so that we could attend to the screen in relation to the child's body and surroundings (social and material) during analysis. This editing was done using Wondershare Filmora software. The resulting views with varying recording configurations are shown in Figures 1 and 2. Figure 3 shows the view obtained from the single camera used to record the child in family 6, playing on a laptop.

A total of 10.5 hours of Minecraft play was recorded across the ten families. Some families recorded just one session, others up to four sessions (see Table 1). Recordings were varied in length, with the shortest being 7 minutes and the longest 63 minutes (both family 9). Analysis involved watching and re-watching the videos, taking detailed notes, and coding in a top-down fashion for types of play in an already existing taxonomy of play types (Hughes 2002). This coding process was done in Elan software (ELAN 2018) which allows for the annotation of large video files. The dual recordings obtained in this study allowed for a detailed, multi-perspectival analysis of children's Minecraft play on a range of devices in home leisure time settings. From this, rich descriptions of play events as they were produced by human and non-human actors, in a range of social settings, were produced. The analysis of this video recording data, in conjunction with interview and play tour data, was used in the first author's thesis to structure a detailed description of sixteen types of play (for example, sociodramatic play, communication play, symbolic play). These findings were situated within studies of the discursive social context of children's digital play and the technological context of contemporary

play worlds to form a conceptual argument that children's Minecraft engagement is as much 'play time' as it is 'screen time' and that given children have a right to play (United Nations Committee on the Rights of the Child 2013), care must be taken to actively 'see' play that involves a screen in order to avoid erasure of practices that are meaningful to children but that also come with histories of adult concern.

In this section, we explain what this method brought to analysis and then point to some challenges and ethical considerations associated with the method. The Minecraft play sessions that unfolded in the video recordings for this study were an ebb and flow of periods of intense drama, action, talk, and movement of bodies (both in physical and virtual space) and more quiet, focused periods of concentration, decision-making and at times an almost meditative or rhythmical flow to placing blocks or flying across the landscape. Video recording took place in a range of household settings—many in living rooms, with children seated on a couch, at the dining table, at a computer desk, or on the floor. Because cameras were placed on tripods or furniture and there was no need for them to be held while recording, parents generally left the immediate proximity of play once recording was set up. Household life carried on in the background. Recordings captured this in audio form with background noises of siblings playing, phone calls, washing machines, kitchen clatter, conversation between parents, and in one case, laughter at the sound of the family dog snoring as it slept next to a child playing on his iPad. Recordings were made at varying times of day and on weekends as well as weekdays after school, or after younger siblings had gone to bed and there was uninterrupted space and time to play. While children and other family members were aware that they were being recorded, the data clearly speak to the ways in which digital gameplay is, as Keogh (2018) writes: 'embedded in and mediated by the



Figure 2. Final recording view for family 4 with child and her father playing together in the same Minecraft game on an iPad (child) and iPhone (father).

rhythms of the player's everyday life, not detached from them' (147; see also Apperley 2009).

A range of social configurations of Minecraft play were captured: children playing on their own; with a parent; with a sibling or cousin; or on an online server. We were able to observe the closeness of pairs of players, over-the-shoulder glances at screens and at each other and, in family 9, the frequent handing over of the Xbox controller to an older sibling when the younger had difficulty manipulating buttons in order to achieve what she wanted her on-screen character to do. The dual view of play meant that we were able to understand breaks in on-screen activity, for example, where discussions between siblings took place, or when a child got up and moved around, leaving the iPad for some time, then returning and re-animating on-screen characters. We could hear songs that children sang while moving their avatars on screen in a

dance-like way, and see accompanying movements of children's bodies. We could see how on-screen activity flowed into corresponding moments of play in physical space. For example, where the on-screen interaction with 'witches' in Minecraft spilled over to two brothers in family 2 imitating the 'witches' cackles which then evolved into a period of rough and tumble play on the couch as the boys pushed their backs against each other with alternating force between the two of them.

We also had a good enough view of the screen that we were able to see children's facial expressions and body movements in direct response to on-screen activity. For example, in family 9, the younger sibling who struggled with the Xbox controller, became visibly tense and moved her body in synchrony with her on-screen character as she had it climb a large, high structure. From the screen view, we were able to see that she had very little space to 'jump' to and that her character frequently fell, before then adding blocks so that climbing was easier. Upon reaching the top of the structure, her body in physical space relaxed, she smiled and turned to her brother exclaiming that she had made it to the top. In family 4's recordings we had a clear view of the way that the child attempted to solve a problem with making a 'fireworks machine', by using different items, having her character change positions and so on. Importantly, we could also hear her verbalizing what she was



Figure 3. Final recording view for family 6 with child playing on a laptop at the dining table.

trying to do and could see her father glancing at her screen in an attempt to help, but being told by her ‘no, look at it from your screen’. It would be possible to get the gist of what was happening on screen, perhaps, from just a recording of the players. But having a clear view of the screen meant that we could see a level of detail in on-screen actions that would have been difficult to get otherwise.

This view of the screen also gave insight into the sorts of preparatory activities children engage in when first entering the Minecraft software. In some cases, children spent a great deal of time tinkering with game settings (adjusting the level of difficulty, assigning roles to players, etc.) Others spent time browsing the Minecraft ‘Marketplace’, trying on new ‘skins’ for their characters, in a kind of dress-up play, for example, or clicking through screenshots of pre-made maps. These sorts of meta-game practices are often left out of accounts of children’s digital play, perhaps because they are less readily aligned with pedagogical goals. But being able to clearly read the on-screen text and hear children’s corresponding commentary, such as voicing the characters of ‘skins’ they tried on or negotiating with a parent about getting a new map for a birthday present, gave us a holistic view of what Minecraft engagement involves. It meant that we could see, for example, how browsing the Marketplace was, for some children, a form of play in itself and how commercial infrastructure seeps into the flow and nature of digital play.

Also of interest and of relevance to this method, was the way that some children interacted with the camera directly. In these instances, children provided a to-camera commentary on their play in the style commonly seen in YouTube gaming videos. For example, Archie (pseudonym) in family 2, during one of his recordings said, ‘hey guys, my name’s Archie ... and now, what you want to do is ...’ and the younger sibling in family 9 said ‘this is the funnest day ever guys!’ while playing. Rather than viewing these instances as a

threat to the ‘naturalistic’ quality of our data, we view them as representations of the cultural milieu in which children’s digital play occurs. As Pink (2007) argues, it is necessary to not only consider participants’ awareness of being recorded but also the place that ‘being recorded’ has in participants’ cultural worlds. We, therefore, see these interactions with the camera as an indication of the enmeshing of ‘YouTuber’ practices and Minecraft play practices in a way that represents the current cultural value of both for children.

Overall, we argue that this method involving multi-perspectival video recordings provides an expanded and yet granular view of digital play. This has the potential to broaden our understandings of children’s contemporary play worlds and provides an effective solution to the problems of gaining access to the intimate spaces of digitally connected homes and playthings that have been difficult for researchers to view and record. In conjunction with other data sources, interview transcripts and play tours, the view of play we have produced here forms what Burnett and Merchant (2016) refer to as a ‘baroque perspective’ where various sources of empirical data are crafted together to construct ‘stories’ that elucidate the nature of children’s digital play worlds and experiences (267). Importantly, it is acknowledged that these stories are constructed by researchers’ work with the data and are not intended to be representative of a finite reality. Rather, they draw on a range of perspectives in order to build a layered, detailed researcher account of play.

Challenges and ethical considerations

The broadness of the view captured by video recordings, combined with interview transcripts, and play tour photographs meant that there was a large volume of data generated, and this presented challenges to analysis. For the purposes of this study, the volume and scope of data were justified, given our aim of

describing Minecraft play within layers of context (social, technical, etc.), and the choice to code in a top-down manner meant that the amount of detail in the data was necessary and manageable. However, for other research aims, with other theoretical bases, this method may produce a volume of information that is unwieldy and potentially unnecessary.

The reliance on technology in data generation makes this method prone to ‘technical difficulties’, that cannot always be anticipated or overcome. For example, in some families, the screen recording appeared to be working well but the files did not actually save correctly and were lost. Commonly, this was because the device’s storage was at capacity and therefore, while it looked like it was recording, there was no space for the recording to be saved. In other cases, the device being used for play was too old to install the version of the operating system that allowed screen recording. In one instance, videos of the child and the screen could not be synced in time because the audio output of the screen recording had not been captured (this is a setting that needs to be turned on). In analyzing the footage in this case, we kept the recordings separate, and tried to connect on and off-screen activity and utterances using other clues such as the coincidence of the participant putting down the device (seen from external camera perspective) with pauses in on-screen activity. These unforeseen problems were dealt with flexibly and analysis was structured around what we could observe in each recording, whether that was a side-by-side view of the screen and player(s), just a view of the screen or just a view of players (see [Table 1](#)).

A collaborative approach between families and the researcher was crucial to the success of this method. Families were told explicitly what would be required of them at initial recruitment contact and they were actively involved in finding ways of obtaining the view of play that the researcher was aiming for. Rapport building was important as was

awareness of the burden placed on participants. The researcher emphasized that there was an ‘ideal’ type of data (two recordings for each play session), but also that they understood the realities of household life with children and the limits of what was possible to achieve. By having an open conversation with participants about the study’s overall aims and what data was desired, participants were able to feel that they were ‘working with’ the researcher rather than solely the ‘subjects’ of research. In all participating families, there was an eagerness to help with producing the best possible view of digital play, both on the part of parents and children. Fortunately, all participating parents in this study had relatively high technology skills and a willingness to solve problems that arose during the period recording equipment was left with them. However, for research with participants who do not have resources in this area, this method would potentially incur an inappropriate level of burden on participants. This may also be the case in families where demands on time, or stress levels are particularly high and this must be included as an ethical consideration in planning and carrying out this kind of research. Open communication between researcher and participants is necessary, as is sensitivity to picking up on situations where the degree of involvement required of participants is inappropriate, including in cases where participants may not verbalize this out of courtesy or anxiety about letting down the researcher.

In addition to consideration of potential burden to families, and ethical considerations common to research involving children, such as the need for reflexivity in regard to power dynamics and modified consent procedures, recording in the intimate spaces of family homes raises further ethical considerations. The view of the home captured both by direct researcher gaze during visits and by camera footage represents an intrusion into spaces that may typically be protected from the view of outsiders. This presents risks to privacy as

the amount of identifying information attached to moving images of private spaces and individuals is potentially much greater than that present in interview transcripts, for example. It also potentially raises feelings of discomfort for families who may feel they are being judged on the state of the house or children's behaviour, or parenting. In this study, again, communication was key here. It was explained clearly from the outset of contact with participants that we were interested in play, for play's sake, and *not* in assessing parenting or learning opportunities or any other family practices. Participants, including children, were given the opportunity to view, share or withhold any footage or images captured. Still images from video recordings have been used in publications arising from this research, with consent, and they have been carefully checked for identifying information. This study has therefore explicitly acknowledged the intrusion of researcher gaze into otherwise private spaces and minimized the potential negative impact of this through formal ethical processes and dialogue with all participants.

Data generation by families, done in amongst busy schedules, routines and in some cases, the controlled chaos of family life, means that the researcher has less control over how much and what kind of data is obtained than they perhaps would if the footage was obtained by researchers during home visits (Marsh 2019). Where a researcher records during home visits, the presence of an outsider in the home, there for a particular purpose, for a particular time, may have an on-the-spot structuring and guiding effect on what is recorded. However, in line with the ethnographic underpinnings of our study, we see the power redistribution inherent in leaving recording to families as an opportunity for participants to directly shape knowledge production. In this way, we see the variety in the lengths and nature of recordings obtained as reflective of the variety of household contexts in which our participants play digital games,

and therefore as a source of enrichment to the knowledge produced by this study. Given this stance, flexibility in expectations around what may be possible to achieve in the analysis is required when using this method. We chose to include all recordings in the analysis, including those where only the screen or only the child were recorded, or where it was not possible to synchronize the two views. In writing about the findings, we noted explicitly the type of recording that examples of play came from and explained clearly how the footage was produced.

The method described here was focused solely on children's digital play within home settings. However, children's media engagement including digital play via mobile devices, does not only occur in the home and gaining a comprehensive view of children's engagement with digital games (and other multi-sited media) means studying these engagements in all the places they happen (Aarsand 2016). The method described here is not able to capture, say, children playing on a parent's phone in the back of the car, or while waiting for an appointment. This raises issues beyond the aim of this paper, for example, about what the objectives of children's media researchers should be, but it is worth noting that the method we have described here would appear most suited to studying play in households, or other relatively fixed and spatially bounded sites. Alternative methods are required to gain an understanding of digital play 'on the go' and in more diffuse physical locations.

Conclusion

In this paper, we have described a method for gaining richly detailed data on children's digital play that is able to account for both the player's actions and the on-screen activity as it unfolds in synchrony. This method, using two recordings edited to be side-by-side for analysis provides a means of capturing qualitative

information about digital play as it occurs in households with children without the need for a researcher to be present when data is generated and in a way that minimizes the loss of acuity of the view of the screen that is inherent in methods using only one recording perspective. The method involves collaboration between participants and researchers and is underpinned by flexibility in set-up and in expectations around the type and amount of data generated. Obtaining screen recordings of play on mobile devices can be challenging given the reliance on family's own device capabilities, and may not be possible in all situations. However, we argue that the insights possible from multi-perspectival recordings are a strong incentive for perseverance through technical difficulties and that having an open, communicative rapport with participants is crucial to the efficacy of this method. The methods developed in this study demonstrate a way to resolve tensions inherent in researching children's digital play, household media use and digital ethnography more broadly when so much of social life is now enacted and distributed across private, physical and digital spaces. Through the combination and layering of multiple simultaneous recordings of digital spaces such as Minecraft, and other children's digital play spaces within the physical and social contexts of the home, we offer a method for capturing children's digital play as an ordinary yet significant site of everyday consumption, practice and meaning.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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References

- Aarsand, P. 2010. "Young Boys Playing Digital Games." *Nordic Journal of Digital Literacy* 5 (01): 38–54. <http://www.idunn.no/dk/2010/01/art04>.
- Aarsand, P. 2016. "Children's Media Practices: Challenges and Dilemmas for the Qualitative Researcher." *Journal of Children and Media* 10 (1): 90–97. doi:10.1080/17482798.2015.1121894.
- Apperley, T. 2009. *Gaming Rhythms: Play and Counterplay from the Situated to the Global*. Amsterdam: Institute of Network Cultures. https://www.networkcultures.org/_uploads/TOD%236%20total%20def.pdf.
- Arnott, L. 2016. "An Ecological Exploration of Young Children's Digital Play: Framing Children's Social Experiences with Technologies in Early Childhood." *Early Years* 36 (3): 271–288. doi:10.1080/09575146.2016.1181049.
- Bailey, C. 2016. "Free the Sheep: Improvised Song and Performance in and Around a Minecraft Community." *Literacy* 50 (2): 62–71. doi:10.1111/lit.12076.
- Burnett, C., and C. Bailey. 2014. "Conceptualising Collaboration in Hybrid Sites: Playing Minecraft Together and Apart in a Primary Classroom."

- In *New Literacies Around the Globe: Policy and Pedagogy*, edited by Cathy Burnett, Julia Davies, Guy Merchant, and Jennifer Rowsell, 50–71. Florence: Taylor and Francis. doi:10.4324/9781315867311.
- Burnett, C., and G. Merchant. 2016. “Boxes of Poison: Baroque Technique as Antidote to Simple Views of Literacy.” *Journal of Literacy Research* 48 (3): 258–279. doi:10.1177/1086296X16668625.
- Burnett, C., and G. Merchant. 2019. “Virtual Play: Developing a Baroque Sensibility.” In *The Routledge Handbook of Digital Literacies in Early Childhood*, edited by Ola Erstad, Rosie Flewitt, Bettina Kümmerling-Meibauer, and Íris Susana Pires Pereira, 342–353. London, UK: Routledge.
- Chaudron, S. 2015. *Young Children (0-8) and Digital Technology: A Qualitative Exploratory Study Across Seven Countries* (JRC93239). Luxembourg: Publications Office of the European Union. <http://publications.jrc.ec.europa.eu/repository/handle/111111111/33897>.
- Dixon, S., and S. Weber. 2007. “Playspaces, Childhood, and Video Games.” In *Growing Up Online: Young People and Digital Technologies*, edited by S. Weber and S. Dixon, 17–36. New York, NY: Palgrave Macmillan US. doi:10.1057/9780230607019_2.
- ELAN (5.4). 2018. [Windows]. Max Planck Institute for Psycholinguistics. <https://tla.mpi.nl/tools/tla-tools/elan/>.
- Fields, D. A., and Y. B. Kafai. 2010. “Knowing and Throwing Mudballs, Hearts, Pies, and Flowers a Connective Ethnography of Gaming Practices.” *Games and Culture* 5 (1): 88–115. doi:10.1177/1555412009351263.
- Giddings, S. 2014. *Gameworlds: Virtual Media and Children’s Everyday Play*. London, UK: Bloomsbury. <http://www.bloomsbury.com/uk/gameworlds-9781623568023/>.
- Given, L., D. Winkler, R. Willson, C. Davidson, S. Danby, and K. Thorpe. 2016. “Watching Young Children “Play” with Information Technology: Everyday Life Information Seeking in the Home.” *Library & Information Science Research* 38 (4): 344–352. doi:10.1016/j.lisr.2016.11.007.
- Hine, C. 2000. *Virtual Ethnography*. London, UK: SAGE.
- Hine, C. 2008. *The SAGE handbook of online research methods*, edited by N. Fielding, R. Lee, and G. Blank. Los Angeles: SAGE.
- Hine, C. 2015. *Ethnography for the internet: Embedded, embodied and everyday*. Oxon: Taylor & Francis.
- Hjorth, L., & Richardson, I. (2020). *Ambient Play*. Cambridge, MA: Playful Thinking.
- Hollett, T., and C. Ehret. 2015. “Bean’s World”: (Mine) Crafting Affective Atmospheres of Gameplay, Learning, and Care in a Children’s Hospital.” *New Media and Society* 17 (11): 1849–1866. doi:10.1177/1461444814535192.
- Horst, H. 2016. “Being in Fieldwork: Collaboration, Digital Media, and Ethnographic Practice.” In *eFieldnotes: The Makings of Anthropology in the Digital World*, edited by R. Sanjek and S. Tratner, 153–168. Philadelphia: University of Pennsylvania Press.
- Hughes, B. 2002. *A Playworker’s Taxonomy of Play Types*. 2nd ed. London, UK: PlayLink.
- Jayemanne, D., B. Nansen, and T. Apperley. 2015. Postdigital Play and the Aesthetics of Recruitment. *Proceedings of the 2015 DiGRA International Conference*, 12, 1–16. http://www.digra.org/wp-content/uploads/digital-library/117_Apperley_etal_Postdigital-Play-and-the-Aesthetics-of-Recruitment.pdf.
- Kennedy, J., M. Arnold, M. Gibbs, B. Nansen, and R. Wilken. 2020. *Digital Domesticity: Media, Materiality, and Home Life*. New York, NY: Oxford University Press.
- Keogh, B. 2018. *A Play of Bodies: How we Perceive Videogames*. Cambridge, MA: MIT Press.
- Kervin, L., I. Verenikina, and M. Rivera. 2015. “Collaborative Onscreen and Offscreen Play: Examining Meaning-Making Complexities.” *Digital Culture & Education* 7 (2): 228–239. <https://ro.uow.edu.au/sspapers/1946/>.
- Lindqvist, G. 2003. “The Dramatic and Narrative Patterns of Play.” *European Early Childhood Education Research Journal* 11 (1): 69–78. doi:10.1080/13502930385209071.
- Mackay, H., and D. Ivey. 2004. *Modern Media in the Home: An Ethnographic Study*. Rome: John Libbey Pub.
- Markham, A. 2016. “Remix Cultures, Remix Methods: Reframing Qualitative Inquiry for Social Media Contexts.” In *Global Dimensions of Qualitative Inquiry*, edited by N. Denzin and M. Giardina, 63–82. New York, NY: Routledge.
- Marsh, J. 2019. “Researching Young Children’s Play in the Post-Digital age: Questions of Method.” In *The Routledge International Handbook of Learning with Technology in Early Childhood*, edited by N. Kucirkova, J. Rowsell, and G. Falloon, 157–170. Oxon: Routledge.
- Marsh, J., K. Murriss, D. Ng’ambi, R. Parry, F. Scott, B. S. Thomsen, J. Bishop, C. Bannister, K. Dixon, and T. Giorza. 2020. *Children, Technology and*

- Play*. 1–200. Billund, Denmark: The Lego Foundation. https://www.legofoundation.com/media/2965/children-tech-and-play_full-report.pdf.
- Marsh, J., L. Plowman, D. Yamada-Rice, J. Bishop, J. Lahmar, and F. Scott. 2018. “Play and Creativity in Young Children’s use of Apps.” *British Journal of Educational Technology* 49 (5): 870–882. doi:10.1111/bjet.12622.
- Mavoa, J., M. Carter, and M. Gibbs. 2018. “Children and Minecraft: A Survey of Children’s Digital Play.” *New Media & Society* 20 (9): 3283–3303. doi:10.1177/1461444817745320.
- Morley, D. 2007. *Media, Modernity and Technology: The Geography of the New*. Oxon: Routledge.
- Nansen, B., J. Kennedy, M. Arnold, M. Gibbs, and R. Wilken. 2015. “Digital Ethnographic Techniques in Domestic Spaces: Notes on Methods and Ethics.” *Visual Methodologies* 3 (2): 86–97. <https://journals.sfu.ca/vm/index.php/vm/article/view/50>.
- Nansen, B., R. Wilken, M. Arnold, J. Kennedy, and M. Gibbs. 2016. “Ethical Concerns Associated with Digital Ethnography in the Domestic Environment: Informant Burden and Burdensome Technologies.” In *Ethics and Visual Research Methods: Theory, Methodology, and Practice*, edited by Deborah Warr, Susan Cox, Marilyns Guillemain, and Jenny Waycott, 45–61.
- Nardi, B. 2010. *My Life as a Night Elf Priest: An Anthropological Account of World of Warcraft*. Ann Arbor: University of Michigan Press.
- Opie, I. 1993. *The People in the Playground*. Oxford, UK: Oxford University Press.
- Pink, S. 2004. *Home Truths: Gender, Domestic Objects and Everyday Life*. Oxford, UK: Berg Publishers. <https://research.monash.edu/en/publications/home-truths-gender-domestic-objects-and-everyday-life>.
- Pink, S. 2007. *Doing Visual Ethnography*. London, UK: SAGE Publications Ltd. doi:10.4135/9780857025029.
- Pink, S. 2021. *Doing Visual Ethnography*. 4th ed. London, UK: Sage Publications Ltd. <https://www.booktopia.com.au/doing-visual-ethnography-sarah-pink/book/9781529717662.html>.
- Plowman, L., O. Stevenson, C. Stephen, and J. McPake. 2012. “Preschool Children’s Learning with Technology at Home.” *Computers & Education* 59 (1): 30–37. doi:10.1016/j.compedu.2011.11.014.
- Rheingold, H. 2000. *The Virtual Community, Revised Edition: Homesteading on the Electronic Frontier*. Cambridge, MA: MIT Press.
- Richards, C., and A. Burn. 2014. *Children’s Games in the New Media age: Childlore, Media and the Playground*. Farnham: Ashgate Publishing Ltd. doi:10.4324/9781315571591.
- Schneier, J., and N. Taylor. 2018. “Handcrafted Gameworlds: Space-Time Biases in Mobile Minecraft Play.” *New Media & Society* 20 (9): 3420–3436. doi:10.1177/1461444817749517.
- Squire, K. D., and C. Steinkuehler. 2017. “The Problem with Screen Time.” *Teachers College Record* 119 (12): 1–24. <https://www.tcrecord.org/content.asp?contentid=22163>.
- Stephen, C., O. Stevenson, and C. Adey. 2013. “Young Children Engaging with Technologies at Home: The Influence of Family Context.” *Journal of Early Childhood Research* 11 (2): 149–164. doi:10.1177/1476718X12466215.
- Taylor, T. L. 2009. “The Assemblage of Play.” *Games and Culture* 4 (4): 331–339. doi:10.1177/1555412009343576.
- Tudge, J. 2008. *The Everyday Lives of Young Children: Culture, Class, and Child Rearing in Diverse Societies*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9780511499890.
- United Nations Committee on the Rights of the Child. 2013. *General Comment 17 on Article 31 of the Convention of the Rights of the Child*, 1–22. United Nations. <http://www.iccp-play.org/documents/news/UNGC17.pdf>
- van den Scott, L.-J. 2018. “Visual Methods in Ethnography.” *Journal of Contemporary Ethnography* 47 (6): 719–728. doi:10.1177/0891241618806972.
- Willett, R. J., C. Richards, J. Marsh, A. Burn, and J. C. Bishop. 2013. *Children, Media and Playground Cultures: Ethnographic Studies of School Playtimes*. Basingstoke: Palgrave Macmillan. doi:10.1057/9781137318077.
- Wohlwend, K., and T. Kargin. 2013. “Cause I Know How to Get Friends—Plus They Like my Dancing’: (I)Earning the Nexus of Practice in Club Penguin.” In *Children’s Virtual Play Worlds: Culture, Learning, and Participation*, edited by A. Burke and J. Marsh, 79–99. New York, NY: Peter Lang.