

**The Autcraft World -
Phenomenological Exploration of the
Autistic Gamer's Learning
Experience**

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for the degree of Doctor of Philosophy in
Applied Autism Research**

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Abstract

This thesis is a phenomenological study that explores what it is like for autistic teenagers to learn to play Minecraft within the community-oriented structure of Autcraft—a semi-private server specifically designed for autistic players. Unlike solo gameplay, Autcraft offers a relational, moderated, and emotionally safe space in which players engage with one another, explore the game’s affordances, and co-construct their learning through play. The study narrates the lived experiences of four autistic teenagers and examines the personal, social, and cognitive dimensions of their learning journeys.

While public understanding of autism has evolved, dominant narratives continue to frame autistic individuals primarily in terms of deficits or impairment. This research draws on the Medical Model, the Social Model of Disability, and the Neurodiversity Movement to examine how prevailing discourses shape assumptions about autistic people and influence both societal perceptions and educational responses. Hence, the study contributes to the knowledge of neurodiversity and inclusive education by foregrounding the perspectives, agency, and learning strategies of autistic adolescents in digital contexts.

The conceptual framework is grounded in the philosophy of *Bildung* and theories of self-directed and self-regulated learning, allowing for an exploration of how autistic players identify what they need to learn, choose how and where to access knowledge and adapt their learning to navigate challenges in the game. The study further considers how autistic teenagers emotionally relate to the virtual space of Autcraft and how their neurodivergence shapes their engagement, participation, and self-expression within that environment.

This qualitative study used an Interpretative Phenomenological Analysis (IPA) and was grounded in neuro-affirmative values, emphasising autonomy, human difference, self-expression, and agency throughout. Every aspect of the research was carried out online and shaped around the needs and preferences of the participants, helping

to foster a sense of comfort, trust, and accessibility. Four participants from the UK, USA, Australia, and New Zealand were recruited directly through Autcraft. Data were collected using questionnaires, video-recorded play sessions, researcher observations, and the participants' digital footprints within the server.

The findings show that self-understanding, communication and spatial organisation might be shaped not only by autism but also by the presence of co-occurring ADHD, in turn, possibly influencing how the participants engaged in learning, coped with regulation and developed self-directed and self-regulated strategies. The research also highlights the neuro-affirmative pedagogical potential of phenomenological approaches in autism research. Finally, the study shed light on how the dialogic, co-constructed nature of the inquiry mirrored inclusive, learner-centred educational practice and offered a methodological model that may inform future research and practice in neurodivergent education.

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Game Language Glossary

Afkd: away from keyboard.

Despawn: disappearing from the game world.

Griefing: act of intentionally destroy or steal others' structures.

/helpop: command to contact Admins in case of emergency.

Mod: modification or addition to the game.

NPCs: non-player characters.

Piglins: pig-like characters.

/sethomes: command to record and go back to a specific place.

Tp: teleport from one place in the game to another.

Tbh: to be honest.

1. INTRODUCTION

This thesis is a phenomenological study that explores what it is like for autistic teenagers to learn to play Minecraft in Autcraft, a semi-private Minecraft server dedicated to autistic¹ young people. It narrates the lived experiences of four autistic gamers playing the game. Before I start, I need to clarify three principal elements of my inquiry, namely, autism, video games, and lived experience. These are paramount to understanding the ideas I will be developing throughout this thesis. While the perception of autism has positively evolved over the years, it is still interpreted mainly in terms of limitations. These interpretations drive how autistic people are considered, valued, and respected at home, at school, and, more broadly, in society. In turn, these influence how programmes and interventions are designed and offered to them. Likewise, research about video games has predominantly focused on their negative impacts, such as addiction, aggressivity, and isolation. However, recent findings have shown the benefits of playing video games, like self-regulation, friendships, and connected learning. It stands to reason that these perceptions, presuppositions, and interpretations equally affect the autistic lived experience.

Heidegger (1927/2010) wrote, “Interpretation is never a presuppositionless grasping of something previously given” and further argued that even a precise “instance of interpretation” of “what is there” is “nothing other than the self-evident, undiscussed prejudice (...) of the interpreter” (p. 146). Leaning on Heidegger’s words, this introductory chapter provides some background information to situate the meaning of the term *autism* amidst the different interpretations that co-exist in association with the two main Models of Disability (medical and social) and the more recent Neurodiversity Movement. Then, I briefly present the world of Minecraft and its cousin, Autcraft. Next, I discuss the motivation behind this research and pose the fundamental

1 I acknowledge that researchers and other professionals may prefer “person-first” (student with autism) language. However, with respect to my autistic son, I will use “identity-first” (autistic person) throughout my thesis.

question I hope to answer. I address the significance of this project and how it might contribute to the current body of knowledge. Finally, I share the outline of what lies ahead in the following pages.

1.1. Background

Knowledge takes us to the gate of understanding. The experience opens it: assumption gets us nowhere. In this section, I explain how our knowledge-based understanding of autism may influence how we perceive the autistic person and sometimes assume what they need. Then, I present the medical definition of autism and succinctly retrace its origin. Finally, I contextualise autism on the backdrop of the Medical and Social Models of Disability along with the Neurodiversity Movement to illustrate the contention that lies between the way the world perceives and understands autism and the way many autistic people experience it.

1.1.1. What is Autism?

The term *autism* comes from the Greek word *autos*, meaning *self*. In 2013, the American Psychiatric Association (APA) defined *autism* as a *lifelong* neurodevelopmental disorder characterised by impaired social interactions and communication skills, restricted/repetitive behaviours and sensory sensitivities. However, sensory sensitivities, which affect any of the senses through hyper-sensitivities (e.g., too much noise) and, or hypo-sensitivities (e.g., high pain tolerance) leading to strong emotional responses, stress, anxiety as much as sleep disturbances (Reynolds et al., 2012), did not gain diagnostic recognition before 2013. In addition, other issues may compound with autism, such as social anxiety disorder (Bejerot et al., 2014), attention deficit hyperactivity disorder (ADHD; Stevens et al., 2016), and gastrointestinal problems (Mannion & Leader, 2013) to name but a few. Even if the APA definition became the bedrock of the diagnostic process, autism is more than a set of precise features; it may include a range of particularities (Figure 1).

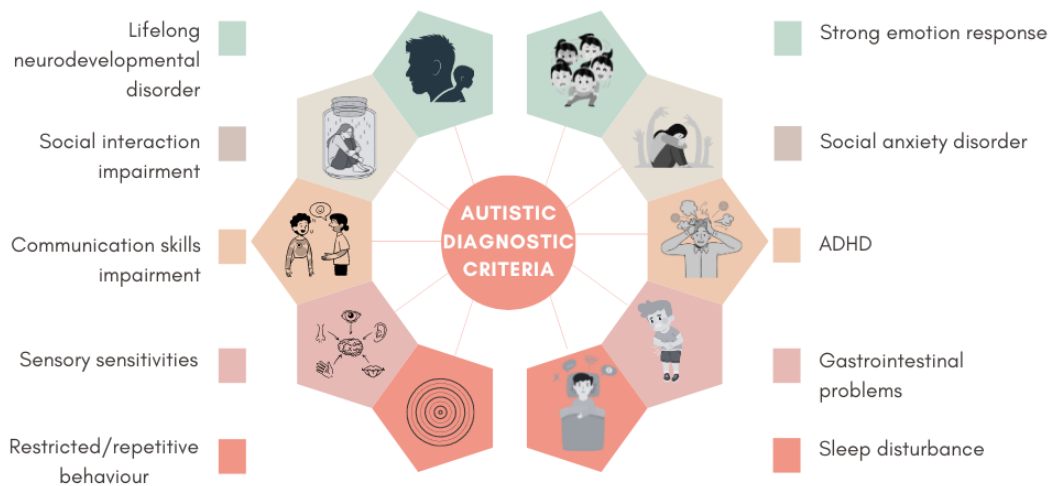


Figure 1. Autism profile based on diagnostic criteria

In the 20th century, Hans Asperger in Austria (1944; Frith, 1991) and Leo Kanner (1943) in the USA described a childhood disorder with similar yet somewhat different features. Unbeknown to them, both scientists published their findings using the same borrowed name, *autism*, coined by Eugen Bleuler in 1911 to define children's schizophrenia (Frith, 1989). Kanner used the label *early infantile autism* (Frith, 1989), thus suggesting autism did not exist in adults, while Asperger reported that autism appeared around two years of age. Years later, van Krevelen (1971) defended the idea that Hans Asperger depicted a distinctive disorder called *Asperger Syndrome* (Wing, 1991). Nonetheless, other scientists deemed the syndrome too similar to *Kanner's Autism* to represent a separate disorder (Gillberg & Gillberg, 1989; Wing, 1991) – the appellation Autism Spectrum Disorder (ASD) aimed at reconciling this blurry line.

1.1.2. How does the world perceive Autism?

Today, the term *Spectrum* aims to represent 'each' unique autistic person; that is, *when we meet an autistic person, we meet one autistic person*. Nevertheless, the perception of autism remains inextricably rooted in the model of disability that fits our world map. The two main models examined in the literature are the Medical and the Social Models of Disability. Straus (2010) states that the Medical Model of Disability

sees autism as an individual's impairment, suggesting a medical cure is needed. Not so long ago, Bettelheim (1967) believed *emotionally detached* mothers caused autism in their children and, in the same breath, coined the term *refrigerator mothers*. Once his theory was debunked, the blame shifted, putting the onus on the "sick children who need to be made well again" (Frith, 1991b; p. 7). Autistic features are often described as shortfalls, justifying the need for interventions in line with the medical model (Bottema-Beutel et al., 2018; Mandy, 2019; Milton, 2012). For example, lack of eye contact or poor understanding of social cues are interpreted as symptoms of social communication *deficiencies* requiring social skills training. Likewise, rocking, a strong interest in specific subjects, and agitation when facing changes are signs of restricted/repetitive behaviour, justifying the need for behavioural interventions (Figure 2).

The contender, the so-called *Social Model of Disability* (Oliver, 1996), asserts that people are disabled and excluded by the barriers society raises. Reframing disability as the product of a discriminatory world, Oliver denounced the need for society to be fixed rather than people (Barnes & Mercer, 1997). However, his claim begs the question: How could public resources be allocated if a disability is not a medical 'problem' requiring treatment but a social construct? Autism also translates aptitudes, including intellectual abilities, thereby underlying the importance of carefully choosing the most appropriate support amidst a growing range of interventions from basic life skills to academic competencies (Armstrong, 2011). This caution applies to education as well when support is offered through schools. As Wood (2019) documented, how education perceives autism equally informs how autistic students are taught in mainstream or specialised education schools. It highlights a critical gap in our scholarly understanding of autism: the focus has been on prescribing interventions to help autistic young people learn in a neurotypical manner rather than designing programmes that support their autistic way of learning. While this social model is necessary to conceptualise the disadvantages disabled people face daily, even after receiving a diagnosis, it is not without flaws. It is criticised for dismissing the experiences of those who do not consider their disability a social problem (e.g., chronic conditions; Beaudry, 2016; Gallagher et al., 2014; Owens, 2015; Figure 2).

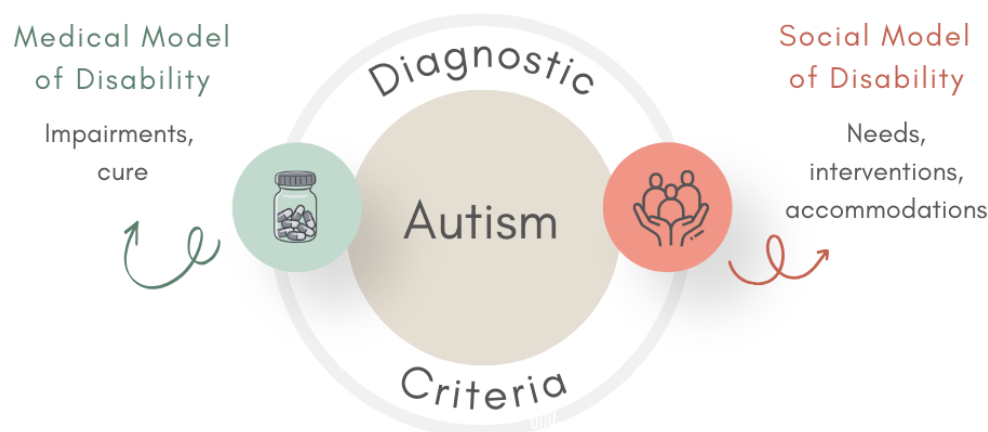


Figure 2. How does the world perceive autism?

Both models conjointly held onto the *disability monopoly* for years until the rise of the Internet in the late 1990s offered diagnosed autistic children, now adults and still autistic, the opportunity to share with a world audience (Davidson, 2008) that being autistic also means being *different, not less* (Grandin, 1995). In that period, two autistic academics, Judy Singer (1998) and Jim Sinclair (2012), disrupted the status quo when they pondered the subject of their autism from a divergent perspective, thus signalling the emergence of the Neurodiversity Movement.

1.1.3. How do many Autistic people experience Autism?

A shift ensued when autistic activists and academics saw their Autism as enmeshed in their cultural identity and felt neither model acknowledged their lived experiences (Beaudry, 2016; Owens, 2015) and from their work emerged what would be known as the *Neurodiversity Movement* (Figure 3). Sinclair's (2012) essay "Don't Mourn for Us", in which he implores parents to embrace their children's differences, initiated a change of perception that would influence future generations. Five years later, an autistic PhD student, Singer (1998), toyed with a new idea that welcomed neurological variances as part of human nature and eventually formulated the term *neurodiversity*. Neither a model nor a paradigm, for neurodivergent academic Walker (2014), neurodiversity symbolises "the diversity of human minds, the infinite variation in neurocognitive functioning within our species" while neurodivergence re-

flects “neurocognitive functioning diverging from dominant societal norms”. Singer’s (1999) argument gained further licence when she proposed that the way neurodivergent individuals process the information would allow them to fill in “ecological niches” (Singer, 2016; Location 1164). Since the term neurodiversity includes neurotypical and neurodivergent people, it also repositions the debate in affirming that autism represents a nuance within the *spectrum* of human behaviours and has strengths akin to Milton’s (2017) *dispositional diversity* (p. 49). The concept is compelling because it naturally disenfranchises the pathologizing of difference and promotes social justice by accepting human neurodivergence (Armstrong, 2015; Chapman, 2019, 2021).

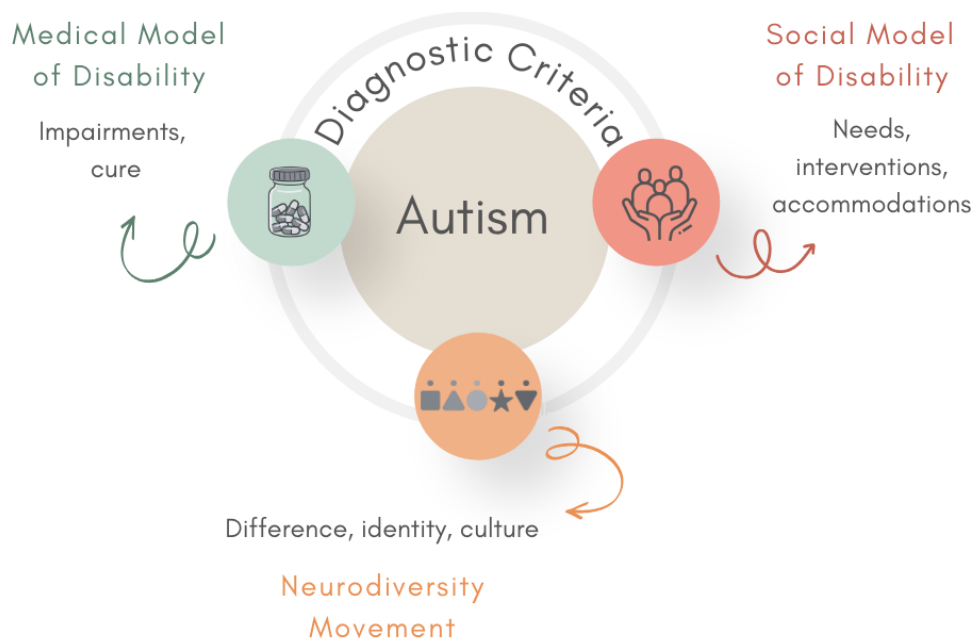


Figure 3. How do many autistic people experience autism?

The Neurodiversity Movement also acknowledges autism as a positive identity (Kapp et al., 2013), reflecting *human variation* (Jaarsma & Welin, 2012). A tenet the neuroscientist Costandi (2019) strongly disputes, saying it is “at odds with scientific understanding” (para. 22). Evidently, any variance from the neurotypical norm will always defy the odds. Many autistic people consider their autism as part of who they are, not as an illness they have (Kapp, 2020) and, on that basis, ask to be treated equally to neurotypical individuals (Runswick-Cole, 2014). This notion of autistic identity

fuelled another debate on language (Bury et al., 2020; Geelhand et al., 2023; Taboas et al., 2023; Vivanti, 2020). Based on a UK survey including 502 autistic people and 967 professionals, Kenny et al. (2016) reported that 61% of autistic adults and 38% of professionals preferred identity-first language, while 22% and 49% endorsed a person-first language. Thus, highlighting that for some people, using *identity-first* language (autistic person) is a way to express their autistic self. Based on a survey with 541 French speaking autistic adults, Geelhand et al. (2023) have given breadth to Kenny et al.'s (2016) study by reporting a similar preference for identity-first language. In contrast, others do not identify with their autism and prefer using the *person-first* (person with autism) form (Bury et al., 2020). Interviewing autistic students in College, Cox et al. (2017) showed that students diagnosed early perceived their autism as part of their identity (identity-first; *autistic person*), and Hickey et al. (2018) reported that people diagnosed after 50 years old tended to see themselves as separate from their autism (person-first; *person with autism*).

If the diagnosis facilitates identity development (e.g., autistic person or person with autism), then could the autistic features, which the medical model characterises as shortfalls, act as cohesive elements of affiliation and contribute to the development of an '*autistic culture*', since autistic people share a set of experiences rooted in the way they perceive and interact with the world as Farahar (2022) argued? The idea bears merit for Fein (2015), who explored the notion of sociocultural affinity in relation to neurodiversity among the autistic residents of the *Journeyfolk*, a camp where autistic teenagers engage in role-playing games. She demonstrated how adolescents' autistic traits, considered deficits outside the camp, became a *source of commonality and community* that allowed them to create their own cultural space. Likewise, Cooper et al. (2021) surveyed 140 autistic participants and established a positive association between their self-esteem and the sense of affiliation with an autistic culture. Reminiscent of the debate surrounding autism and identity, the autistic artist Adams (2019) highlighted a rift in descriptive language between the concepts of *autism culture* (non-autistic-led) and *autistic culture* (autistic-led). Under this light, the label *Autism Spectrum Disorder*, it could be said, takes on different meanings in which *Autism* reflects a multiplicity of perceptions, *Spectrum* conveys a multiplicity of expressions,

and *Dis-Order* enables a multiplicity of conjectures. Nonetheless, as discussed above, *being* autistic means different qualities of being and insightful interactions from which emerge a sense of belonging to an autistic culture.

The notion of autistic culture is also present in the virtual world, particularly, in online video games, as Ringland (2019a) established by demonstrating how playing in Autcraft, a multiplayer online Minecraft server, facilitates the development of a virtual community that autistic gamers enjoy; however, before I delve into my research and highlight the reasons why they relish the experience, I will now briefly present what Minecraft is and how it differs from Autcraft.

1.1.4. What is Minecraft?

Minecraft (Mojang, 2009) was created by Markus Persson — better known to players as Notch — a Swedish developer who is autistic himself. It is what is known as a sandbox game: a format where, rather than being steered towards a fixed goal, players are left to set their own direction. They can build, explore, modify, and shape the world however they choose. This open format stands in stark contrast to the traditional structure seen in games like *Super Mario* or *Zelda*, where there is a clear mission — usually something heroic like saving a princess — and once it is completed, the game ends. Minecraft does not end. It simply continues, shaped by whatever goals players choose for themselves: constructing grand castles, journeying to far-off biomes, or battling the lurking mobs that come out at night.

It can be played solo or with others. In multiplayer mode, players share the same world, connecting through servers and leaving their imprint on a collective landscape. Visually, Minecraft's blocky, pixelated style often draws comparisons to a digital version of Lego®. Its graphics have been criticised for looking outdated — even a bit ugly, by modern standards — a throwback to the 1980s aesthetic. Nevertheless, strangely enough, this did little to deter its popularity. On the contrary, Minecraft's audience has grown rapidly over time (Curry, 2021). Persson has often said that Minecraft was not born out of nowhere. "Minecraft is like a mixture of everything I loved

about games when I grew up,” he reflected (Arnroth, 2014; p. 14). His real innovation was less about inventing something entirely new, and more about reworking old elements into something that felt unmistakably personal. “I try to create my own dialect of the language that’s called gaming,” he explained (Arnroth, 2014; p. 15). Another key part of Minecraft’s early success was Persson’s openness with his community. From the beginning, players were invited to try beta versions — released daily through Twitter — and their feedback genuinely shaped the game’s development. This collaborative approach was relatively rare at the time. By the time Minecraft launched officially, it already had an audience that felt not just loyal but also invested (Arnroth, 2014).

For many autistic young people, Minecraft serves as a space where personal expression is possible in ways that other environments might not allow. It becomes a place where they can decide what to do, how to learn, and when to move forward, all without needing to follow strict external rules. The flexibility of the game seems important here. Players are not confined to set pathways or formal tutorials. In fact, the absence of structured guidance often pushes them to figure things out on their own. Some players experiment directly in the game. Others, however, search for information outside of it. Improving skills like building or fighting often leads them to YouTube channels, blogs, or online communities such as Discord, where advice is shared among players. There is no single route to improvement; what works for one person may not for another. It is through these small, often imperfect experiments that Minecraft becomes something more complex than just a space for creativity or exploration. It also demands skills in critical judgement, something that grows gradually as players navigate the learning process (Bebbington & Vellino, 2015).

From an academic standpoint, research demonstrated how Minecraft benefited non-autistic students in geometry (Foerster, 2017), sciences (Lane et al., 2017) and second language learning (Marlatt, 2018). Karsenti and Bugmann (2017) studied 118 primary students using Minecraft in their class over one academic year and reported increased collaboration and cooperation when troubleshooting game issues. Being highly collaborative, Minecraft challenges the myth of the disconnected teen player

(Mojang, 2016) and contradicts the negative impacts reported in early research, such as (Zimbardo & Coulombe, 2015).

One of Minecraft's strengths is its ability to cater to players' preferences and needs. Players often find it helpful to adjust different parts of the game environment depending on what they need at a given moment. Some might lower the difficulty level if things start to feel overwhelming; others might turn off the sound altogether or shift between survival and creative modes to match their mood or energy. These small decisions do not simply alter how the game looks or feels. In many cases, they seem to allow players to manage emotional reactions or sensory overload in ways that formal settings rarely make possible. It is difficult to say precisely how much of an impact this has, but for some, being able to make these choices may ease feelings of frustration or anxiety. Over time, these experiences might even support a stronger sense of confidence in their ability to handle challenges on their own terms. These choices do not just change the way the game looks or sounds; they appear to offer players a means of managing their emotional and sensory experiences in a way that feels personally meaningful. For some, making minor adjustments like these may help to reduce feelings of anxiety or frustration. In turn, the ability to shape their own play environment might gradually support a growing sense of self-efficacy, although this likely varies between individuals.

As discussed in [Chapter 1. Introduction - How do many Autistic people experience Autism?](#), the neurodiversity movement advocates for recognising differences in cognition and behaviour as legitimate forms of human variation and for providing autistic individuals with opportunities to thrive in environments that accept and support these differences. Minecraft's customisability gives players a chance to shape their experience in ways that feel right for them, rather than having to follow a fixed path. This kind of flexibility shares some important ideas with the Neurodiversity Movement, particularly in how it values different ways of engaging and expressing oneself. For autistic gamers especially, Minecraft can become a space where personal growth and self-expression are possible on their own terms. Because there is no single end goal built into the game, players are free to create their own stories and move through the

world as they choose (Duncan, 2013; Ringland et al., 2016). Even so, one might argue that offering choices mainly reflects the intentions of the developer rather than being solely about empowering the players.

This research took place on a multiplayer server (online host) called Autcraft, where players virtually gather to play Minecraft together. As of today, Autcraft represents a community of about 15000 neurodivergent gamers and extends its reach through Facebook, Twitter, Twitch, YouTube, and a dedicated website. It offers many activities tailored to the players' interests (Figure 4) and organises cultural and autism-related events (e.g., Autcon, Pride, and New Year's fireworks) for and with its community.

My inquiry seeks to explore whether playing Minecraft in Autcraft is an effective learning environment that fits a student-focused framework for autistic learners. Therefore, having established my understanding of autism, Minecraft and Autcraft, I will now explain the significance of this study, share the motivations beyond this research, and describe its purpose.

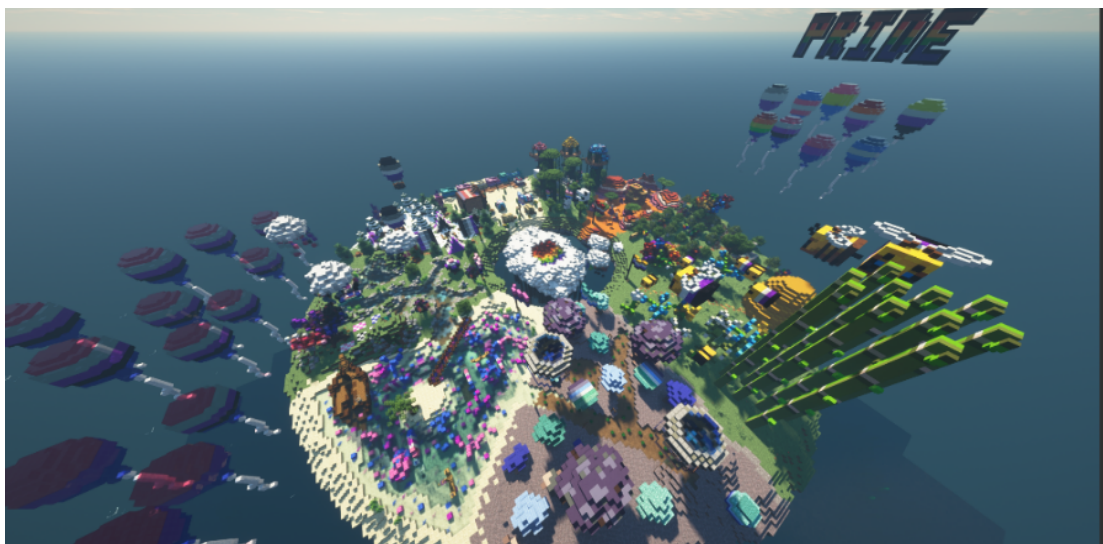


Figure 4. Autcraft - Pride Event (players' interest)

1.2. Significance of the Research

The number of autistic young people attending mainstream schools is rising (D'Agostino & Douglas, 2021). In 2017, the Scottish Government (2017) introduced an initiative to include autistic students in mainstream education to foster inclusion within these settings. However, Goodall (2020) challenges this approach, highlighting a disconnect between mainstream high schools' concept of inclusion and autistic students' experiences, arguing that inclusion is a *'feeling [sense of belonging], not a place [school]*. In practice, inclusion is often sought through a 'shared space' (e.g., mainstream schools for autistic and non-autistic students) in combination with intervention programmes (Babb et al., 2021; Education Scotland, 2019) and accommodation strategies (Babb et al., 2021) aiming at helping autistic students learn among and in the same way as their non-autistic peers, rather than accepting them as they are and supporting their autistic way of learning. It might help explain why, among the 70% of autistic young people registered in mainstream schools in the United Kingdom, 60% of them and 70% of their parents deplore that teachers do not understand their autism (APPGA, 2017).

While the virtual world does not guarantee inclusion or learning, the fact that many autistic young people have a strong affinity with online technologies encouragingly points the way forward. That said, the pertinence of using technology for educational purposes has been challenged. Past studies have discussed the negative impact online technology has on autistic young people, such as increasing maladaptive behaviours or isolation (Craig et al., 2021; Kuo et al., 2015), which, in turn, may hinder inclusion and learning. However, some of these studies rely on second-hand data (e.g., teachers, psychologists, parents); thus, they may not always give credence to the autistic lived experience or reflect whether or not the autistic participants felt included (Figure 5). By contrast, other scientists, using first-hand data, demonstrated that online technology could foster inclusion and facilitate learning in informal settings. Ringland (2019b), for instance, showed how Autcraft offers an online environment where autistic gamers feel understood, acknowledged, and included, while Soares et al. (2021) reported how technology could facilitate autistic students' learning. It underscores the

need for further research to better understand how autistic students learn, what true inclusion looks like and means for them, how it contributes to their learning experience in online video games, and how it can ultimately be modelled in the classroom.

As previously discussed in [Chapter 1. Introduction – How does the world perceive autism](#), our understanding of autism influences how we interact with autistic people. This perception also orients autism research. Over the years, research has remained principally concerned with the impairments associated with autism. Burnham Riosa et al. (2017) reported that out of the 431 studies they reviewed, which focused on the well-being of autistic people, 50.3% had a deficit orientation, while only 11% emphasised autistic strengths. These findings underline the paucity of research informed by a positive neurodiversity perspective. Frith (1989) argued that autistic people exhibit a deficit in processing information because they focus on details, which she referred to as weak central coherence, while non-autistic individuals grasp the overall gist. Even if we know that academic underachievement is common in autism (Mayes et al., 2020), we still do not fully understand what this processing difference means to autistic young people and how it might contribute to their way of learning. Although Ringland et al. (2015) showed that autistic children learn skills and develop knowledge about various topics in Autcraft and Mazurek and Engelhardt (2013b) reported that they play more video games than non-autistic ones, research investigating the positive aspects inherent to autistic particularities (Wilson et al., 2017) in the virtual world is scarce. While many autistic young people are accomplished Minecraft players (Ringland, 2017), the synergy between their autism and the underlying learning mechanisms that make them skilled at the game remains unclear.

The democratisation of online technologies has offered a novel approach to intervention programmes supporting autistic young people (Zayeni et al., 2020). However, these tools are designed based on a predetermined understanding of autism; therefore, they follow a deficit view of autism and aim at ‘remediating’ its impairments (American Psychiatric Association, 2013), often relying on the input of non-autistic professionals and/or parents as described in Carlier et al.’ (2020) study. Alternatively, they may be informed by autistic user experiences (UX), as Bossavit and Parsons

(2016) demonstrated in their research approach. That said, a specific autistic UX model has yet to be formally conceptualised (Valencia et al., 2021), thus giving purchase to the need for qualitative research focusing on autistic gamers' lived experiences.

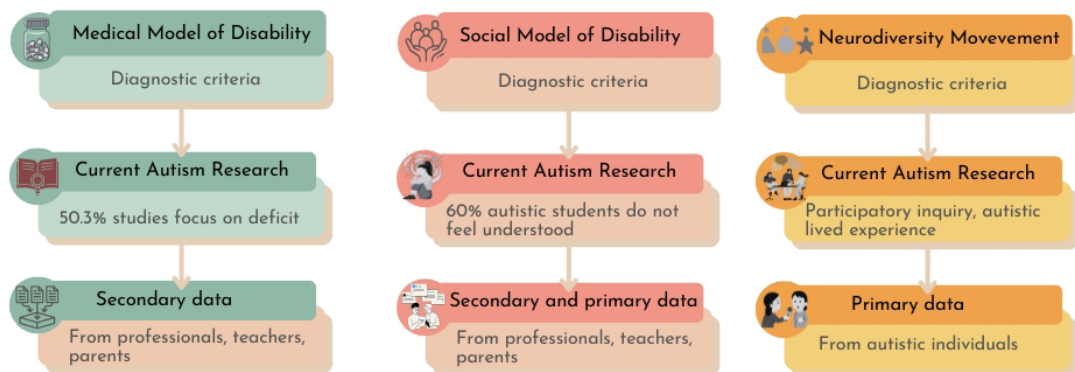


Figure 5. Secondary vs primary data

1.3. My journey

My interest in how autistic young people learn stems from my autistic son's experience of sensory sensitivity. Two experiences, in particular, inspired me to embark on this journey. The first is rooted in my son's dyslexia diagnosis (6 years old). Working with him, I realised that his dyslexia presented differently from his brother's. He did not see a word constantly in the same way. For example, he would read the words *four days* as *our days*, or *fdays*, or skip the word *four* entirely, yet at other times, he would read them correctly. One evening, while reading a novel, I came across the notion of binocular rivalry, and since it seemed very similar, I contacted the educational psychologist who had diagnosed him. She had not told us about it because, in Spain, parents are usually wary of approaches that are not covered by insurance. At the end of our conversation, I had a name, a phone number, and hope to spare. After three hours of visually challenging tests, binocular rivalry was confirmed, and we left with a lens prescription. Associated with sensory processing differences (Li et al., 2017), binocular rivalry causes visual desynchronisation, where each eye sends a different image to the brain (Karaminis et al., 2017). My son went from having reading difficulties to reading effortlessly almost immediately upon wearing glasses, which is nothing short

of a miracle. What would have happened to him if the story had ended at the doorstep of the dyslexia diagnosis? The second experience arose from my Masters' research (Marmoy, 2020), which revealed that my son is more sensorily regulated when he plays online video games (e.g., Minecraft). Moreover, this online space seems to offer him an alternative means to satisfy his sensory demands (e.g., rapid mouse manipulations). At the same time, his avatar appears to facilitate friendships with other players sharing the same interest (affiliation).

Based on these two experiences, I wondered whether my son's sensory sensitivities further influence his learning and whether his online playing experience supports the way he learns. Albeit prior studies have presented Minecraft as a positive environment conducive to learning (Bar-El & Ringland, 2020; Karsenti & Bugmann, 2017), we know very little about the underlying strategies autistic players rely on to learn the game independently (e.g., without a formal instruction manual) within the boundary and specificities of a multiplayer server (e.g., among other players in Autcraft). Consequently, the purpose of this study was to understand the experience of autistic young people learning to play Minecraft in Autcraft, which I detail in the next section.

1.4. The Purpose of the Research

The exploratory nature at the core of this study drove the way I articulated the aims and the research question. Therefore, the purpose of my inquiry reflects two perspectives, namely, the autistic gamer's experience and the relation between the autistic gamer and the game in a multiplayer environment.

This study aims at the following:

1. Exploring the autistic teenagers' learning experience through the strategies they develop and rely on to play Minecraft in Autcraft.
2. Examining the interaction between autistic players and the Minecraft game within the Autcraft server.

Since this inquiry is informed by the theories of self-directed and self-regulated learning and guided by the philosophy of Bildung, the overall objective of my research can be synthesised as follows: This research highlights the humanistic principles and vocational aspects of Bildung, exploring how autistic gamers engage in self-directed and self-regulated learning through Minecraft's game mechanics and the organisational structure of the Autcraft server.

1.5. The Research Question

This research attempts to answer the following question:

How do Autistic Teenagers Learn to Play Minecraft in Autcraft?

Three guiding questions further shape the inquiry:

1. How do autistic teenagers perceive themselves, and how does this self-perception influence their learning experience differently when playing in Autcraft?
2. What does the learning experience of playing Minecraft within Autcraft mean to autistic teenagers?
3. What strategies do autistic teenagers develop to learn and progress in the game in Autcraft's multiplayer setting?

Furthermore, a hermeneutic phenomenological methodology and, more particularly, an interpretative phenomenological analysis of the player experience is employed to answer these questions.

It is worth mentioning that in this study, I deliberately employ the term 'learning experience' to distinguish the inquiry's focus from 'learning', which is often understood solely as skill acquisition, performance, or measurable outcomes. While this formulation is often used to emphasise learners' subjective engagement with learning processes, I use 'learning experience' to refer more broadly to the situated, relational,

and embodied context in which learning unfolds in any settings. It includes not only how autistic teenagers perceive and make sense of learning, but also how learning is shaped through interaction with the game environment, its mechanics, and the social structure of the Autcraft server.

Framing the research questions around the learning experience aligns with the hermeneutic-phenomenological approach adopted in this study, which seeks to understand learning as a lived, meaning-making process embedded in context. It is also consistent with Self-Directed and Self-Regulated Learning theories, which foreground learners' agency, goal-setting, and emotional regulation, as well as with the philosophy of *Bildung*, which conceptualises learning as a process of self-formation emerging through lived engagement with the world rather than through outcomes alone.

1.6. Contribution to the Body of Knowledge

Whereas the consensus is that accommodation strategies (e.g., simplified content, deferring classroom entrance to avoid crowded hallways) *enable* autistic students to learn among and in the same way as their non-autistic peers, this research takes a different path. Instead, it is conducted within an *informal learning space*, Minecraft, within the structure of the Autcraft server, where autistic young people are known to be learning without having to ask for accommodation. This study aims to contribute to the body of knowledge by exploring the autistic experience through the lens of the German philosophy of *Bildung* in tandem with self-directed and self-regulated learning theories. I will examine how autistic players perceive themselves, connect with other players, and relate to the technology to develop their own learning approach. I hope the research's findings will provide a wealth of insights, which might improve how video games and educational programmes are designed to address the learning needs of autistic young people while focusing on their well-being and their inclusion in the classroom and society.

1.7. Positionality Statement

I shall add a few remarks concerning my stylistic approach and positionality to make the undercurrents influencing this research as explicit as possible. I chose the first-person singular form for three reasons. First, it allowed me to better communicate the intimacy of the participants' lived experiences. Second, it aligns with the core principle of the Interpretative Phenomenological Analysis method, which recognises that meaning is co-constructed through the researcher's interpretative lens. For instance, when a participant described the feeling of "being invisible", I did not treat this as a static descriptor. I also reflected on how my own experiences of social marginalisation influenced the way I connected with what the participant was describing. When another participant spoke about the comfort they found in the repetitive rituals of Minecraft, I became aware of how my own neurodivergent preference for structure and rhythm shaped my understanding of the emotional significance of their words. In these instances, using the first-person allowed me to acknowledge my interpretative presence rather than feign an impossible objectivity. Third, it openly reflects my investment in the topic, which helped me remain vigilant about my biases. However, maintaining this "objective" closeness to the subject was not always easy, and halfway through the literature review, it became a challenge. I found myself reacting emotionally to what I was reading and began to lose perspective. Journaling about my experiences allowed me to regain a clear sense of direction and purpose. Through this experience, I discovered a guiding compass that helped me assess my actions and uphold an ethical, objective, and honest stance as a researcher.

My worldview is continuously shaped by my life experience as a neurodivergent researcher, woman, and mother of three neurodivergent children. Based on this, my epistemological position is that we learn about the world by acknowledging, experiencing, and interpreting multiple realities with an open mind and a deep respect for its diversity.

Since this interdisciplinary research engages with four major disciplines: philosophy, psychology, education, and technology—and to keep this thesis aligned with my inquiry, I highlight these perspectives with a different level of granularity. While

these shortcomings may raise concerns, I hope the value and robustness of the findings assuage them. For this reason, I encourage readers to be patient while pursuing their reading to the end.

1.8. Organisation of the Thesis

This study, which explores the lived experiences of autistic young people learning to play Minecraft in Autcraft, is organised into seven chapters.

Chapter one – introduces the research and contextualises the meaning of autism.

Chapter two – describes the theoretical and philosophical frameworks guiding the study.

Chapter three – offers an overview of the autistic experience of learning documented in the existing literature. It focuses on the autistic first-hand experience as it transpired in the reviewed studies and is organised around the tenets of the philosophical framework.

Chapter four – presents the method employed, that is, the Interpretative Phenomenological Analysis and highlights the hermeneutics phenomenology underpinning the research process. It provides the inclusion and exclusion criteria followed to recruit the participants. Finally, it explains how the data was collected and analysed.

Chapter five – presents the findings of the research. It describes each participant's world and details the core elements of their experiences. Moreover, it reveals the three salient experiential themes shared by the participants.

Chapter six – discusses the research findings, brings to light unexpected insights and answers the research question.

Chapter seven – reviews the significance of the study, presents its contribution to knowledge, addresses the limitations inherent to the study, and offers recommendations for future research.

2. THEORETICAL AND PHILOSOPHICAL FRAMEWORKS

2.1. Introduction

Borrowing the analogy from another student, delving into previous research is like organising a big dinner party, wondering which guests I should invite and where they should sit. As my inquiry called on diverse expertise, I have tried to gather different, supportive, and contradicting views around my table, juxtaposing theories and concepts that had not been previously considered together within the field of autism. As human *experience* is a phenomenon affecting all aspects of life, I needed to call on various theories and philosophies to fully map the meaning of the autistic experience. As such, this study sought to stretch beyond the models of disability presented in the introduction and root my research in a school of thought that perceives human difference as a marker of humanness, through which we may become our best selves.

Here, philosophers such as Heidegger, Sartre, Merleau-Ponty, James, and Bergson allowed me to embrace the notion that, whether autistic or non-autistic, we are all human beings. In sum, the philosophical framework of Humanism allowed me to consider ‘the person’ through their wholeness. After discussing the historical imprint of Humanism on education and pedagogy, I present the theories of self-directed and self-regulated learning framing the research. Next, the focus turns towards the German philosophy of *Bildung*, which I will also situate historically before illustrating four key principles: 1) its lifelong self-formation tenet, 2) its relation to self-world orientation, 3) its freedom and diversity prerequisites, and 4) its association with practical experience. This chapter concludes with a diagram synthesising how the various authors who sat at my table helped me create the sensible yet robust multidisciplinary framework that guided my research inquiry.

I will begin by introducing the concept of humanism to provide a historical overview of how humanism has influenced Wilhelm Dilthey’s and John Dewey’s ped-

agogical approaches, as well as Malcolm Knowles' and Monique Boekaerts' learning theories.

2.1.1. Humanism

Humanism is not a new-fangled idea; it can be traced back through time and culture from the Roman Philosopher Cicero (106 – 43 BC), who used the term *humanitas* to describe liberal education, to the writings of Epicurus (Greece, 342–271 BC), who explored the unceasing quest for a joyful human life in a God-free world, to Confucius' (China, 551–471 BC) belief in the need to secure justice and decency among people, or in the work of Voltaire (France, 1694–1778), who never shied away from standing against injustices and defended the fundamentals of free speech. Humanism tends to consider the 'human essence' as universal, irrespective of race, gender, ability, or social status. In contrast to the mind-body dichotomy, humanists emphasise brain and body unity through their whole-person approach (White, 2015).

Human *autonomy* is a hallmark of humanism. It posits that people are autonomous when their beliefs and actions emerge from their reflective reasoning. For humanists, autonomy exalts the uniqueness of each individual—without autonomy, people become less human (Norman, 2013). In this school of thought, education is believed to play a fundamental role in elevating humanity by forming each human being according to their individuality. In this inquiry, I focus on the work of Wilhelm Dilthey (1833-1911) and John Dewey (1859-1952). While both embrace a *learner-centred* approach, they also offer a certain level of structure², which is crucial for autistic learners. Overall, they emphasise the importance of both cognitive (intellectual) and affective (emotional) aspects of student learning, thereby integrating theoretical knowledge with practical application.

2 Structure means providing specific and clearly defined activities or tasks as opposed to Control, which aims to verify their execution.

2.1.2. Humanistic Pedagogies – Play, Experience, Learn

A pedagogical model calling for a design centred on the learner arose from Humanism two centuries ago. If it was a novel concept at the time, today, it still makes for a compelling case, especially in relation to Minecraft’s player-centred approach. In this section, I walk alongside great humanist thinkers such as Wilhelm Dilthey (1833-1911) and John Dewey (1859-1952), who viewed pedagogy through the lens of *Bildung* (see [Chapter 2.3. Philosophy of Bildung](#)) in Germany and the United States, respectively. Pedagogy, for the German philosopher Wilhelm Dilthey (1833-1911), begins “with the description of the educator in his relationship to the student” (Dilthey, 1971; p. 8)³. In making this claim, he echoes the relational aspect of Friedrich Schleiermacher’s (1768-1834) understanding of education when he stated that education had no walls but stood in the synergy between the teacher and their student, emphasising the responsibility of the older generation towards the well-being of the younger one.

In the late 19th century, Dilthey developed the Human Science Pedagogy (HSP) to challenge the natural and applied sciences, which he believed were ill-equipped to understand the nuances of everyday life experience. For Dilthey, knowledge emerges through a hermeneutic process, which he explains as follows: “In understanding we proceed from the coherent whole which is (...) given to us (...) in order to make the particular intelligible to us” (Dilthey, 1982; p. 172)⁴. In other words, it is because we live in a coherent whole (the world) that we can understand the intricacies (experiences) that make up that whole. He envisioned HSP as a way to appreciate education through its cultural and experiential layers (Friesen, 2020). Dilthey believed pedagogy ought to involve *values, feelings, interests, and intentions*.

Likewise, the American philosopher John Dewey (1934/2005) considered learning experiences to be fundamentally hermeneutic, involving a double process of understanding that influences those *who experience* as much as it impacts the world around them. His pedagogical model rests on the idea that “an educational aim must

3 As cited in Friesen (2020) p. 308.

4 As cited in Friesen (2020) p. 311.

be founded upon the intrinsic activities and needs (including original instincts and acquired habits) of the given individual to be educated” (Dewey, 1922; p. 126). His student-centred approach portrays *play* as an essential educational activity in which the learner’s experience initiates learning, stating:

The desirability of starting from and with the experience and capacities of learners (...) has led to the introduction of forms of activity, in play and work, similar to those in which children and youth engage outside of school (Dewey, 1922; p. 228).

Since young people willingly follow the rules when playing a game, he explained, the same structure should be integrated within the classroom’s activities, making the learning objective the goal, the rules part of the process to achieve it, the student *actor* rather than a *spectator* and the teacher a *facilitator* (Sikandar, 2016). Dewey (1922) also emphasised the roles of sensory experience and action in the construction of knowledge when insisting that “senses are avenues of knowledge not because external facts are somehow ‘conveyed’ to the brain, but because they are used in doing something with a purpose” (p. 167). He believed learning activities should model real-life situations, allowing students to learn in various social settings (Gutek, 2013) while offering them a *space* to be safely challenged, thus suggesting the notion of learning through *thinking* and *doing* (Dewey, 1922).

Humanist pedagogies, whilst valuing students’ emotional well-being, also emphasise learners’ choice, self-motivation, self-reflection, and self-evaluation. These principles are at the core of the theoretical and philosophical frameworks discussed hereafter and further frame the project.

2.2. Theoretical Framework

2.2.1. Introduction

To structure the literature review and conceptualise the learning experiences of autistic teenagers who passionately learn to play Minecraft in Autcraft ([Chapter](#)

[3. Experiences of Autistic Young People](#)), I drew on theories grounded in humanism. In exploring the breadth of existing research, I became acquainted with Tough (1971), Knowles (1975), Zimmerman (1986), and Boekaerts (2011), whose theories encapsulate the philosophy of Bildung and the concept of '*learning by doing*' that takes place in Minecraft. The section below, therefore, presents the work of these four scholars but focuses more particularly on the two foundational pillars that inform this theoretical framework: Knowles' (1975) theory of self-directed learning, which posits that students' agency and interest drive their learning, and Boekaerts' (2011) theory of self-regulated learning, which illuminates the role of emotions in influencing how learning is experienced. However, before delving into the core of the theoretical framework and its relevance to this investigation, I will first outline my selection process.

2.2.2. The Theoretical Landscape – Selection Process

Due to the multidisciplinary and exploratory nature of this research, I reviewed numerous articles in the fields of psychology and education. To maintain a clear focus within the scope of my study, I established a set of criteria to retain the articles that met specific selection requirements (Table 1). Additionally, to provide a more comprehensive overview of the theoretical landscape, I incorporated various viewpoints while tentatively allowing space for an autistic perspective, which is further explored in the literature review presented in [Chapter 3. Experiences of Autistic Young People](#).

Table 1 - Theoretical framework inclusion and exclusion criteria

| Inclusion | Exclusion |
|--|---|
| Peer reviewed studies addressing learner's agency, autonomy, and decision making | Weakness or absence of substantive evidence |
| Integrating personal attributes: self-concept, interest, motivation, and meaningfulness | Having roots in a field other than education, philosophy, psychology, or technology |
| Including a social dimension to learning that encompasses exchange, collaboration, and diversity | Not applicable to the video game space |
| Acknowledging the impact of emotions and sensory sensitivities | Not published in English |
| Considering playing as a form of learning | Not available in full text or out-of-print book |

Furthermore, I built upon the findings from my Master's dissertation (Marmoy, 2020) and expanded upon them to identify the most relevant theories addressing the following:

1. The ability to find, organise, learn, and implement many strategies to progress in the game.
2. The capacity to solve complex technical problems and interpersonal issues between players.
3. The ability to recognise the need to self-regulate emotions and sensory sensitivities.

I also paid close attention to the dynamics within Minecraft. Watching three walkthrough videos on YouTube reminded me of the game's greatest strength: its agency, that is, the degree of autonomy it provides players as they learn to play and/or progress in the game.

Finally, this selection process led me to identify and explore two humanistic theories: Knowles' (1975) theory of self-directed learning and Boekaerts' (2011) theory of self-regulated learning, which I present below.

2.2.3. The Theory of Self-Directed Learning

Steeped in Humanist principles such as learner's autonomy, intrinsic motivation, self-growth, self-evaluation, and respect for human differences, the term *Self-Directed Learning* (SDL) sprung mainly from the works of the American educators Tough (1971) and Knowles (1975) in the field of adult education. Their andragogical approach allows learners to identify their own problem areas through self-assessments and determine the most suitable learning format for them (e.g., individual, group, or a combination of both). It also provides teachers with the flexibility to develop experiential learning modules that they offer learners based on their readiness (Knowles et al., 2015). When Tough (1971) discovered that adult learning is pervasive and typically centred around a learning project, he designed his educational programmes accordingly. These programmes consisted of a series of independent and group learning projects, which were co-defined and planned by both learners and teachers, with learners taking the initiative to start them independently (Knowles et al., 2015).

Based on this understanding, he conceptualised a model in three phases: 1) *decision to start learning*, 2) *choosing how to learn*, and 3) *using rich and diverse resources to learn*. Convinced that increasing these skills would improve adults' learning, he identified no less than 26 possible steps facilitating the *decision to start learning*, such as assessing interests, seeking relevant information, choosing the most appropriate knowledge, determining the amount of learning, and evaluating the soundness of the learning project, to name but a few. Then, he demonstrated that *choosing how to learn* (e.g., books, audio recordings, instructor, group) encourages collaborative rather than dependent learning. Lastly, he emphasised *using rich and diverse resources*, like seeking the expertise of other teachers, friends, or members of the community, so learners would also learn how to apply the strategy in other situations.

A few years later, Knowles (1975) expounded the definition of SDL as follows:

Process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (p. 18).

Knowles' (1975) work helped redefine the relationship between teachers and students by proposing a learning contract to officialise their agreement (teacher and student) on the student's personal learning goals (without specifying them) and the metrics to validate their achievements based on which grades were determined. In his theory, he put forth two fundamental elements: 1) SDL allows students to control their learning process, making them accountable for their learning, and 2) It proposes that teachers become 'learning facilitators' responsible for providing students with the resources they need and guiding them in developing their self-directed learning skills (Loeng, 2020).

Furthermore, Knowles (1975) revolutionised the field of adult education when he wondered how he could *help people learn* instead of how he could *educate people*. The former focuses on supporting learners' natural learning process, often guided by their interests, needs, or specific goals. In this kind of setting, teachers tend to act more like facilitators or mentors. They offer resources, give feedback, and provide encouragement, but it is the learners who decide what they want to focus on and how they want to go about it. The whole approach usually feels more personalised and flexible, adjusting to the learner's own pace and way of working.

In contrast, more traditional methods are built around a structured system, where a set curriculum, fixed goals, and clear standards shape what needs to be learned — and often how it needs to be approached as well. Here, educators take on a more active role in delivering information, checking understanding, and making sure that students reach certain expected levels of achievement. Educating is often systematic and aims to impart knowledge, skills, and values to prepare learners for future challenges or

societal expectations. Developing his theory, he realised that when adults were taught the same way children were (pedagogy), some of them quickly became demotivated, especially when the teaching methods did not account for their practical experience. Leaning on Dewey's (1934/2005) progressive approach, he suggested that knowledge should be developed by building on students' pre-existing experiences rather than through authority. Recognising the significance of Maslow's (1943) self-actualisation theory, his model established that internal motivators such as self-esteem, recognition, and quality of life play a central role in the learning process.

Inspired by Lindeman (1926), an advocate of informal learning in adult education, Knowles (1975) also promoted the creation of supportive environments—places where students feel safe, motivated, and encouraged—that are conducive to learning both physically (in terms of space) and psychologically (in terms of atmosphere). Knowles (1975) devised a set of six assumptions to conceptualise his andragogical model: 1) *self-concept*, 2) *role of experience*, 3) *readiness to learn*, 4) *orientation for learning*, 5) *internal motivation*, and 6) *need to know*.

He presumed that because learners were adults, they ought to have reached a certain level of *self-concept* – that is, they were already self-directing since they were responsible for their lives and were aware of how they were judged based on their ability to take responsibility. Based on this assumption, he concluded they would resent being coerced into a learning approach that dismissed their personal views.

He also assumed adults entered the learning process with many years' worth of life *experience*, suggesting that they were both learners and sources of learning, especially regarding problem-solving skills. In his third assumption, Knowles (1975) presupposed that adults learned best when they wanted to know or do something that would improve their lives, implying that they had to be willing, which he called *readiness to learn*.

Furthermore, he assumed that the subject-oriented pedagogical model needed to be revised to address adults' life-centred, task-centred, and problem-centred *orienta-*

tion for learning. He believed that adults were also motivated by deeper intrinsic needs such as self-esteem, recognition, self-confidence, and better quality of life, which he referred to as *internal motivation*. He completed the model by presupposing adults had to understand the value of learning and be able to determine what they needed to learn.

Although Knowles' (1975) model emphasises students' autonomy, self-evaluation, interest and motivation and accounts for various learning styles, some scholars have interpreted 'learner autonomy' and 'self-evaluation' in terms of 'control.' For example, Peters (1989) highlighted the role of 'control' in learning, arguing that "Self-direction means that the learner has control over the process of goal setting, planning and action" (p. 43), while Candy (1991) contended that student autonomy was incompatible with a formal education setting. Additionally, Caffarella and O'Donnell (1991) questioned the self-evaluation component, asking, "Does that place less value on that learning than what is offered to learners in formal educational programs?" (p. 10).

His work also faced criticism. Hartree (1984) disputed the soundness of andragogy as a learning theory since it was based on Knowles' observations rather than being corroborated by other tested learning theories, suggesting that it was only a set of guidelines. Merriam (2001) challenged the domain-specific nature of andragogy and pedagogy, suggesting that both models could apply to children and adults, as children can be self-directed learners, and adults may sometimes require more support from their teachers. Merriam's argument was further supported by elementary and secondary teachers who reported that the andragogical model benefited their young students, while others working with adults indicated that the pedagogical model remained more suitable for their mature learners. This perspective may explain why Knowles (1975) later refined his theory, proposing that pedagogy and andragogy could be adapted based on learners' needs rather than being strictly defined by age.

Regardless, Knowles (1975) was convinced that people who initiated their learning learned more and were better equipped to apply their new knowledge than those who were passively being taught because their motivation had a genuine purpose. That said, the concepts of motivation and a sense of purpose suggest that learning also

has an affective dimension. Therefore, I will now explore the theory of self-regulated learning and examine how emotions influence the learning process.

2.2.4. The Theory of Self-Regulated Learning

Since *Self-Regulated Learning* (SRL; Zimmerman, 1990) shares some characteristics with *Self-Directed Learning* (SDL; Knowles, 1975), they are often used interchangeably (Robertson, 2011; Siadaty et al., 2012). Nevertheless, each theory is embedded in a different framework. SDL is entrenched in andragogy, where students contribute to the design and organisation of their learning in non-formal settings (Saks & Leijen, 2014). Conversely, SRL originated from cognitive psychology and can be part of the classroom pedagogy where teachers predetermine learning (Saks & Leijen, 2014). Likewise, it is worth distinguishing between *self-regulation* and *self-regulated learning*. At first, self-regulation was seen mainly as a part of behavioural and emotional control; that is, the idea focused on how people interact with their environment and how their behaviour shapes and responds to what is around them. The concept of self-regulated learning evolved to describe a process in which students take responsibility for their learning by monitoring their progress and adjusting their strategies to perform at their best in challenging and changing situations (Saks & Leijen, 2014). I shall now contextualise SRL research as defined and theorised by Zimmerman (1990) before highlighting the work of Boekaerts (1995), who underlined the synergy between SRL and the *affect*, linking self-regulation with self-regulated learning.

From the 1980s to the 1990s, SRL research sought to develop a theoretical framework from which scientists could develop robust methodologies to measure achievement outcomes. Zimmerman (1986) was the first to envision a comprehensive SRL process. He proposed a cyclical model in three phases: forethought, performance control, and self-reflection. He described self-regulated learners as “metacognitively, motivationally, and behaviourally active participants in their own learning” (p. 4); that is, students are (1) *metacognitively active* when they plan, set goals, organise, self-monitor, and self-evaluate their knowledge acquisition; (2) *motivationally active* when they exhibit self-efficacy, self-attribution, and interest in their learning; and (3)

behaviourally active when they select and create their learning environment as they self-instruct, and finally self-reinforce their learning. He distinguished the *strategies* optimising SRL (e.g., breaking down goals into intermediary objectives) from the *SRL processes* (e.g., self-efficacy). By *strategies*, he meant all the actions and tactics students utilise to gain knowledge and skills. He defined the *process* feature as a *self-oriented feedback loop*, which Bandura (1982) argued needed to be considered positively and negatively to appreciate the nuances in students' learning approaches. Students seek to reduce the gap between planned goals and outcomes in a *negative feedback loop*. Alternatively, they raise their objectives in a *positive feedback loop* based on the outcomes they achieve.

Zimmerman also asserted that SRL denotes how students select a *strategy* (action) and respond to a task (feedback loop) through sustained efforts, claiming that students must value the outcome to self-regulate. A dichotomy ensued. Behaviourists viewed self-regulated responses as contingent on rewards and punishments in social recognition, personal status, or material gain (Skinner, 1963), while humanists considered SRL in terms of self-esteem and self-actualisation (Boekaerts, 1995).

The strength of Zimmerman's SRL theory lies in its recognition of the dynamic relationship between learning and motivation. As motivation triggers learning and learning, in turn, enhances motivation, students are not only self-regulated in a metacognitive sense but also self-motivated, as Bandura (1982) described. For Zimmerman, therefore, *skill* and *will* are interwoven elements of self-regulation. However, since he viewed metacognition as a set of strategies, such as planning, controlling, and evaluating a task, his model implies that SRL is primarily a top-down process reliant on executive functions. His framework does not account for learners' metacognitive experiences, such as metacognitive feelings and affect, which suggest a bottom-up approach to self-regulation.

Although the nature of SRL has evolved over the years (Zeidner, 2019), none of the changes has been as significant as acknowledging the role emotions play in the learning experience. Until recently, learning was primarily regarded as knowledge

acquisition (e.g., facts, ideas, problem-solving skills) and behavioural representation (e.g., writing, speaking, testing), with emotions having little to no bearing. Meanwhile, emotion underwent a similar shift, from being viewed as a behavioural trigger, and thus a by-product, as Smith and Lazarus (1993) posited, to being perceived as a goal or a desired outcome, as suggested by Csikszentmihalyi and Seligman (2000). In this context, exploring the relationship between students' emotions and learning through Boekaerts' (1995) Dual Processing Self-Regulation Model is paramount to understanding self-regulated learning.

As early as 1988, Boekaerts contested the consensus that knowledge increase was the hallmark of learning and proposed that learning experiences stemming from regulating emotions (positive and negative) also be considered learning outcomes. Boekaerts (1995) pioneered the idea of integrating the notion of self-regulation within SRL and was the first to evaluate students' motivation alongside "their perception of self in relation to different learning contexts" (p. 197). She argued that "multiple forms of self-regulation ought to be made explicit educational goals when starting a new content domain" (p. 195). Thus, understanding how students activate different goals during their self-regulated learning gave impetus to her work. Her conception of SRL includes various dimensions, such as cognition, metacognition, motivation, self-concept, affect, and volition, which, she says, are necessary to ensure due process. In 1996, she introduced the term *learning episode*, describing it "as a situation in which a person is invited, coached, or coaxed to display context-specific, goal-directed behaviour [sic]" (Boekaerts, 1996; p. 396).

Collaborating with Niemivirta, she further explored the situational element inherent to learning and compared learning episodes occurring in non-formal environments with those in classrooms (Boekaerts & Niemivirta, 2000). Based on their analysis, they described learning episodes in informal settings as self-started, socially situated, and driven by personal goals, thus intertwined with affect while leading to ongoing learning experiences. Conversely, they presented classroom-associated learning episodes as fragmented, fostering teacher-oriented goals that only sometimes interest students and leading to indirect experiences not systematically used to activate pre-ex-

isting knowledge. Highlighting a counterintuitive aspect of SRL, they claimed that self-regulation is challenging to achieve in the classroom mainly because students usually expect teachers to provide them with the resources needed, keep them engaged, monitor their performance, and offer them relevant feedback. Based on their findings, they inferred that self-regulated learning is initiated when students identify, interpret, and appraise the learning situation they face. Boekaerts and Corno (2005) argued that when students experience 'failure', it progressively influences how they feel about specific tasks, and eventually, they start perceiving and interpreting them as threats. This conclusion is at the core of her Dual Processing Self-Regulation Model, which outlines how learning goals interact with students' well-being needs.

Her model accounts for two SRL processes: mastery/growth and coping/well-being. Students' evaluation of the task determines which pathway to follow. If their appraisal reveals a congruence between the task and their needs, positive emotions (e.g., interest) are triggered, and the mastery/growth pathway is initiated. Students' personal goals drive the task goals, reflecting a top-down mechanism. However, negative emotions arise if they perceive the task as threatening to their well-being (e.g., anxiety, fear), and the coping/well-being pathway is triggered. Protecting their well-being becomes the goal, hence highlighting a bottom-up route. She further suggests that children may generalise using either of these pathways when they perceive a new task as similar. While Boekaerts' (1995) model illustrates the synergy between cognition, metacognition, motivation, self-concept, and affect, she considers the latter as a response to a threat to the self (coping strategies) rather than a necessary cognitive component. Still, her model remains fluid; students starting on the mastery/growth pathway may switch to the coping/well-being route whenever they feel they might not be successful.

Whereas Deci and Ryan (1985) argue that goal setting, choice of goal, and goal thriving together act as a bridge between intention and actions (to achieve goals), highlighting students' volition, Boekaerts (1995) proposes that students' appraisal of the learning situation orients their goal setting (intention) towards one of the two pathways, either mastery/growth (task-focused, based on the metacognitive knowledge

about the task) or coping/well-being (self-focused, based on personal traits). She put forth that the appraisal influences students' goal striving (strategies) and will reflect problem-focused actions when oriented toward mastery/growth or emotion-focused actions when turned towards coping/well-being. While Boekaerts and Corno (2005) considered self-regulated learning an ongoing process influenced by context, other scientists beg to differ. Aldridge and Rowntree's (2022) findings showed that the learning environment did not influence their participants' self-regulation (n=338 female science students in Abu Dhabi). Whence suggesting that unconscious factors may also guide goal setting and goal thriving, Boekaerts (2011) asserts that once a goal is associated with a specific learning situation, it becomes part of a situational meaning structure and can be activated unconsciously, triggering a generalised response (goal striving) without setting goals.

2.2.5. Summary and Diagram

This chapter presents the case for studying the autistic learning experience through the lenses of two complementary theories – self-directed learning and self-regulated learning. I began by outlining the theoretical terrain into which this research was rooted, focusing on Knowles (1975) and Boekaerts (1995). Throughout my investigation, I was guided by Knowles, who served as a gatekeeper, constantly reminding me that learners who initiate their own learning tend to learn more and better apply their new knowledge in their daily lives because they feel a sense of purpose. Boekaerts, on the other hand, opened a gate for me, showing me how emotions could facilitate or hinder learning. This understanding was instrumental in capturing my autistic participants' lived experiences and interpreting them authentically, as demonstrated in [Chapter 6. Discussion](#). An overview of the perspectives discussed in this chapter is illustrated below (Figure 6). With this theoretical understanding in mind, I will now address the philosophical underpinning that helped me articulate how the participants made sense of their experiences.

THEORETICAL FRAMEWORK

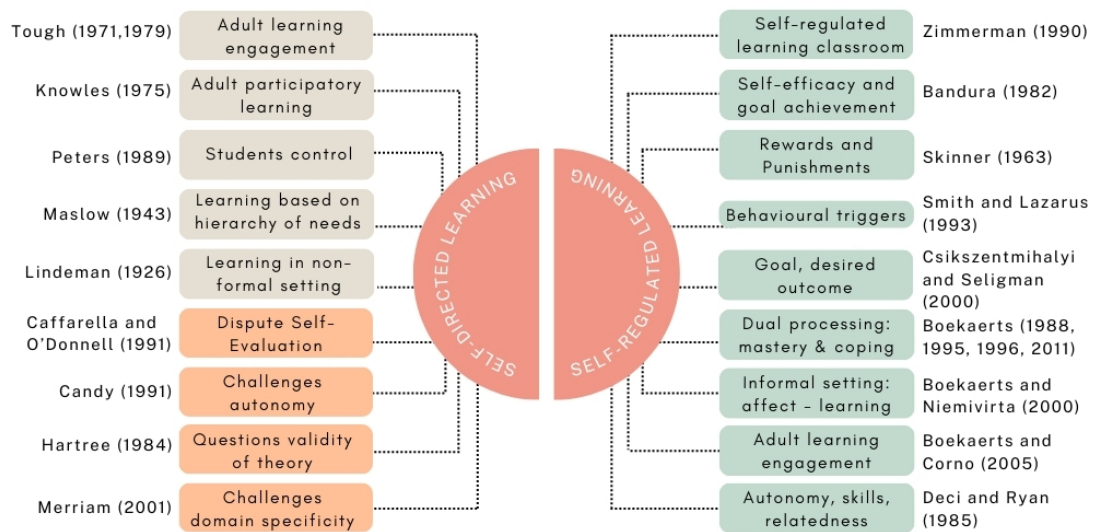


Figure 6. Theoretical framework overview

2.3. Philosophical Framework

2.3.1. Introduction

During our first meeting, my supervisor, Dr Katja Frimberger, asked, “Have you considered Bildung?” to which I could only answer “no”. That question, however, was enough to instigate the ensuing months of focus on the topic. The Philosophy of Bildung is about 800 years old, and while it survived the test of time, it also varied accordingly. Consequently, the notion became more and more complex with each iteration. A major challenge was building a philosophical framework on a compounded concept with limited access to original English work or translation. However, as I made my way through, I glimpsed an aspect of Bildung that is usually understood to be at the antipode of its philosophy: its *practical* dimension. Experiential learning and Bildung are not commonly part of scholarly conversations, except for the Swedish academic Ruhi Tyson (2016), whose work on vocational Bildung was a cornerstone to my understanding.

2.3.2. Philosophy of Bildung

An intellectual tradition seeking to help all individuals develop to their full potential, so-called self-cultivation or *Bildung* arose from the humanist movement in Germany. It had the ambition to educate a new generation capable of thinking critically rather than primarily relying on memorised facts. In some ways, *Bildung* could be said to reflect the practice of Humanism.

2.3.3. What does Bildung mean?

Bildung is a German word for which there is no accurate English translation; it is woven into the German culture and broadly understood in English as *self-cultivation*, *self-formation* (Horlacher, 2017), or *self-development* (Siljander et al., 2012b). Alves (2019) defines Bildung as “the most ambiguous concept of German pedagogy, providing a range of uses and interpretations” (p. 2). The term is interchangeably associated with education, learning, or culture, and in that sense, remains difficult to fully grasp even in German, as Sanders (2011) explains:

Bildung does not exactly mean *Erziehung* (that is, *education*) (...). Nor is Bildung exactly synonymous with learning, since it does *not* concern the acquisition of some competence but, (...) indicates emancipation and self-liberation by means of *culture*, which in turn is created in the process of *Bildung*. However, Bildung also is not identical with culture (*Kultur*) (p. 454).

In his *Theory of Bildung*, von Humboldt (1794/2012) describes a process. The notion of *process* is critical to value the meaning of Bildung. Akin to Plato’s allegory of the cave, Bildung conveys the notion of seeking knowledge beyond the *shadow* of the *truth* we take for granted (Laros et al., 2017). Thereby, Bildung is less a product than it is an action, as Biesta (2002) wrote, “there is no such “thing” as Bildung, that it is not a “thing” on its own” (p. 344). At its core, Bildung is concerned with the central questions of what it means to be human and what constitutes an educated or cultivated human being, claiming that each individual should be enabled to develop their capacities to the highest level possible (Laros et al., 2017). As described below, von Hum-

boldt's original view of Bildung highlights a process wherein individuals continually grow and become emancipated through self-reflection.

2.3.4. Wilhelm von Humboldt's Vision of Bildung

The neo-humanist von Humboldt (1794/2012), credited for the theory, believed Bildung was the path to meaningful scholarships in which every person was entitled to undertake Bildung and where individuals were knowledgeable in various domains leading to genuine insights. He foresaw Bildung as a lifelong endeavour based on the premise that to become fully autonomous and socially respectable, people should explore various knowledge throughout their lives. Hence, they become free and self-determined in their self-cultivation. Whilst he was convinced that students and teachers would be able to expand on their Bildung only through exchanges within the realm of universities' academic freedom, it seems he did not extend the same privilege to *vocational* schools catering to the working class (Laros et al., 2017). It could be argued that since he was an aristocrat, he added a condition of social class to the principle mentioned above. However, Heidt (2015) helped me understand von Humboldt's notion of *academic freedom* in terms of *being free from* the influence of the state on the one hand, which, according to him, would promote "slaves, rather than a nation of free and independent men" (von Humboldt, 1850/2009; p. 79)⁵ and from the imperative of a utilitarian economy on the other.

For von Humboldt, research, teaching, and learning ought to be interconnected so that students are involved in creating knowledge rather than simply reproducing it. He was convinced that learning could not emerge from the assimilation of knowledge others considered trustworthy but from the assessment of that *truth*, from students' questioning. According to him, the teacher's role was not to impart knowledge to students but to facilitate the "inner cultivation of the human person, which must be holistically developed and not simply inculcated with knowledge" (Collins & Clemens, 2021; p. 1). In the image of Berlin's intellectual salons he was a member of, he

5 As cited in Heidt (2015) p. 4.

advocated for universities to become fluid communities of learners where ideas were exchanged and personal relationships facilitated (Sorkin, 1983). He aspired to make the Prussian population literate and was entrusted to put forth a state education reform. However, his ideas were dismissed, and his reform failed. His approach to education might have been novel enough to put on the defensive the aristocracy that financed his reform and too innovative for the working class, who mainly saw the loss of inexpensive labour—that is, their children (Heidt, 2015). From then on, education and Bildung became matters of the state.

Scholars have expressed diverse views since the beginning of the 21st century. Although scholars such as Masschelein and Ricken (2003) have argued that Bildung grew estranged from its value of freedom, describing it as “a privilege medium through which a certain power apparatus (‘un dispositif⁶ [sic] de pouvoir’) has been invested” (p. 139), most intellectuals have carried on von Humboldt’s legacy. Biesta (2002), for instance, sees in Bildung “the cultivation of the inner life” (p. 345), while Schneider (2012) considers it a process characterised by the action of becoming oneself. Others, such as Koller (2017, 2020) and von Rosenberg (2016), explore the similarities between Transformative Learning (Mezirow, 1997) and Bildung through Bourdieu’s (1977) concept of *habitus transformation*, thus leaning on the social dimension underlying Bildung. I do not fully adhere to Koller’s parallel between Transformative Learning and Bildung; the former implies immediacy (crisis), while the latter conveys a life-long growth process. Nevertheless, his approach echoes Bildung when he suggests a transformation of thinking through interpretation and appropriation of knowledge that influences how we perceive the world around us. Narrowing on the notion of agency, Fellenz (2016) defines the philosophy as “autonomous self-formation and reflective and responsible action in (and interaction with) society” (p. 273). Finally, contrasting with Masschelein and Ricken’s (2003) view, Alna (2018) posits that Bildung can foster active learning by developing situation-specific content in which knowledge is meaningful because it relates to the learners’ experience. A precept, she says, “is of the utmost significance when dealing with present and future global challenges” (p. 1).

6 Correct French term is ‘un dispositif’.

Bildung promotes a comprehensive understanding of what education is for; however, it should be acknowledged that while the theory of Bildung has been discussed in great length over the years, a paucity of empirical research remains – theorists claiming that this kind of investigation is difficult since Bildung is an individual journey that cannot be measured (Siljander et al., 2012a). Unfortunately, this seems to have created substantial gaps between the rich but abstract theory and its validation in educational practice. Thereby, throughout this research, I will lean on a definition of *'being educated'*, that is, *learning*, informed by von Humboldt's Bildung – a life-long process of human development through self-reflection from which knowledge is co-produced in interaction with the world.

2.3.5. Bildung – A Journey from the inner Self to the outside World

Bildung offers the promise of a cultivated inner self capable of establishing a more humane society, one where acceptance replaces difference and where autistic students have the right to *'be educated'* based on the way they learn. That said, can an educational philosophy oriented principally towards intellectual inquisitiveness be reconciled with the more experiential and hands-on approach of the digital learning implied in Minecraft? With this question in mind, I will now explore the Bildung literature with a particular focus on the formation of the self, the relation between the self and the world, the realisation of the autonomous person, and the practice of learning by doing.

2.3.5.1. The Formation of the Self

Bildung's main endeavour is forming the *self*, and thus, *Humanity* (Kergel et al., 2022). Von Humboldt's conceptualisation of Bildung reflects an existential journey through experience, a self-understanding process to fulfil one's nature. Von Humboldt proposed that all human beings possess inner forces (e.g., talents, natural abilities) guiding them towards becoming who they are meant to be. Ekberg and Schwieler (2021) refer to this constant becoming an "evolving Bildung" (p. 1). This self-formation process presupposes these inner forces to be good (Biesta, 2017) and that every human being is worthy of being *formed* to their full potential. For von Humboldt, these

forces are inborn and express a unique individuality, suggesting that *we are meant to be who we already are!* Bildung reflects who the learner is; it influences the learner in *becoming*. However, he also posited that one's inner forces should be harmonised (self-regulated) to enable self-formation. In that sense, it could be assumed that Bildung creates a safe environment conducive to every individual's self-development (Kergel et al., 2022). Nevertheless, for von Humboldt, the question is not how an environment might fashion the individual (e.g., medical and social models of disability), but rather, to what extent do individuals accept who they are, fulfil their purpose, and carve their place in the world (neurodiversity movement; Kergel et al., 2022)?

According to Andersen (2020), von Humboldt perceived individuality as a potential that lays dormant in everyone, a set of aptitudes that can evolve into individuality through self-formation. That said, his notion of Bildung's formation of the self stretches beyond the mere development of one's capacities to include the growth of the entire person. Von Humboldt speaks of turning inward to identify what knowledge needs to be learned, thus implying that students also recognise the limitations of their existing knowledge (self-directed learning). Rather than pursuing activities for their *societal* utilities, he advocates choosing those based on one's ideas, making self-awareness of one's interests the cornerstone to forming the self. Self-awareness emerges from the realisation of being a physical self in a body, an emotional self with feelings, and a rational self with thoughts. Based on this cognition, humans develop a conceptualised understanding of who they are (self-concept). Our self-concept is not finite; instead, it evolves with time to help us dismantle parts that misrepresent ourselves or inhibit our self-development (Andersen, 2020). This is called our learning process.

From a functional perspective, the philosophy of Bildung could be said to provide students with competencies that enable them to become active contributors to society while empowering them to define *how* they will participate. The notion of *utility* becomes a way to contribute to the world that stems from the inner self. From a subjective standpoint, students are *beings* with a consciousness reinventing itself layer after layer over a lifespan. In other words, each student is unique in experiencing them-

selves throughout life (Andersen, 2020). From a moral prerogative, when education accompanies students in developing their self-awareness, they start developing a sense of responsibility for their learning, reflecting on what they already know, and using their experience as a compass. From an educational perspective, Bildung aims at challenging students to think and act critically towards humanity, history, and the context in which they are, thus suggesting that the purpose of the school is to encourage students to question themselves and the world in order to engage with it responsibly. In so doing, students become accountable and self-governed learners (Kergel et al., 2022). Thereby making the case that critical engagement, experience, and reflection are significant elements of Bildung; self-reflection transforms experiences into knowledge that students critically analyse and upon which they learn and grow into who they are meant to be (Collins & Clemens, 2021). Ergo, Bildung's formation of the Self shows how individuals unfold their identity and move towards self-realisation.

It must be noted at this point that von Humboldt's focus on the self has raised criticism. While he advocated for people's autonomy from state and sovereign authorities, his emphasis on the inner development of the person was said to be overly individualistic, to have disenfranchised people from their responsibility towards others, and to have contributed later to the political uprising of the Nazi regime (Heidt, 2015; Murillo, 2018). What these critiques do not seem to acknowledge, however, is that while the formation of the self calls for turning inward, *meaning*, on the other hand, can only emerge from the interaction between a *formed* or *cultivated* self and the world.

2.3.5.2. The Relation between Self and World

Education implies an interaction between the *self* and *others*. From an intersubjective standpoint, human beings are part of a world with shared norms, values, and beliefs in which all individuals are active contributors. In that sense, Bildung invites students to be part of this shared world on their own terms. In its relationship with the world, Bildung is in perpetual movements between the student's unfolding identity (inner) and its subsequent influence, which shapes the world accordingly (outer). It

could be said that Bildung exposes the interdependency between self and other, which von Humboldt (2012) explained as follows:

It is the ultimate task of our existence to achieve as much substance as possible for the concept of humanity in our person, both during the span of our life and beyond it, through the traces we leave by means of our vital activity. This can be fulfilled only by the linking of the self to the world to achieve the most general, most animated, and most unrestrained interplay (p. 58).

However, according to Løvlie and Standish (2002), for some neo-humanists of the time, Bildung was an educational process in which they sought to incorporate Greek knowledge and culture to transform the society they lived in, suggesting Bildung was to serve a political agenda. While this contradicts von Humboldt's independent vision, it also highlights two intertwined fundamentals of Bildung. Firstly, it presents the relationship between the self and the world as a powerful force that can be swayed. Secondly, it suggests Bildung is oriented towards the unknown, encouraging students to interact with others and learn from seeing the world through their eyes (Biesta, 2002). Concurrently, looking at the world from another's viewpoint provides the distance to acknowledge, challenge, dismiss, or retain one's assumptions and gain new understandings. The humanist educationalist Dewey (1991) embraced the notion, stating that "the expression of differences is not only a right of the other persons but is a means of enriching one's own life-experience" (p. 228)⁷. Although Taylor (2017) claimed Bildung originates in the formation of the self through individual experience, a few years prior, Wahlström (2010) stated that this experience is only feasible because it occurs and is situated in the world, suggesting that Bildung ought to lie in the situated experience itself. Moreover, it could be argued that "Bildung's place is not limited to institutions of learning" (Wahlström, 2010; p. 306).

Through the interactive relationship between the 'self' and the 'world', Bildung involves a cycle of actions and reactions that creates tension, stripping the learning

7 As cited in Wahlström (2010) p. 305.

process down to its core to explore how new meaning is formed and what purpose it will serve (Miyamoto, 2022). Thompson (2005) speaks of the “experience of remaining strangers to ourselves” (p. 528), which “critically challenges us and brings uncertainty into our relationship to ourselves and to the world” (p. 528). It resonates with von Humboldt’s dialectic of friction between self and world when the inner powers or talents of the individual conflict with the advantage of meddling and exchanging with others (Seigel, 2005). A possible explanation for this notion of struggle may be found in the origins of Bildung. Bildung was fashioned in the image of the Greek culture, which had a predilection for wars. By its very nature, war shapes men’s relation to one another based on the struggle, tension, and suffering it generates, yet it also allows for “new forms of life” to emerge (Seigel, 2005; p. 345). Although von Humboldt exploited the war analogy, he was not a proponent of warfare. He used it to vividly illustrate how the tension arising from being confronted with what is different and from being challenged by the perspectives of others is necessary, even if painful, for Man to become self-realised. Learning occurs in the liminal space between the known and the unknown, yet students resist facing new possibilities – because learning can also be a painful experience (Wahlström, 2010).

Von Humboldt (1850/2009) argued that *freedom* and “*variety of situations*” (p. 16) were interweaved prerequisites for the realisation of “the true end of man” (p. 16) and that:

Human diversity was a product of freedom, since left to themselves people naturally develop in distinct ways, but it was also a precondition for freedom’s ability to bring humanity to its goal, because only variety overcomes a certain tendency to one-sidedness in human existence (Seigel, 2005; pp. 343-344).

This statement, in itself, puts to rest the concerns about Bildung’s individualistic underpinning. Von Humboldt was of the view that individuals have a more significant opportunity to achieve self-growth when they are in the midst of challenging situations, compelling them to rely on their inner qualities and when they have to interact with others sharing the same circumstances (Seigel, 2005). He also pointed out that language has a way of pulling diversity together. When people speak the same

language, they often start to see the world in more similar ways. Over time, this shared way of speaking and seeing can help build a common culture, even among people with very different backgrounds. In that sense, it might be argued that neurodivergent people, who more easily interact with each other, collectively represent a neurodivergent culture. Moreover, Alves (2019) suggested that the formation of the self occurs when individuals retain their individualities in their communities. Overall, Bildung exposes students to a world in which differences confront them and simultaneously root them culturally, not to fit into and align with the demands of society merely but to give them the space to critique, evaluate, and embrace the cultural environment that fits them (Ulvik et al., 2021).

2.3.5.3. The Realisation of the Autonomous Person

As discussed above, according to von Humboldt (1850/2009), *freedom* was a sine qua non of self-realisation. Freedom, for him, meant that individuals were to be educated according to their inner qualities and personal interests, thus growing into who they were meant to be as opposed to becoming who society needed them to be. The fact that von Humboldt conceptualised Bildung as a model of education focused on general academic disciplines that excluded the vocational approach stands incongruently with his freedom principle (Miller, 2021). Subsequently, it begs the question of whether Bildung represents the freedom to develop one's talents, whichever they may be, or the freedom to choose between a Bildung and a vocational education. None of the literature I read offered a satisfying answer. Perhaps there is no question to be asked but an ambiguity to clarify. The term *vocation* comes from the Latin word 'vocare' meaning 'to call', which the Oxford dictionary defines as 'an occupation requiring dedication'. Given the socioeconomic context⁸ in which von Humboldt defined his philosophy, the word *vocation* might have been analogous to 'labour' and, if so, would explain the dissonance with today's interpretation. Alternatively, it could be argued that von Humboldt did not dismiss the value of practical knowledge but instead

8 The French Revolution (1789) led to the shifting of power from the aristocracy to the bourgeoisie in which Bildung became a tool to shape the German conception of statehood and individuality, this time ensuring the survival of the German bourgeoisie as a cultural identity through *Public Spheres* (Habermas, 1991).

foresaw it outside the purview of Bildung since such learning was dictated by industrial needs (utilitarian). In that sense, he predicted the fields of formal and informal learning.

However, for von Humboldt, freedom did not suffice. Rooted in Humanism, Bildung ought to assume an emancipatory role (Winkler, 2012) through which learners' self-formation is interconnected with developing their autonomy. Since students are responsible for conceiving their true selves, he believed they had to remain autonomous in their actions. In his view, Bildung encouraged students to critically assess and reflect upon what they had learned and what they would need to learn next. It also implied students' agency. The concept of agency was essential to von Humboldt (1794/2012), as he wrote in his 'Theory of Bildung':

In pure, ultimate terms, thought is never more than an attempt of the mind to be comprehensible to itself, whereas action is an attempt of the will to become free and independent in itself (p. 58).

The notion of autonomy underpinning Bildung remains controversial (Schneider, 2012). Whether Bildung, as the formation of the self, reflects an autonomous purpose or an autonomous process is still debatable. If it carries an autonomous purpose, then its vocation is to empower its students to think for and about themselves, to become autonomous learners able to evaluate the context and the situation influencing their actions, to reflect upon them critically, and to make appropriate decisions regarding their learning. In this case, Bildung could be perceived as emancipating its students, so their constant thinking and questioning make them impervious to subjugation from the teaching, the will of others, or their presuppositions. If, on the other hand, it underlies an autonomous process, then its role is to develop in its students the capacity to independently learn what has been prescribed to them (Eneau, 2012), hence suggesting that Bildung does not play an emancipatory role. Coming to grasp with the difficulty of reconciling both concepts, Winkler (2012) wrote that Bildung "is connected to the pathos of freedom; autonomy is experienced as something possible and at the same time as something which is always denied" (p. 93).

Rather than debating whether *Bildung* calls on students' freedom, autonomy, and agency, Kegan (1994) examined where these concepts are situated in the *Bildung* process, thus putting the dispute to rest either way. He explained:

'Object' refers to those elements of our knowing or organizing that we can reflect on, handle, look at, be responsible for, relate to each other, take control of, internalize, assimilate, or otherwise operate upon. [...] 'Subject' refers to those elements of our knowing or organizing that we are identified with, tied to, fused with, or embedded in. We have object; we are subject. We cannot be responsible for, in control of, or reflect upon that which is subject (p. 32).

In other words, students need to lose their subjectivity and perceive themselves as *objectified* to enable the formation of their self. In this act of alienation, their freedom, autonomy, and agency transpire (Schneider, 2012). To revisit whether *Bildung* represents the freedom of developing one's talents, whichever they may be, or the freedom of choosing between *Bildung* and vocational education, I will now examine *Bildung* from a vocational perspective.

2.3.5.4. The Practice of Learning by Doing

So far, I have presented von Humboldt's vision of *Bildung* as a lifelong process that entails self-discovery, identity development, relation to and exchange with others, making choices, accountability for learning, and self-reflection. I also highlighted the distinction von Humboldt makes between *Bildung* as the growth of the individual through intellectual work on the one hand and *Vocation* as the person's qualification through work training on the other (Sanderse, 2021). This domain differentiation is the nexus of this section, which I revisit by examining the concept of *Vocation* in tandem with *Bildung*, inasmuch as they appear to be intermingled and mutually constitutive. This separation between general education (*Bildung*) and specialist education (*Vocation*) is a subject often discussed in academic circles (Laros et al., 2017; Siljander et al., 2012b), not least John Dewey (1922), in his book 'Democracy and Education', dedicated an entire chapter to the 'Vocational Aspects of Education' (pp. 358-373).

More recently, the Swedish scholar Ruhi Tyson (2016) has offered an interesting perspective. Rather than considering the distinction between two different educational approaches, he proposes that *vocation* be understood within the remit of *expansive (general)* and *exclusive (specialist)* pedagogies. Although much research has been published in various languages (e.g., German, Swedish, Finish), Tyson's account is the only one I have found written in English that utilises empirical data to illustrate the interconnection between *Vocation* and *Bildung*. Ergo, I will lean on John Dewey and Ruhi Tyson to explore the paradoxical notion of *Vocational Bildung*.

In his theory, von Humboldt advocated for academic education, arguing that studying ancient Greek language, literature, and philosophy was the only way for young people to reach their highest potential (Koller, 2020) and subsequently set aside vocational learning. Since *Bildung* is rooted in the Greek *Paideia* and, therefore, is informed by Plato's notion of *ideas* as fixed and immutable concepts, it stands to reason that von Humboldt's theory of *Bildung* would be challenged by a *Vocational Bildung* that ought to be malleable in order to adapt to the contingency of the world in which it is enacted (Fuhr, 2017). Furthermore, it is essential to note that at the time, education was a privilege associated with social class, where *vocation* represented the societal role individuals should carry to secure and develop their families' social and economic positions. As Alves (2019) explains, this intentional segregation might have been von Humboldt's attempt "to free people from the roles predetermined by the order of estates and corporations", suggesting "education would liberate the individual to freely choose his occupation (...)" (p. 9), in other words, their *vocation*.

However, von Humboldt did not reject the value of vocational schools; instead, he recommended that such learning takes place after students underwent a *Bildung* education, saying that:

All schools for which not one social class but the whole nation or the state is responsible, have as their only end the general *Bildung* of human beings. What the needs of life or of one single industry requires, has to be acquired isolated

and after having finished the general education (von Humboldt, 1809/2010; pp. 276-277)⁹.

Even if the partition between general (*Bildung*) and specialist (*Vocation*) education was often debated in academic circles (Herdt, 2019; Horlacher, 2017; Laros et al., 2017; Siljander et al., 2012b), few scholars, other than Tyson (2016) have explored Vocational *Bildung* through the lens of personal growth, that is personal *Bildung*. If, as discussed above, one of *Bildung*'s objectives is to enable learners to become autonomous and responsible individuals, it follows that students are entitled to these fundamentals whether they undergo *vocational* or *general* *Bildung*. The fact that von Humboldt advocated for all students to undertake general *Bildung* before choosing a particular vocational training implies that he perceived the legitimacy of vocational education. von Humboldt might have feared that learners in vocational programmes would be trained to emulate others' competencies rather than being able to think autonomously to develop their original skills (Sanderse, 2021).

Much later, the educational theorist John Dewey tried to bridge vocational (specialist) and *Bildung* (general) education through his progressive approach. He saw vocation as a catalyst for learners to discover and develop their abilities in order to be of service to others, hence marrying talents and personal interest with a sense of purpose, which ultimately he saw as contributing "to everyone's happiness and meaning in life" (Sanderse, 2021; p. 4). Dewey did not contend with a definition of vocational education as "a means of securing technical efficiency in specialised future pursuits" (Dewey, 1922, p. 369), also referred to as *trade education*. Echoing von Humboldt's autonomy and responsibility tenets, Dewey seems to suggest that merging *general* and *specialist* education would provide students with a clear purpose and the knowledge and independence to carry it responsibly.

More recently, Tyson (2014) has emphasised a distinction between *Bildung* aiming at developing knowledge about a craft which does not require practice and *Bil-*

9 As translated and cited in Schneuwly and Vollmer (2018, p. 3).

ding targeting knowledge development through the mastery of a craft which “occurs precisely as a result of practice” (p. 352). Building the case for a hands-on Bildung dimension, Tyson (2016) leans on the educational biography of a craftsman named Wolfgang B. (p. 238) to reconstruct the principles of Bildung underpinning his ‘vocational’ training. From this account, Tyson underlines the points of convergence between both Bildung, such as when the teacher included notions of physics while teaching Wolfgang to create a metallic cube, or when his father adamantly advocated for the inclusion of general knowledge into his formation, or when the students went on various cultural excursions. In that sense, Tyson’s proposition to blend Vocational and General Bildung as a “way of connecting work and vocation, Bildung and culture” (Tyson, 2016; p. 244) not only reminisces of Dewey’s view it also gives breadth to the notion of *learning by doing* as it takes place in video games like Minecraft.

2.3.6. Summary and Diagram

This chapter examined an old German philosophical approach to education, the so-called Bildung and leaned on von Humboldt’s view. Despite its controversial genealogy, this section demonstrated that Bildung remains a valid model, capable of enlightening what it means to learn in the 21st century. The dichotomy between general Bildung and vocational Bildung was made explicit before being reinterpreted through von Humboldt’s notions of freedom, autonomy, and agency. Then, it explored the Bildung literature with a particular focus on the formation of the self, the relation between the self and the world, the realisation of the autonomous person, and the practice of learning by doing.

Finally, it reinforced the promise that education, when understood through the lens of Bildung, may foster a more humane society where acceptance primes and autistic students have the ‘human right’ to learn the way they learn best. The philosophical framework is synthesised in the diagram below (Figure 7). Bearing in mind the philosophy of Bildung, the next chapter will explore each of its tenets as they transpire through the autistic experiences accounted for in the current literature.

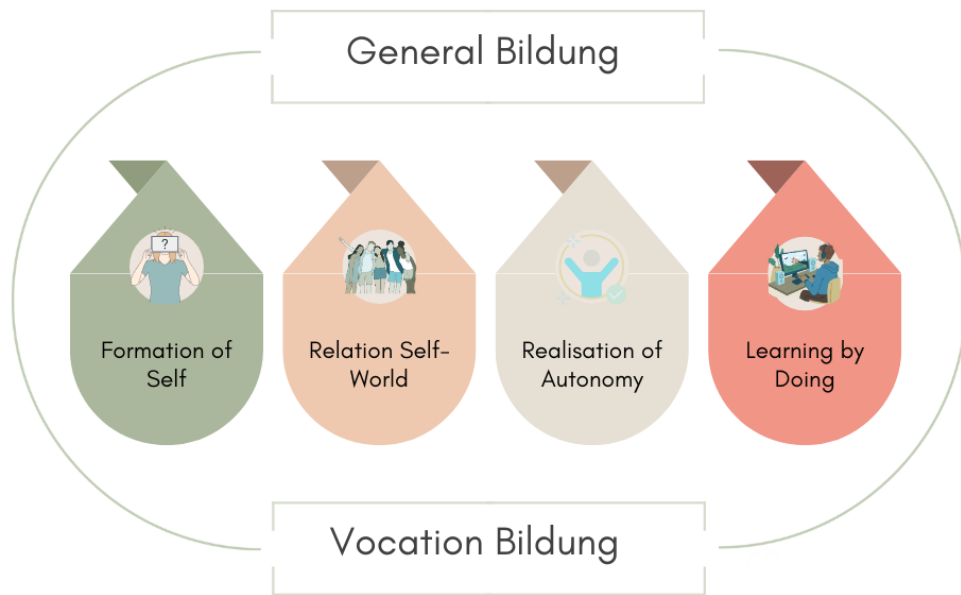


Figure 7. Philosophical framework overview

3. EXPERIENCES OF AUTISTIC YOUNG PEOPLE

3.1. Introduction

As discussed in [Chapter 1. Introduction](#), how we understand people around us is often inferred from how we interpret their behaviour and evaluate it against what we believe is ‘appropriate’. In that sense, it could be suggested that *understanding* is analogous to *judgment*, for understanding could often be nothing more than mere assumptions. In that opening chapter, I also contextualised autism on the backdrop of the two main models of disability, that is, the medical and social models, before emphasising how they did not entirely do justice to the experience of autistic people, which led to the emergence of the Neurodiversity Movement. Following suit, I purposefully combed the literature to include studies that challenged, disputed, or aligned with these perspectives. This thesis was informed by four different disciplines: Education, Psychology, Philosophy, and Technology. Some of the connections made between these different areas may, at times, appear more obvious than others, however, each of them has played a critical role in developing this research.

This chapter begins with a description of the approach used to review the existing literature. To ensure continuity in my arguments, I framed the exploration of the literature around the four principles of Bildung discussed in [Chapter 2.3. Philosophical Framework](#): *Formation of Self, Self-World, Autonomy, and Practice*. Next, I examine the autism research landscape, presenting the autistic learning experience through the lens of these concepts of Bildung as follows: 1) *The autistic experience of learning through the formation of self*; 2) *The autistic experience of learning through the relation self-world*; 3) *The autistic experience of learning as an autonomous person*; and 4) *The autistic experience of learning by doing*. Finally, I summarise these topics and highlight how they inform my argument regarding how society perceives autistic young people and how this perception influences their learning experience.

3.2. The Existing Literature – A Synthesis Approach

Due to the interdisciplinary nature of my research, databases such as Science Direct, Child Development and Adolescent Studies, Eric, Applied Sciences, ACM Digital Library, Springer, Sage, JSTOR, Emerald, Google Scholars, and Scite were searched across five domains, namely, autism, psychology, philosophy, education, and digital technologies. A series of strings were applied in relation to the fundamentals of the philosophy of Bildung: the formation of the Self, the relation between Self and World, the realisation of the autonomous person, and the practice of learning by doing. I then progressively raised the level of granularity to increase the pertinence of the results.

I initially started by identifying keywords susceptible to yield relevant studies by focusing on terms associated with ‘experience’, ‘autism’, and ‘Minecraft’. However, I realised the method was too overreaching (number of instances per string) to cater to my research subject (Table 2). Therefore, I opted for a meta-synthesis approach informed by Dawson (2019) to identify, select, and evaluate “primary data across the findings sections of published peer-reviewed papers reporting qualitative research” (p. 786). It allowed me to retrieve, from the existing literature, some of the autistic experiential accounts already documented (Efrat Efron & Ravid, 2018). This strategy helped me sharpen my inquiry by reading also academic books presenting each topic holistically, from which I selected primary sources with the most currency and relevance.

Table 2 - Search strings initially applied to retrieve relevant studies between 2018 and 2022

| String | Results | Dates |
|---|---------|----------------------------|
| autism AND Minecraft | 1290 | 2018 to 2022 |
| autism AND “self-concept” AND Minecraft | 125 | 2018 to 2022 |
| “autistic students” AND “lived experience” | 388 | 2018 to 2022 |
| “autistic student experience” AND “high school” | 38 | 2018 to 2022 |
| autism AND “learner autonomy” | 852 | 2012 to 2022 ¹⁰ |

¹⁰ The date range was increased to retrieve more specific articles.

| | | |
|---|-----|--------------|
| autism AND ethic AND “learner agency” | 98 | 2018 to 2022 |
| “autistic lived experience” AND “autistic voice” | 11 | 2018 to 2022 |
| “autistic voice” AND “high school” | 89 | 2018 to 2022 |
| “autism” AND “user experience” AND “Minecraft” | 154 | 2018 to 2022 |
| “user experience” AND “video games” AND autism AND Minecraft | 86 | 2018 to 2022 |
| “autistic experience” AND Minecraft | 15 | 2018 to 2022 |
| Autcraft AND learning | 98 | 2018 to 2022 |

3.2.1. Selection Process and Themes Generation

Given the breadth of scholarship that has touched on various aspects of the learning experience, I limited the scope of the review to literature relating to experiences and outcomes based on the central question my research addressed: How do Autistic Young People Learn to Play Minecraft in Autcraft? This process was tedious and demanded that I read a great number of abstracts to select the few that explored the autistic experience through a different lens and which, included quotations from their participants.

I searched broadly for literature addressing autistic learning experiences, lived experience, inclusion, and participation across educational and digital contexts, using conceptually driven terms (e.g., autistic lived experience, autistic student experience, autistic learning experience). Then, I used concepts drawn from the theoretical framework to increase the granularity of the search. In that sense, studies were also retained for how they documented learner agency, choice-making, goal-setting, emotional regulation, and shifts between engagement and withdrawal, as these dimensions aligned with SDL’s focus on autonomy and SRL’s emphasis on affective regulation within learning processes.

After identifying and selecting relevant literature, I undertook a narrative synthesis to engage with the included sources. As I engaged with the selected literature, I read each source iteratively, focusing on participants’ descriptions of how learning was experienced rather than solely on author-defined outcomes or theoretical interpretations. Through this process, specific experiential dimensions repeatedly surfaced

across studies. For example, autistic participants frequently described feelings of shame, misunderstanding, or self-doubt in school contexts (e.g., Cunningham, 2020; Goodall, 2018c), which contrasted with experiences of safety, belonging, or validation in environments that accommodated their needs or aligned with their interests (e.g., Hugo & Hedegaard, 2021; Ringland, 2019a). These dimensions were not introduced as analytic categories in advance but emerged inductively through sustained engagement with first-hand accounts.

I recorded these recurring experiential features as analytic notes, treating them as provisional sensitising concepts rather than fixed themes. For example, repeated accounts of exclusion, emotional distress, and relational rupture in mainstream schooling (e.g., Brede et al., 2017; Bottema-Beutel et al., 2020) were considered alongside descriptions of affiliation, social risk-taking, and mutual recognition in autistic-affirming or interest-based contexts, particularly within digital environments (e.g., Gallup et al., 2016; Finke et al., 2018). This comparative reading revealed consistent patterns in how autistic young people described their relationships to themselves, to others, and to learning environments.

Once these experiential patterns were identified, I organised the synthesis around the four tenets of Bildung, using them as an organisational framework to structure the review while remaining grounded in the lived experiences reported in the literature. The tenets of self-formation, self-world relations, autonomy, and learning by doing were not imposed deductively, but provided a conceptual structure through which the emergent experiential dimensions could be coherently presented.

3.3. The Autistic Experience of Learning through the Formation of Self

The concept of self is complex and extends beyond the scope of this research; therefore, the term ‘formation of the self,’ as applied in this study, refers to the notions of self-understanding and self-growth articulated in von Humboldt’s philosophy of

Bildung. Before examining how the autistic experience of learning relates to the formation of self, I will first provide a brief historical context.

Throughout history, autistic individuals have often been portrayed as lacking the capacity for deep self-awareness, with their unique perspectives on self-awareness frequently overlooked or framed through a deficit-oriented lens (e.g., the medical model of disabilities). For instance, in her book 'Autism: Explaining the Enigma', Frith (1989) claimed an absence of self characterised autism. Ten years later, Frith and Happé (1999) argued that autistic people lacked self-awareness and could only recognise their inner states through their actions. In other words, these researchers contended that autistic individuals were unable to perceive their 'self' as the object of their own attention (e.g., perceptions, attitudes, emotions) or as the object of others' perceptions. However, recent studies have shifted this perspective, emphasising both the potential and the significance of self-awareness in autistic individuals. Zahavi (2010) proposes that autism involves "multiples types [of self-awareness] and that these can be selectively impaired" (p. 548), whilst Constant et al. (2020), narrowing on the social self, suggest that the autistic self reflects divergent constructions. Although Williams et al. (2018) reported that self-awareness is vital for "cognition, perception, and decision-making" (p. 332), research exploring the autistic adolescent experience of self in relation to learning remains scarce. Nonetheless, self-awareness has gained impetus in psychology research. Mantzalas et al. (2018c) found that developing self-awareness and a sense of personal agency in autistic individuals is linked to resilience against autistic burnout. Lind et al. (2020) demonstrated that objective and subjective self-awareness are similar between autistic and neurotypical individuals.

Previous studies have also demonstrated how autistic individuals shape their perception of self and identity after receiving their diagnoses (Crane et al., 2021; Powell & Acker, 2016; Taboas et al., 2023). While some are more inclined to preserve the self as they know it after being diagnosed, separating themselves from their autism (Bury et al., 2020), for others, the diagnosis is difficult to accept (Lewis, 2016). Forber-Pratt et al.'s (2017) systematic review further established that "disability identity is a unique phenomenon that shapes a person's way of seeing themselves" (p. 3). Lean-

ing on Bury's (1982) biographical illumination approach, which centres on the cultivation of and knowledge about the self, Tan (2018) portrays the diagnosis as a catalyst for self-awareness, one that allows autistic people to reframe their self-concept from "devaluation to redemption" (p. 164). As one of Tan's participants puts it: "I was just weird and different and broken, I felt in so many ways. And now ... Now, I'm a normal autistic person, not an abnormal neurotypical" (p. 164).

Moreover, Tan (2018) suggests the diagnosis may also validate the autistic way of being through a positive lens, thus affording autistic people the opportunity to reconsider their shortcomings (e.g., restricted interest) as strengths (e.g., passion). Another participant describes this realisation as follows: "I think my Asperger's traits have sort of [sic] is the reason I have been able to be successful in my job, that I did well at school, that I lived my life the way I did" (p. 165). That said, autism no longer holds the monopoly. In 2013, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) recognised the co-existence of ADHD alongside autism. Since then, Ghirardi et al.'s (2019) study has indicated a significant association between hyperactivity/impulsivity in ADHD and repetitive and restricted behaviour in autism, thus demonstrating an overlap between the two. Examining the dual diagnosis within the broader family context, Green et al. (2016) has shown that parents of children with ADHD who also presented autistic traits had poorer family quality of life compared to those of children with ADHD alone, stressing the need to adapt family support accordingly. That said, further inquiries are needed to identify whether or not the dual diagnosis of autism and ADHD influence the perception of self and if the dual diagnosis leads to a different but compound self.

Despite the prevalence of dual diagnoses (Antshel & Russo, 2019), research on the school experience of autistic students with ADHD have remained primarily focused on autism (Taneja-Johansson, 2023). Two exceptions are worth mentioning. First, Bolic Baric et al.'s (2016) research on how older autistic (Asperger) and ADHD students experienced the learning support they received in school. However, their findings do not account for the specificities of each diagnosis. Second, Ceruti et al.'s (2024) meta-analysis profiling executive functions difficulties in autistic young people

(6-18 years) with and without ADHD or with ADHD alone. They reported a similar executive function profile between participants with a dual diagnosis and those with only ADHD, and those with both diagnoses faced greater challenges than the participants with only autism. Regardless of the diagnosis, the formation of self is a sinuous and individual path. The diagnosis is only a gate. What is revealed on the other side of that gate varies according to who steps through.

Education is another gate to the self (Sylva, 1994). Valuable insights can be gleaned from recent literature focusing on the experience of school inclusion based on autistic people's first-hand accounts (Goodall, 2019, 2020; Hill et al., 2021; Hugo & Hedegaard, 2017, 2021). Bracher (2006) posited that non-autistic students' sense of self and identity represent strong motivators directly affecting their learning experience. For him, learning is facilitated when it enables students to experience their "sense of oneself as a force that matters in the world" (p. 19), akin to Bildung's sense of purpose. Considering Bracher's proposition in the context of autism, what does this tell us about the increase in autistic girls' absenteeism from secondary schools reported by Moyse (2021)? Though Bracher added a proviso, the need of students to maintain their identity may also thwart their desire to learn, for example, when students experience a stronger sense of identity outside school settings (e.g., Minecraft) or when the learning threatens their sense of self and identity, an idea reminiscent of Boekaerts' (2011) Dual Processing Self-Regulation Model.

Investigating the autistic lived experience in mainstream primary schools, Cunningham (2020) asked eleven pupils what they thought an autistic-friendly school would entail. She gathered revealing insights from her participants using the "three houses" approach (house of good things, house of worries, and house of dreams). Four pupils said they needed support to learn more about themselves and their autism and another one shared that their autism was "a very special thing to have" (p. 8). The pupils in Cunningham's (2020) study credited the social learning support they had received for their ability to navigate the non-autistic world around them without losing themselves. One older pupil, initially reluctant to the programme, recognised its impact on their sense of autistic self, saying: "Gets me to sort this out by myself when I don't really want to" (p. 8).

While these children could recognise when they needed help and why, suggesting a certain level of self-awareness, three children felt too ashamed to use the support available because it was not accessible without their peers knowing. Not only did they emphasise the need for their peers to learn about what being autistic means as an inclusion device, but all shared experiences in which they felt their teachers did not understand them or their autism. Nine of them even suggested that teachers “Try and improve your autism knowledge as much as you can” and “How you should treat them, what they might feel” (p. 8). Although the house of dreams was meant to represent what needed to be changed for the school to become autism friendly, placing their suggestions in that house may also indicate that they were aware of how unlikely the change was. By comparison, these children also remembered teachers who facilitated adequate adjustments for them based on their clear understanding of their autistic experience. Hence, Cunningham’s (2020) findings suggest that these children understood how they needed to be helped, therefore demonstrating self-concept.

The Bildung philosophy, which holds the formation of self at its core, seems alive and thriving in a Swedish Folk High School (Hugo & Hedegaard, 2021) offering a curriculum designed for autistic young adults. In this school, learning extends to and is informed by the students’ life situations. Hugo and Hedegaard’s (2021) study depicts a distinctive educational model where learning about oneself is integrated into the curriculum. The school proposes three courses aiming at helping autistic young people a) gain a better understanding of themselves, b) manage their day-to-day lives, and c) develop the social skills necessary to circumnavigate the pressure of the non-autistic world. Social learning takes place through a combination of formal and informal methods, allowing students to develop self-knowledge and self-confidence in their lives naturally. In line with Cunningham’s (2020) pupils, the students, although older, also reported having learned why, how, and when they needed to ask for help, thus highlighting generalisation through self-awareness and self-concept.

Likewise, the ability to self-reflect presupposes both self-awareness and self-concept. Autistic adolescents in Dillon et al.’s (2014) research reported feeling uneasy about some of their behaviours as one student shared, “I just argue back, I don’t

know why” (p. 5). Expressing their concerns further highlights their self-reflection abilities. Studies exploring how autistic students develop their sense of self through school, if any, are scarce or predominantly based on what this sense of self looks like to teachers and educators. As Hodge et al.’s (2019) study clearly emphasises, these non-autistic perspectives may not always equate to the autistic experience of self. Differences may transpire in the meaning of autism, such as “[They] believe everything is to do with the Asperger’s rather than actually everybody feels upset sometimes” (p. 1364) or “they’re told all the time they’re different or they can’t do this or they’re going to a SEN [special educational needs] school rather than a mainstream, so it’s learnt and then they see themselves as being different” (p. 1364). Although those insights were from well-intentioned school staff, their language remains strongly *ableist*.

Owing to their affinity with technology, many autistic young people have access to a gate of a different nature, one that unlocks a virtual world where they can ‘forge’ their sense of self through a gamer identity entwined with their autism (Anderson & Johnson, 2021; De Grove et al., 2015). That is not to say that all players identify as gamers (Shaw, 2012) or that all autistic people are interested in technology (Yuill, 2021). Through her ethnographic work in *Autcraft*, Ringland (2019b) sheds light on the dynamic between the autistic sense of self and the gamer identity, indicating that autistic players consider both aspects distinctively while being part of who they are. She illuminates *Autcraft*’s tour de force in transforming the pejorative autistic label into a badge of honour while creating a positive identity that extends into an *Autsome* culture where players often “feel like the game itself is dedicated to autistic people” (Ringland, 2019; p. 136). Provided the game was designed by Notch, an autistic developer (Goldberg & Larsson, 2015) may explain the phenomenon.

On the platform’s forum, players can access a wealth of autism-related information posted by autistic young people or their parents. Each discussion thread (forum) is a space where players come to read, contribute, or exchange what they know, akin to von Humboldt’s salons in Berlin. In those virtual gathering points, autistic players learn to understand and accept themselves as much as their autism (Ringland, 2019a). Narrowing on disability as an identity, Anderson and Johnson (2021) examined the

way eight live streamers use their online platforms to construct their own identities. All the streamers in the study acknowledge their disabilities in their videos and use them as content generators. For example, their usernames, such as ‘RockyNoHands’ or ‘BornToAdapt’ (p. 7), unequivocally reflect their disability identities. Interestingly, six streamers state that they use their online presence to inspire viewers with a disability, thus also highlighting Bildung’s sense of purpose and responsibility.

Video games represent an alternative realm where neurodivergent *avatars* may help awaken players’ sense of self and identity. The term *avatar* originates from the Sanskrit word *avatāra*, which translates the notion of *manifestation* or *appearance* of divinity into the physical world. Today, avatars have become analogous to embodiment, affording a graphical representation of the self (Ikegami, 2011). Although the avatar may be perceived as a mere two-dimensional image of a *user*, in insight, it could be understood as a *doppelgänger*, a digitalised alter ego (Suh & Kim, 2011). In stark contrast with Stone (1996) who posited that digital media led to disembodied identities existing independently in one world or the other, Burleigh et al. (2018) have shown that the user-avatar relationship epitomises a bidirectional bond between the user and their virtual character.

Ratan and Dawson (2016) suggested that an avatar is a tool allowing the user to extend themselves into the virtual world. However, this begs two questions. Firstly, how do autistic players perceive this interconnection provided they experience a different perception of self, notwithstanding their bodies? Whilst Aymerich-Franch and Fosch-Villaronga (2019) do not directly answer my question, they present another perspective. They claim, “embodiment technologies” (p. 4) could empower users with disabilities through “digital surrogates” (p. 4), further arguing that a user embodied in an avatar might feel, to various degrees, the harm inflicted to their avatar (e.g., attack in the game). Secondly, could this avatar-driven sense of virtual self influence the gamer’s sense of identity? Yee et al. (2009) believe it is so and have shown that when a player develops a strong tie with their avatar, they tend to endorse their identity (characteristics), suggesting a certain level of generalisation, which they refer to as the *Proteus Effect*. However, to my knowledge, it remains to be evidenced concerning autism.

In their review of the multiplayer first-person shooter game *Overwatch* (Blizzard Entertainment, 2022), Cullen et al. (2018) illustrate how the gaming industry might influence public perception of disability and neurodivergence on a grand scale, thus providing a mirror to its autistic crowd. The game offers a selection of avatars with various disabilities; for example, Symmetra, who “bends reality” and “crafts the world as she wishes it to be, in hopes of engineering a perfect society”, happens to represent an autistic woman (Blizzard Entertainment, 2022, Heroes tab). Many autistic players acclaimed Blizzard’s inclusion and recognition of autistic players through avatars. Mulkerin (2017) posted online:

(...) this warms my heart SO much (...) I absolutely adore this game for its cultural diversity” or “I dunno about you guys, but this is really major good stuff (...) especially since I have autism myself.

Another gamer, appreciating the representation of neurodivergent players (on the same website), summed it up eloquently declaring:

I feel that Symmetra is a hero in more ways than one. Not only does she represent a portion of the population that is vastly underrepresented in media, but she does so in a way that shows how being with high-functioning autism is like. ... Good on you Blizzard, for not making her make a big deal of it... that’s the kinda [sic] representation I’ve wanted (Mulkerin, 2017).

In line with Mazurek et al. (2015) who have demonstrated that autistic adults often play video games to reduce their stress or escape the pressure of their daily lives, Finke et al.’s (2018) findings highlight the broader self-regulatory benefit that video games may offer. The first-hand accounts they gathered provide direct insights into how their participants use video games to relax and diffuse unpleasant situations, such as Christian saying that playing video games is “extremely relaxing, while still being interactive” (p. 14) or Shaun stating that “playing video games does make me happy, so if I’m feeling sad, they have helped me pass through some stuff” (p. 14). Moreover, participants in the same study have also described how playing video games can gen-

erate positive emotions associated with self-efficacy. Andrew shared, “every time I get a new Call of Duty and I prestige. I feel like I achieved something. It’s so fun!” (p. 15). Noah commented, “it makes me feel like I’ve achieved something, something greater than I could do in reality. It’s empowering, it makes you feel good! It makes you feel like there is something you are good at, it’s a cool feeling” (p. 15). Connecting positive emotions with sharing interests, Rachel explained, “it makes me feel good when I meet someone that shares my appreciation for video games. It just makes you feel that much better that they understand how special it is” (p. 16). Conversely, when Christian shares, “when I can’t accomplish something (...) that’s [frustration] something I’m not very good at handling either” (p. 14) and Shaun explains, “I start connecting with characters, and if one of them dies, if I feel really connected to them, I’ll be really sad they’re gone. I think Mass Effect is one of the best examples” (p.15), both participants demonstrate their awareness of the negative emotions that playing video games may also trigger.

All in all, learning about oneself is a borderless endeavour continuing beyond the school gates. As Hugo and Hedegaard (2021) have illuminated, a curriculum inspired by the philosophy of Bildung may subsidise academic learning while emphasising learners’ sense of purpose, and as Finke et al. (2018) have highlighted above, a Bildung sense of self through purpose may equally be integrated into video game designs. The virtual world, particularly video games, is not the panacea guaranteeing the development of a robust and empowering autistic sense of self. However, despite the debate about their negative impact (Craig et al., 2021; Mazurek & Engelhardt, 2013a; Mazurek & Wenstrup, 2013), research has also highlighted how video games may positively contribute to the learning and well-being of autistic players (Ringland, 2019a; Zain et al., 2021). Shattering the dystopian myth of the machine, Blizzard Entertainment (2022) has trailblazed the industry, demonstrating ethics and showing that video games are not antagonistic when the aim is to recognise and embrace differences. Although the formation of the self is an individual process, the self is expressed through its relationship with the world. Ergo, this relationship between the self and the world will be the subject of the next section.

3.4. The Autistic Experience of Learning through the Relation Self-World

Expressing a sense of self in relation to the world presupposes individual self-confidence and collective acceptance of difference. Albeit the effort to ensure schools are places where inclusion primes, the autistic way of being may also translate into an inherent sense of difference, thus making autism the culprit of exclusion. Two autistic participants in the study of Bottema-Beutel et al. (2020) encapsulate this feeling by saying, “I think it [autism] made it where less people wanted to talk to or associate with me and would rather just avoid me” and “My disability made me different from the other students and because of that I was isolated” (p. 3303). For many autistic students, going to school unravels an emotional turmoil that places them in a constant “state of crisis” (Brede et al., 2017; p. 7). Goodall (2018a) speaks of the “feelings of dread” (p. 6) to capture the emotional experience of one of his participants, sharing, “My time at primary school was very stressful. At secondary school, the difficulties got worse” (p. 6), and “I am physically, mentally and emotionally drained... I am done with this. Talking about it [mainstream school] makes me angry . . . very angry and upset” (p. 6).

More recently, researchers such as Quadt et al. (2021) have proposed that the synergy between emotion and interoception could influence autistic people’s cognition and sense of self in a social context. Earlier findings associating anxiety with atypical interoception in autistic people, such as Quattrocki and Friston (2014), have offered that a dysfunctional interoceptive system in autistic individuals may explain their difficulty with social interactions along with their sensory and cognitive differences. Mazefsky and White (2014) hypothesised that emotional dysregulation provokes a sense of uncertainty at the idea of going to school that hinders group activities and distracts autistic students from schoolwork. This suggestion was corroborated by Costley et al.’s (2021) study in which five of their eighteen High-School participants described physical manifestations of their anxiety, saying, for example: “Sometimes I get shivers coming down in my body. Sometimes I get a bit of a stomachache, not a real [sic] bad one but just a bit and I feel uncomfortable” (p. 5).

Focusing on the sensory system, Hadley et al. (2019) demonstrated that when the background noise increases, non-autistic conversing individuals use shorter sentences, pay more attention to the speaker's mouth, and have a harder time respecting turn-taking in the discussion. Their study gives breadth to Acker et al.'s (2018) research reporting that sensory stimuli such as noise in the hallways, bodily smells, or touch might equally lead to school anxiety in autistic students. One participant in their study describes this interrelation as follows:

(...) you sort of notice [sniffing], erm things more, like the things which you don't like....[deep breath]. Like for example if a baby really upsets me via crying I will go outside and I will start noticing that my clothes are annoying me. So, I will start itching and scratching and it gets really annoying. And then erm, I'll start sweating and then that annoys me. And it just all triggers everything (p. 15).

Giving credence to previous studies (Garfinkel et al., 2016; Palser et al., 2018; Pickard et al., 2020), Trevisan et al., 2021 suggest that, emotions in concert with interoception, shed light on the emotional mechanisms underpinning autistic students' depression and anxiety associated with the feeling of school exclusion. However, findings regarding the interplay between interoceptive sensitivities and emotions are inconsistent. Distinguishing interoceptive sensitivity from interoceptive awareness, Mul et al. (2018) demonstrated that the former was not associated with their participants' level of empathy even if the latter was related to their autism traits, hence giving breadth to the hypothesis that self-awareness of body sensory sensitivities not only plays a role in feeling one's emotions but also others'. That said, Mahler et al. (2022) building on Trevisan et al.'s (2021) idea, showed that integrating interoception-based interventions¹¹ into the curriculum was not only feasible but also improved the participants' emotion regulation, thus adding weight to Boekaerts and Corno's (2005) argument that learning about oneself has a place in the classroom.

11 Three-step intervention: 1) recognise bodily changes, 2) identify the corresponding felt emotion, and 3) associate positive actions to the body-emotion connection.

Substantiating Milton's (2012) *double-empathy problem*, autistic children (Cunningham, 2020), adolescents (Goodall, 2020), and adults (Wood et al., 2022) have all shared feelings of not being understood both by their teachers and their peers, implying their environment also influence their relationships self-world. A fact, Goodall (2020) deplores, saying that school inclusion "in reality may be nothing more than physical integration" (p. 1286). This disconnect, according to Goodall and MacKenzie (2019), stems partially from the flaws of inclusion research, that is, their reliance on second-hand perspectives from teachers (Maciver et al., 2018) or parents (Zhao et al., 2021) rather than the views of autistic young people who actually experience *inclusion* or the lack of it thereof. Exemplifying the feeling of exclusion, one of Goodall and MacKenzie's (2019) participants stated: "As usual, I had no one and I was made to pair up with the teacher. I felt so little having to stand there waiting to pair up with the teacher. I had no one. It was awful" (p. 508). The ubiquity of this lack of understanding often leads to bullying (Fisher & Taylor, 2016), stigmatisation (Pearson & Rose, 2021), victimisation (Griffiths et al., 2019), and even dehumanisation (Cage et al., 2019) of autistic people. Ultimately, these experiences inform and shape the relationship autistic young people form with the world around them.

Countering the narrative of *mainstream inclusion*, Goodall (2018c) illustrated, through the lived experiences of twelve autistic adolescents, that, in practice, *mainstream is not for all*. Most of his participants also felt a sense of exclusion. One of them, eleven years old, shared a heart-wrenching experience saying:

School was always awful. I went through a bit of severe depression. I kept on saying, every time bad things happened, that I wished I was dead. I have to go to school [sad expression] ... I was always dreading it (p. 1662).

Similarly to Cunningham's (2020), the participants in Goodall and MacKenzie's (2019) study underscored the need for teachers to be trained, suggesting that "teaching staff might have to re-adjust their thinking and attitudes towards someone with autism and how they can best provide support" (p. 511). Though recognising it was not a "silver bullet" (p. 1663) one participant in Goodall's (2018c) warned against the pitfall of a 'one-fit-all' approach.

It [teacher training] makes some of the difference but it depends how it is used. It is a matter of taking the training and using it seriously and understanding that the child is their own person (p. 1663).

It could be argued that since the studies of Cunningham (2020), Goodall and MacKenzie (2019), and Goodall (2018c) focus solely on autistic students with negative school experiences, their biases have weakened their findings. However, parents have also expressed having to become strong advocates (O'Hare et al., 2021) for their children who often hide their needs for fear of being marginalised at school (Hill et al., 2021; O'Hare et al., 2021; Sproston et al., 2017). In their article, notwithstanding the clickbait title 'These aren't the kids I signed up for', Stites et al. (2021) reason it would be reductive and inaccurate to assume teachers intentionally stigmatise their students based on their *dis-ability*. Giving voice to three teachers' lived experiences, they demonstrate how unsupported these teachers feel and how unprepared they are to teach children with cognitive differences.

That said, autistic teachers are in a unique position to share a perspective informed by their own lived experiences. In their book, 'Learning from Autistic Teachers', Wood et al. (2022) offer meaningful insights into what true inclusion looks like for autistic students and teachers alike. While the book features fifteen powerful stories, two of them seemed to encapsulate the evolutive experience of the autistic student becoming an autistic teacher or leader. In chapter 9, Elkie Kammer shares how showing initiative and independence in her learning experience as a student by finding her own school placement was told off because she failed to discuss it with her teacher. Later on, as a teacher assigned to teach P7 pupils about the Second World War, she explains how she made the topic more relevant to her class by connecting it with war events happening at the time but was also told off because her approach did not align with the traditional teaching model (p. 111). In the second example, Claire O'Neil, a school leader explains how she prefers handling certain administrative tasks in the evening at home and explain how representing her organisation visually was not only soothing but also inspired her pupils to use visuals to organise their own tasks. Finally, highlighting the significant role autistic teachers play in inclusive classrooms, she shares:

“This enables me to empathise with my autistic pupils and helps me explain to others what the child may be feeling or experiencing at a given point in time” (pp. 184-185).

Giving purchase to the argument that adequate support programmes must be available to neurodivergent students for inclusion to be successful, Saggars et al. (2011) explored the experience of nine autistic students in an Australian high school, which enacting that principle was considered *inclusive*. Whilst all autistic students attended classes with their peers, the school also offered them a comprehensive support programme tailored to their individual needs. As opposed to the participants in the studies discussed above, the students described their teachers more positively, identifying qualities that facilitated inclusion and acceptance, such as being listened to and understood. One of the students illustrated this in terms of relatedness, saying, “I think it’s the feeling where you can talk to them like another student, kind of thing. So, you can relate to them, they can relate to you...” (p. 8). The students particularly appreciated teachers with whom learning was enjoyable as one student shared, “He’s nice, I like him, my favourite teacher. I don’t know, he’s just funny...” (p. 7), moreover highlighting that the quality of the relation with others also triggers emotions, which in turn, influence the autistic learning process.

Nevertheless, this self-world relation may also reflect a positive influence. Dillon et al. (2014) documented how support staff help foster a sense of inclusion in mainstream high schools. From interviewing fourteen autistic students, they gathered significant insights about their relationship with the staff sharing, “They just listen and understand you” (p. 6) and about the way support staff facilitate emotional regulation, saying, “When I get angry. I can go to the youth office... It’s good... It helps ‘cause [sic] I can’t do my work if I’m hangry. They just talk it out with me and always know what to do...” (p. 6). Interestingly, some of their participants also shared their liking for group work, indicating, “More group work would be fun... Playing games in teams and raffles in class are fun” (p. 6), which contrasts with Mazefsky and White’s (2014) suggestion. Group work in a classroom might not suffice to invoke a *sense of belonging*; Acker et al. (2018) propose *affiliation* instead. Studying how fourteen autistic ado-

lescents understood their school anxiety, their participants emphasised the importance of engaging with other autistic students, stating:

Well, they're basically just like me. They're, they're all autistic, they all have their own problems, they all go off into their own little world, they all have special way of fitting into reality, just like me (p. 12).

Bottema-Beutel et al.'s (2020) quantitative study reached similar findings. Their survey (n=248) showed that 60% of respondents felt their peers positively influenced their high school experience. However, while 48% said their peers supported them emotionally, only 13% felt they belonged with their peers. Demonstrating affiliation through shared identity, one of their participants stated, "I was in a class with people who had disabilities and it made it positive for me. Knowing that I could support them and they could support me was all the friendship that I needed" (p. 3405). Unfortunately, affiliation is not always feasible, as another participant reflected, "My ASD disability made my life in school more difficult because I always had to try extra hard to try to fit in with everyone else" (p. 3407).

Considering learning a social act, it could be argued that friendship might facilitate learning since it involves positive emotions while capitalising on affiliation. However, making friends is not always easy for autistic young people. Just as the understanding of autism varies, the meaning of friendship differs between autistic and non-autistic people (Finke et al., 2019). O'Hagan and Hebron (2017) interviewed three autistic adolescents to understand their perception of friendship and juxtaposed their views with those of their parents. They reported that although students seemed to understand the idea of friendship, some parents qualified this understanding as theoretical. One of their participants described a good friend as having "a good attitude; being nice to that person; helping them when they're stuck with something" (p.12), emphasising qualities such as *liking*, *trust*, and *respect*. Provided how autistic young people are sometimes regarded, no wonder 'being nice' is at the top of the list! The participants perceived 'companionship' and 'helping each other' as essential characteristics of friendship, which are hard to reconcile with parents' input such as "I don't think

he truly knows what the word friendship is. Like, I have a friend from childhood and that's what I would call proper friendship" (p. 13) or "He found it nearly impossible to make friends ... if there was somebody crossing the road, they would be his friend even if he had never seen them before" (p. 13). In line with Gunn and Delafield-Butt's (2016) research, O'Hagan and Hebron's (2017) findings have also shown that their participants' friendships mostly evolved around a shared interest acting as a catalyst for socialisation (e.g., video games) as exemplified in this mother's comment: "He's got a couple of friends on there [Xbox Live] from primary school who he's actually getting along a lot better with now they're not face to face" (p.15). Thus, the authors suggest that this type of social interaction might be feasible because it follows or models the structured rules inherent to video games. However, the fact that the same mother later added, "it's not what I would call a proper friendship but I think in his mind they're his friends," (p. 15) only epitomises how divergence of perception remains salient.

Unburdened by physical interactions, the virtual world seems to offer a fertile ground for gamers to seed and/or grow friendships, an assertion best exemplified in *Autcraft* (Ringland, 2019a). Girvan (2018) defines the *virtual world* as a distinctive "simulated environment" (p. 1096). Its specific features (e.g., avatar) offer gamers a range of experiences extending beyond the confines of the physical world that contains it and provide many opportunities for social regulation (Harrison & Gesthuizen, 2019). While video games exist within the virtual realm, their non-playing characters (NPCs), in other words, their inhabitants, are in constant relations with the players' avatars, hence blurring borders between both dimensions. It is amid this fuzziness that autistic players seem to relate to one another.

In their phenomenological study, Gallup et al. (2016) liken the video game world to a *safe space* that facilitates "social risk-taking" (p. 226) and allows autistic players to develop friendships in their own terms, as exemplified in this comment: "I have lots of friends in the game... I can have more friends online and socialize just like you do [emphasized with a louder voice]" (p. 232) and without geographical restraints "I get to meet people from all over the world" (p. 234). Their experiences give breadth to O'Hagan and Hebron's (2017) proposition that video game interactions might shape

the autistic understanding of friendship. Furthermore, Gallup et al.'s (2016) participants also commented on having learned the mechanics of social interactions through playing video games and described using their new skills to facilitate or improve their face-to-face relationships. Interestingly, all three participants could differentiate between the skills required to socially interact online and those needed for interactions in the physical world. As Taylor shared, "To game and have friends you have to have a whole different set of 'social skills' [his hand quoted in the air]" (p. 233).

Examining the experience of ten autistic young people playing video games, Finke et al. (2018) highlighted a direct connection between video games and friendships, allowing social interactions to move back and forth between both worlds. Some of their participants shared playing with family members or friends: "I like to play with friends. They come over to my house. I play with my friends and with my siblings" (p. 10). Others have stated that playing video games helped them maintain friendships: "And so we're all in school and stuff, so during the week we play online and then during the weekend is when we get together" (p. 11). Finke et al. (2018) further demonstrated how video games become social devices to initiate friendships in the physical world through shared interest, as one participant explained:

If I meet someone new and they like videogames, well, we can talk about that, and maybe play together. I think that has helped me a little bit. If one of their interests is videogames then that can help me connect with them, because connecting with people is really difficult for me (p. 12).

Or to initiate new friendships online by playing with gamers they do not know; as a participant commented, "we call them 'randoms.' They just drop in. You meet them and you hope they're good and sometimes you become good friends" (p. 13). Ergo, it could be said that autistic gamers demonstrate a certain degree of social acumen since they understand the qualities of a good gamer and deliberately choose to play with unknown players. While it is fair to conclude that friendship may facilitate inclusion in the classroom or a video game, to my knowledge, no research has investigated whether friendships and, therefore, inclusion increase the quality of learning or improve the learning experience of autistic students.

3.5. The Autistic Experience of Learning as an Autonomous Person

In the autistic realm, terms such as *independence*, *autonomy*, and *agency* seem to give lieu to notions mirroring the diagnostic criteria (American Psychiatric Association, 2013). Despite the impetus for inclusive classrooms initiated by the widespread endorsement of the Salamanca Agreement (UNESCO, 1994), the mixed usage of the terms mentioned above may complicate how inclusion is enacted in the classroom, especially for autistic students. Since these competencies are frequently perceived as learning goals for non-autistic students, I will now examine how they are explored from an autistic perspective in the existing literature.

Independence is often defined in relation to the field of inquiry. From a behavioural standpoint, it is described as “on task engagement in an activity in the absence of adult prompting” (Hume & Odom, 2007; p. 1). In contrast, Zimmer-Gembeck and Collins (2003) defines the interplay between *independence* and *autonomy* as self-governed and self-regulated behaviours reflecting personal decision. Still, in the classroom, independence often equates to performing academic tasks according to instructions and without supervision (Tamm et al., 2020). Investigating the inclusion of autistic students¹² in a mainstream Swedish high school through the lens of autonomy, Sjödin (2015) contrasts the experience of Alice, a high-functioning autistic student, with her teachers’ understanding of autism. Her study sheds light on the way Alice’s interests and values are discouraged by the establishment; where she demonstrates attention, initiative, and a capacity for structuring and explaining specific topics, teachers emphasise her inability to follow the timetable and abide by classroom rules, saying:

In a way, she is more attentive than most children. She sees things as they are. In other children, it is perhaps more that they draw a mental picture they have of a horse, but Alice wants to know how many teeth the horse has (...). There are such possibilities in it but as it is now it is more important that she completes the same five pages of math as everyone else (p. 91).

12 Interviews and observations took place at three age points: eight, eleven, and thirteen.

Considering that Alice devoted too much time to her personal interest at the expense of completing school tasks, she was forbidden to “working with anything related to her interest during the school day” (p. 92). Sjödin (2015) uses this anecdote to illustrate the distinction between *independence* and *autonomy*, contrasting the assumptions of the year seven teacher and educator with Alice’s own explanation of her needs:

Teacher: How do I know if she hears me when she is not listening when I speak to her? Seeing as how she sits with that stuff all the time, how will she be able to concentrate on what she is supposed to do? (p. 92).

Educator: It’s not good for these children with too much [sic] stimuli, we should try to help her focus on what is important. She needs clear rules to relate to. We must help her to focus so she can listen properly and do the things she’s expected to do (p. 92).

Alice: I have to do something [related to her interest]. If I do not do something, I cannot hear what they say to me. Their voices blend together with the other sounds. If I do something while I listen, I can focus but they do not believe me when I tell them (p. 92).

In this example, the teacher and educator appear to misunderstand Alice’s reliance on her topic of interest. While Alice exhibits autonomy by recognising and employing a coping strategy that enables her to focus (e.g., keeping herself busy with something she enjoys helps her listen to her teachers), they misinterpret this as a form of disobedience, thereby blurring the distinction between independence and autonomy.

Although an individual must be able to act independently to be autonomous, autonomy is distinguished by the ability to make one’s own decisions (Hume et al., 2014). Jennings (2016) includes the notion of freedom, describing autonomy as the “freedom from outside restraint and the freedom to live one’s own life in one’s own way” (p. 12). However, this understanding may conflict with the diagnostic criteria since autism has also been associated with a lack of or an inability to be autonomous

(Parsi & Elster, 2015). Paradoxically, many autistic individuals portrayed as ‘rigid’ in their thinking are often described as original, focused, and not easily influenced by others, which indicates autonomy in non-autistic terms (Klauß, 2005)¹³. In 2012, Sciutto et al. reported that integrating “the child’s interests in any way possible—Allowing them to lead when appropriate” (p. 183) positively influences the learning experience of autistic students, which a parent confirmed saying:

He asked my son to bring in some of his collection and made it a point to design many of his Algebra classes around these items. My son not only got an A in that class but for the first time, actually looked forward to going to school in the morning (p. 183).

Three years later, the findings of Sciutto et al. (2012) do not appear to be reflected in the practices of Alice’s tutor as described by Sjödin (2015):

She has certain interests, of course. In a way I suppose it is good she has them, because it means that she reads, but sometimes I feel these interests take up too much of her time. Time she should spend on other things (Sjödin, 2015; p. 90).

Moreover, the same tutor brings to the forefront the lingering contention between Alice’s need for autonomy and the school’s expectations:

This monotonous kind of work, that other children may find boring, that is no problem. It is good for these children to be a little bored. They benefit from it. (...) It is all about being clear and definite, is it not? She has to conform to the ways of the school” (p. 91).

Thereby, what could be perceived as rigidity of thought, social inadequacy, or even distressing behaviour might simply reflect the autistic autonomous way of following their interests independently.

13 Translation cited in Späth & Jongsma (2020) p. 74.

Berlin (1958/2005) posited that autonomy implies that the person knows, understands, and accepts who they are in relation to the world in which they live. Therefore, when Frith and Happé (1999) proposed that autistic people lack self-awareness, it could be inferred that they cannot be autonomous either. Williams et al. (2018b) hypothesised that “self-representation is unimpaired in ASD, but selectively blocked from influencing memory” (p. 339), suggesting that their autonomy might be partial in equal measure. Another argument could be made that when autistic autonomy is challenged or dismissed, their awareness of self and potential for growth are denied (Bloom, 2009). Based on Sjödin’s (2015) study, Alice’s experience highlights the impact of teachers’ assumptions on her self-understanding, as she began to view herself through the perspective of her teachers:

I do not know what is wrong with my mind, why I am so stupid. I cannot hear what they say; I cannot explain to them so they understand and they do not want to listen. They do not think I hear them when they talk about me; they do not think I understand; but I hear everything (p. 92).

Echoing Berlin (1958/2005), Post et al. (2017) further argue that having the autonomy to use their personality and skills to participate in the world around them contributes to autistic well-being. Moreover, as Späth and Jongsma (2020) report later, some autistic people need time to consider all the details of a situation before answering novel questions or explaining some of their actions, and this ‘delay’ can sometimes be misconstrued as a lack of autonomy. In turn, it may be understood as an inability to make decisions, thus suggesting that narrowing choices or making decisions for autistic students is required.

Presenting autonomy within a capability framework, Robeyns (2016) questions whether autistic people can autonomously decide what is in their best interest, all the while stating that autistic children, aware of their agency being overly constrained compared to their non-autistic peers, “experience it as a ‘great injustice’” (p. 17). This incongruence begs a different perspective: How can autistic people be supported so they are confident in their own decision-making? A perspective that Jaswal

et al. (2020) explored investigating the communicative autonomy of nine nonspeaking autistic individuals using a letterboard¹⁴. They concluded that, based on the various patterns measured using a head-mounted eye-tracking system, their participants pointed to letters they had chosen by themselves, demonstrating autonomy and agency.

Agency is a term conveying different shades of meaning depending on the context in which it is discussed. From an inclusive education standpoint, Terzi (2010) defines *agency* as “actively choosing one’s own broader goals, and of achieving them” (p. 140). On the other hand, Binder (2019) associates agency with the notion of freedom of choice, implying that several alternatives are offered. Therefore, it stands to reason that when the agency of an autistic student is constrained, their ability to make choices is equally limited. Expanding on Ahearn’s (2001) functional definition of agency as a “capacity to act” (p. 112), Huijg (2020) integrates the notion of choice, offering a slightly more comprehensive conceptualisation as “the capacity to act or to not act” (p. 213). In including the option *to not act* as an expression of agency, Huig offers an opportunity to consider autistic students’ needs beyond the limits of the diagnostic criteria.

Choice and *flexibility* are the two sides of the same coin called *agency*. One of Goodall’s (2020) participants, Sarah Jane, illustrated these two aspects by saying, “This may involve adapting curriculum i.e. no mental maths or poetry etc. as well as changing how a subject is taught” (p. 1302). In the same vein, Tomlinson et al. (2022) have demonstrated that school flexibility (e.g., being able to leave the class before the bell rings, exam arrangements) not only helps autistic high school students develop independence, autonomy and agency (e.g., choosing their own accommodations), it also facilitates emotion and sensory regulation. Enforcing handwriting is another issue that can inhibit autistic students’ learning performance (Hill et al., 2021). Oscar, in Saggars et al. (2011), describes the negative impact of having to take notes by hand saying, “Well my arm, my finger here gets a bit sore (...). And well it just sort of hurts my arm when I write a lot” (p. 10) while Rebecca underlines how flexibility could make a difference commenting, “If I had a computer it would be better. Because I’m faster

14 Laminated piece of paper containing 26 upper-case letters, 4 punctuation marks, and 2 icons (p. 8).

on the computer than I am at writing, and some people can't read my writing" (p. 11). Although encouraging, flexibility is not a one-fit-all solution either. Whereas Sproston et al. (2017) reported that overall, autistic students tend to perceive flexible teachers as more inclusive, one of their participants explains, "[they] gave me options to do a part-time timetable but that just wasn't going to work for me because I'm quite all or nothing" (p. 8). What these experiences seem to suggest, however, is that the kind of alternatives offered through flexibility does matter.

3.6. The Autistic Experience of Learning by Doing

A hands-on approach to education is often considered the remit of vocational training where students are apprentices learning a trade. However, the advancement of technology has modified the landscape and is now increasingly challenging the dichotomy between general and vocational education. With technology emerges the ability to produce digital fabrications through various digital designs. Nevertheless, the use of technology in school is often limited to promoting traditional teaching practices rather than compelling learning through innovative thinking (Eisenberg, 2013). Although Katterfeldt et al. (2015) demonstrated how principles of *Bildung* (e.g., Imagineering, self-efficacy) could be cohesively integrated into digital constructionist learning environments using codable construction kits, introducing the production of digital artefacts as teaching modality remains a challenging endeavour. Hjorth et al. (2016) have highlighted three critical obstacles for teachers: a) the need for more training in complex design processes b) the management of the technology itself, and c) the ability to endorse different roles in their classrooms.

Interestingly, research into virtual classrooms has emphasised the role of the body by underlying the salient role gestures play in the learning process (Li et al., 2019; Vest et al., 2020). Wang et al. (2018) showed that incorporating an 'animated virtual instructor' pointing at the section being discussed in online classes enhances students' attention and improves learning achievements. According to Quek et al. (2002), gestures and speech are complementary, they facilitate learning by improving information retention (working memory) and reducing cognitive load. Although more than twenty

years ago, Veinott et al. (1999) suggested that gestural information through videos could be used to contravene language barriers and improve communication, research remains scarce in the field of autism.

Video games bring both body and mind to the altar of learning and, in so doing, further revive this dualistic view. Many digital fabrications are natural by-products of video games, but *learning by doing* through this medium commends for a generalisation of competence, in other words, the possibility that the skills acquired while playing will be transferable to the physical world. Whereas a body of research has underlined the positive influence of video games on non-autistic players' cognitive abilities in task switching (Cain et al., 2012), auditory perception (Lelo de Larrea-Mancera et al., 2021), or attentional control (He et al., 2022) within the game environment, Stewart et al.'s (2020) study has confirmed that skill transfer, if any, is predominantly modality-specific. It makes the argument for a generalisation of broad competences through video games hard to substantiate. By contrast, McKinley et al.'s (2011) study, which compared the performances of experienced pilots and experienced video game players, demonstrated that cognitive skills gained in video games could be effectively applied in other yet related domains. More recently, Franceschini et al. (2017) have shown that their dyslexic participants improved their reading abilities with action video games, thus suggesting that the transfer of skills to a novel domain commends further inquiries.

In Finke et al.'s (2018) study, autistic participants have shared experiences in which video games positively impacted their thinking skills. For example, Christian shares, "You do learn things. You do have experiences that you wouldn't gain outside of that, that you can only get through games, and I think you could only gain through videogames" (p.16). Speaking of the difference between playing video games and watching TV, Josh explains, "I like playing videogames because sometimes, I just-with [sic] TV I just can't really concentrate on it for very long; and with videogames, you have to pay attention, or you're just not playing" (p. 16). On the other hand, Rachel's comment is more specific, stating, "My ability to pay attention more, I think, has actually increased because of playing videogames because it really requires quite

a bit of attention” (p. 16). Kaleb also shows self-reflection when discussing how video games helped him develop problem-solving and critical thinking, saying, “You know, when you stop for a few seconds? Stop to think for a while and just wonder what if I try this or that” (p. 16) whereas Nolan acknowledges his resilience by saying:

I learned to be persistent... you have to keep trying and trying different things and then finally something will work. And then, of course, you move on, and they give you some other challenge... but as long as you're persistent, you will get it (p.16).

Perhaps more closely related to the concept of generalisation discussed above, Finke et al.'s (2018) participants described other instances where video games directly benefited their academic achievements. For example, Noah explains:

I learned to spell by playing video games. My spelling was horrendous. I was like five years behind in my spelling and writing skills... and I've always said I learned from online interaction... the only way I learned how to spell was through repetitive action of typing the words to people or whatever (p. 17).

Shaun describes using the topic of video games to write essays and give class presentations, saying, “I've even written a paper on video games, a college paper. I wrote on video game terms and slang. Just different terms that gamers use. I got an A+ on that” (p. 17). Placing engagement at the intersection between both worlds, Christian describes, “I mentioned that I used to play historical strategy games, and it was probably... a result of that or concurrent with that, I tend to very much enjoy history classes” (p. 17). Furthermore, analysing the gameplay of eight autistic adolescents concerning the tasks and features of three different games, Ke and Moon (2018) demonstrated that games, regardless of the type, facilitate the development of different skills. In the competition genre, for instance, the chess game, which demands remembering various combinations of moves while being able to shift strategies and actions, seemed to have promoted cognitive flexibility and mental evaluation. Conversely, the racing game, while belonging to the same category, had a lesser impact on cognitive

flexibility but contributed to developing the participants' identity through self-efficacy (sense of achievement).

Extending beyond cognition and achievement, Finke et al. (2018) also documented how video games improve physical skills as Shaun shares, "My reaction time, reflexes, have improved. I'm sure I could beat myself if I was playing myself back then [when I was younger]" (p. 17). Highlighting how video games may contribute to habit formation (repetition), Kaleb comments, "Once you get the hang of a game, it really just becomes something you hardly think about-you just do... after a whole lot of practice" (p. 17). Moreover, Rachel underlines improvement in fine motor skills, "I think my hand eye coordination wasn't that good when I was younger, but I put a lot of practice in, to use different controllers, the ability to remember all the different-what each button means, what each one, like, represents. I got much better at that" (p. 17).

In Moster et al. (2022), most participants reported that working in a team at the camp was a more enjoyable experience than at school, explaining that their teammates were "better than previous ones" (p. 5). Realising that the camp did not afford them the time to produce a complete game, but only a demo version, they learned about time management, which they considered as the most valuable skill they had learned. In terms of behaviour, instructors noted that students were not moving about as much, preferring to stay at their computers instead, yet stepping away from their screens to move their bodies was shown to improve their attitude and attention throughout the day. The camp also facilitated social bonding over shared interest, as some students said they wanted to stay in touch with their peers to continue building the game or to meet in Minecraft.

The impetus for technology-based intervention models aiming at supporting autistic people has motivated researchers to investigate the efficacy of such programmes. Although promising, findings remain inconclusive, as Grynszpan et al.'s (2014) meta-analysis and Fletcher-Watson et al.'s (2016) collaborative pilot design have demonstrated. That said, considering the idea that many autistic young people are avid players who have shown a certain level of technological acumen, particularly

in video games, it follows that involving them in the design process could not only improve the efficiency of these interventions, it could also meet their learning needs while capitalising on their interest. However, scientists in the field of technology tend to lean on a characterisation of autism based on its diagnostic criteria, such as social and communication impairments, rigidity of thinking, repetitive behaviour, and sensory sensitivity (American Psychiatric Association, 2013), which unavoidably, shapes how research with autistic participants is understood and designed. Frauenberger et al. (2013) have suggested that autistic participants might face difficulties since collaborating on design activities is socially demanding. While their work presents autism primarily through the lens of deficit-based diagnostic criteria, they report that their annotator tool supported the intricate communication needs of their autistic participants. However, their study provides no detail on the social profiles of participants prior to the research, nor does it clarify how those difficulties were identified or operationalised or mitigated.

Cai et al. (2013) have reported that some of their participants refused to collaborate due to the organisation of their study environment. Nevertheless, studying the involvement of autistic participants in user experience research¹⁵, Çorlu et al. (2017) brought forth another perspective by explaining that some researchers may not have the knowledge or experience to work with neurodivergent participants; hence, the instruments used or the research design itself may not be appropriate.

In consequence, this perception may further contribute to the pervasiveness of methods using second-hand data above research employing participatory designs in autism research. Carlier et al. (2020) collected inputs from specialised therapists and parents to design a *serious game* aimed at helping autistic young people reduce their stress and anxiety. However, statements such as “According to the expertise of the consulted therapists, the graphical aspect of New Horizon can be appealing for the targeted age category of 6 to 10 years” (p. 12) or “Feedback from the therapists mentioned that the bubbles’ movement and noise should be the main focus of the game, to avoid loss of

15 User experience (UX) examines the way users relate to a digital product (e.g., website, video game) along with the emotions and behaviour emerging from their interaction with it.

concentration or anxious feelings” (p. 18) could be questioned since the study does not inform on the professionals’ authority in designing or playing video games.

Likewise, the choice of three autistic young participants who preferred other activities than playing video games¹⁶ is difficult to reconcile with the study’s objective. Moreover, based on their usability study, the authors state that the “children enjoyed playing the New Horizon game” (p. 31) even though a usability study does not assess enjoyment but how easy it is to use the game. While the Likert scale was employed to measure the participants’ moods, their records were inconsistent, which researchers claim is due to the children intentionally turning the game on and off to avoid recording their moods. Most surprisingly, although the authors indicate that “none of the children had the chance to play the game when feeling stressed or anxious” (p.32), they still conclude that “the children indicate reduced levels of stress and anxiety after the study,” (p. 31) and that “the multidisciplinary approach and the guidelines for ASD have resulted in a game that fits the needs of children with ASD and limited unwanted behavior has been noted” (p. 31). That being said, a greater awareness of neurodiversity has also led to a shift in research designs. Benton et al. (2014) developed the Diversity for Design (D4D) framework, which considers the challenges and strengths of neurodivergent children. They recommend adding situational elements to the study environment to align with the individual needs, personality, interests, and abilities of neurodivergent participants. In a similar vein, Makhaeva et al. (2016) proposed the model of “Handlungsspielraum”¹⁷, advocating for structured designs that allow for creative freedom (e.g., offering different ways of participating) and in which participants feel safe.

In this regard, the participatory format Bossavit and Parsons (2016) followed to design a serious game in collaboration with four autistic adolescents¹⁸ and a group of teachers is particularly interesting. While they offered different tools (e.g., visual schedule, blank paper to draw ideas), as Makhaeva et al. (2016) suggested, the

16 P1 and P2 preferred watching YouTube while P3 preferred reality series (p. 20).

17 Handlungsspielraum may be translated as ‘room for manoeuvre’.

18 Among the four participants, only two consistently participated (Nathan and Jack).

participants did not use them and mainly contributed through in-session dialogues. Additionally, this approach reveals how the participants' personality influenced their engagement in the research. Nathan, who is described by his ICT teacher as "usually shy, stays quiet and sits formally" (p. 2), is seen as "very active, thinking on how to improve the interaction – sitting on the table touching his chin, moving all over the room and trying and trying again to discover the limits of the Kinect"¹⁹ during the sessions to test the demo. On the other hand, Jack, who initially did not exhibit interest in the demo, seemed more engaged with the process of ideation. However, as his motivation faded after rapidly losing the game, he withdrew. Akin to Minecraft's role segmentation, participants were alternatively given the roles of user and informant in line with the session's objectives; unfortunately, this reduced their level of collaboration. The fact that transitions can be challenging for autistic young people may account for the issue more than the roles per se. When Nathan offered to design a game for learning geography (based on his difficulty in school), Jack built on the idea and proposed a "race of country selections where the first player who answers the teacher's questions wins" (p. 3). Although the teacher rejected his suggestion since the content was to be provided only by teachers, it compelled Jack to suggest a more sophisticated concept. Overall, Bossavit and Parsons' (2016) study demonstrates that gathering various expertise, such as the researcher's knowledge of game design, the teacher's pedagogical experience, and the participants' experience of playing video games, rather than multiple disciplines (Carlier et al., 2020), co-jointly and effectively contribute towards the realisation of the shared goal.

3.7. Summary and Diagram

In this section, I have reviewed several areas of the literature that demonstrate how the formation of an autistic self is a sine qua non for a positive and enriching learning experience, highlighting the significance of the diagnosis in constructing an autistic identity and the crucial role teachers and educators play within the school

19 Kinect is a Microsoft's motion sensor.

setting. Moreover, it illustrated how video games may offer an alternative learning environment conducive to the autistic development of self.

This review also shed light on the relationships autistic young people form with others, emphasising the impact of sensory sensitivities, suggesting their potential influence on the quality of the friendships autistic young people forge. It brought to the fore the bi-directionality of all social interactions, underscoring how autistic people are often deemed the sole responsible party in the exchange. It added weight to the idea that relationships often grow stronger when they are built around shared interests. It also helped to show why online video games might offer something valuable — a kind of in-between space where young people can connect with others without having to deal with the usual physical barriers or discomforts.

It further demonstrated how understanding the autistic young person through the lens of the diagnostic criteria may conflict with their sense of agency, autonomy, and independence, which, by extension, can deny their sense of awareness. Conversely, it highlighted how affording autistic young people autonomy by giving them opportunities to use their personalities and skills contributed to their well-being.

To conclude, the review evidenced how online technology may represent a digital vocational terrain favourable to the autistic way of learning, where *doing* is prioritised over *memorising*. It also highlighted how the skills autistic learners acquire online may potentially contribute to their academic achievement. However, it also revealed how research focusing on the development of technology-based support programmes is often designed according to the diagnostic criteria using secondary data, hence looping back on the primacy of the deficit-oriented perception of autism (Figure 8).

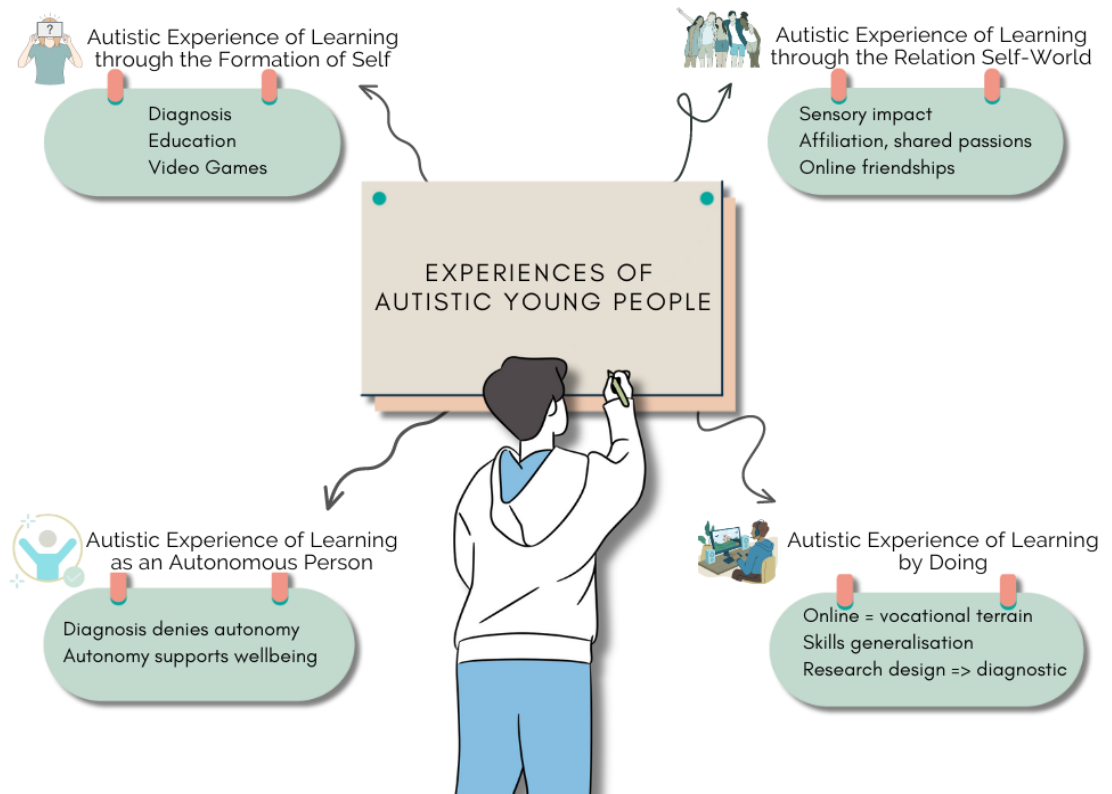


Figure 8. Landscape of autistic young people's learning experience

4. METHODOLOGY

4.1. Introduction

The phenomenon of lived experience explored in this study lent itself to a qualitative methodology as it is best suited to understand individuals' attitudes, emotions, and interactions with the world. In contrast to quantitative research, a qualitative inquiry does not require testing hypotheses to validate or invalidate findings. While both perspectives have their merits, qualitative research in autism remains scarce. The autistic community has also pleaded for a greater focus on qualitative and inclusive research informed by their experiences and aligned with their needs. Therefore, given the community's demand and the focus of my research question on the autistic learning experience in Minecraft, a hermeneutic phenomenological methodology was the most appropriate approach.

Throughout this inquiry, I consider the term *learning* as a multidimensional experience involving constructive *play*, bodily *senses*, and *relations* with the world, which aligns with the philosophy of *Bildung*. This research aimed to examine these multiplicities to understand the experience of six autistic teenagers playing Minecraft on a private server called Autcraft.

In this chapter, I present the broader phenomenological paradigm which framed my research before describing Smith et al.'s (2009) Interpretative Phenomenological Analysis (IPA) as my chosen method. It is a choice that aligns with my epistemological position and the nature of the data gathered, which I defend by considering two other methodologies. Next, I explain the participants' recruitment process and detail the procedure for capturing their lived experiences via observation and play sessions. Finally, leaning back on Smith et al.'s (2009) Interpretative Phenomenological Analysis (IPA), I provide an exhaustive account of the process followed in interpreting the data within its context.

4.2. The Phenomenological Paradigm

Phenomenology has one fundamental tenet: It describes an experience as it is lived (Friesen et al., 2012). Van Manen (2016a) emphasises that phenomenology “respects the reality of our experience-as-lived” (p.13). The term *respect*, to me, implies a sense of acceptance of all experiences while translating their undeniable significance and meaningfulness. Phenomenology initiated and anchored my research in the pre-reflective observation of the participants to uncover the *particularities* in their experiences through the variations that arose. In this sense, it allowed me to explore how learning occurs beyond the confines of the classroom, viewing it through the lens of autonomous learners, such as Minecraft players. It encouraged me to feel comfortable knowing that some people might have a different experience of the phenomenon or not have any, thus embracing the uniqueness of my autistic participants’ experiences rather than focusing on what is generalisable. While phenomenology acknowledges scientific literature, it also strives to identify and describe specific experiences to reflect upon and relay their interpretations into immersive narratives, deepening our understanding one question at a time. Various thinkers contributed to this body of thought as I sat on the shoulders of a few giants such as Martin Heidegger, Jean-Paul Sartre, Maurice Merleau-Ponty, William James, and Henri Bergson.

Martin Heidegger (1927/2010) argues in ‘Being and Time’ that we cannot be separated from the context of our experiences and highlights our intentional engagement in the world. He initiates an existential approach to lived experience, emphasising the structure and meaning of being in the world, which he symbolises as *always ready* in relation to others (being-with) through the term *Dasein*, literally meaning *being there* while implying reflective awareness. He puts forth that human beings are *persons in context* who are *intersubjectively* involved in the world and contests Husserl’s notion of *bracketing* personal preconceptions and biases. Therefore, it could be argued that Heidegger advocates for researchers to co-create meanings (interpretation) with their participants (Wojnar & Swanson, 2007). Conceptualising the *hermeneutic circle* to reach the core of being without bracketing the experience, he posits that all descriptions are *already interpretations* and that no observations can be shielded from

the observer's experience. The concepts of '*present-at-hand*' (vorhanden) and '*ready-at-hand*' (zuhanden) are central to Heidegger's philosophy. They describe two modes of being that things can have, depending on how we engage with them. They highlight how our relationship with things is not purely objective or detached but shaped by how we use and interact with them in a practical context. Heidegger further argues that most of our experience is in the mode of *ready-at-hand* (practical, lived experiences), where we engage with the world pragmatically and unreflectively. However, when something disrupts this flow (e.g., the Internet is down, or we encounter something unfamiliar), it shifts into the *present-at-hand* (abstract, theory), making us aware of it as an object distinct from our activity. His work also offers crucial insights into emotions, the so-called *moods*, seeing them as a reflection of our *attunement* with the world.

Jean-Paul Sartre (1943/2003), inspired by Heidegger, considers human beings to be *work-in-progress*, always in the process of becoming and engaged in projects in the world. He rejects the notion of a creator – *existence comes before essence* and defends the idea that people have freedom of choice and are responsible for their actions. In 'Being and Nothingness,' he underlines how others affect the way we see the world simply by their presence and actions within it, thus conferring a sense of direction to our perception through the gaze of others upon our world or ourselves as we are looking at the world (Sartre, 2021)²⁰. Sartre expands on the *worldliness* of human experience as contingent upon the *presence* or *absence* of our relationships with others.

Maurice Merleau-Ponty (1945/2013) aspired to a more contextualised phenomenology and concentrated his work on the embodied nature of our relationship with the world as *body-subjects*: "The body no longer conceived as an object in the world, but as our means of communication with it" (p. 106). He defines it as the *primacy of the situated viewpoint* that is inescapable. In his 'Phenomenology of Perception', he explores many clinical cases and proposes that our sense of self is *holistic* while turned towards the world; we see ourselves differently. Mirroring Sartre's *corps d'autrui*, he elegantly marries subjectivity and embodiment, arguing that our perception

20 The Look, p. 355.

of others always comes from our embodied standpoint, illustrating our inexorable position of difference. According to Merleau-Ponty, knowledge is shaped by our body, suggesting that practical activities (perceptual affordances) and *body-in-the-world relationships* could be as significant as abstract ones (Anderson, 2003).

William James (1890/2000b) engages with the ideas of *free will* and *accountability* for our actions. In the chapter titled ‘Will’ (pp. 486-592), he posits that meaning and essence are determined by our *interest* in the object (its function), which further aligns with Heidegger’s (1927/2010) *circumspective concern* claiming that the *present-at-hand* is derived from the *ready-at-hand*. For James, the world of senses represents the *paramount reality* (p. 299), which transpires in Merleau-Ponty’s (1945/2013) *primacy of perception*. Similarly, this notion of lived reality rejoins Heidegger’s idea that man is understandable on the premise of *being-in-the-world*.

Henri Bergson (1910/2012) is another philosopher worth including since his work was instrumental to my understanding of the participants’ *lived* experiences. Notwithstanding his public disagreement with Albert Einstein about the definition of ‘real’ time, it is Bergson’s conceptualisation of ‘self’ as a *becoming*, a *progressing*, a *continual change* that I found enlightening. For Bergson, what is real is never static, rather it is always in movement, reality, for him, is continuous. In line with William James and Jean-Paul Sartre, Bergson views *Being* as a being in progress – that is, *Becoming*. Thereby, it stands to reason that becoming, progress, and change can only be lived. Considering the self based on his notion of *duration* best captures what *lived* experiences are, while his metaphor of the ‘image’ sheds light on the difference between an experience that is lived (enduring) and an experience that is reflected upon (spatial), which echoes Heidegger’s notions of *ready-at-hand* and *present-at-hand*. Furthermore, the complementary conceptualisation of the fundamental and spatial selves, which is at the core of Bergson’s philosophy, is also cornerstone to this study.

In addition, with this philosophical understanding in mind, I investigated three phenomenological methods: Van Manen’s (2016a) Phenomenology of Practice, Ihde’s (1990) Postphenomenology, and Smith et al.’s (2009) Interpretative Phenomenolog-

ical Analysis (IPA), which I selected. Furthermore, in the next section, I address the reasons for disregarding the contenders mentioned before describing IPA and demonstrating its suitability.

4.2.1. Considering the phenomenological landscape

As I sought the most appropriate methodology to address my research question, I met Max van Manen (2016a) and his Phenomenology of Practice. The parallel he explores between being a parent and a teacher felt like a personal call. I am not a teacher; I am a parent, and his eloquent balance between the two roles helped me realise the bivalence of my position. My children are my teachers; each, in their own way, teaches me how to be their mum. Part of me expected nothing less from the participants. Moreover, his practice-oriented approach seemed to align with the ‘hands-on’ aspect of playing video games. In his own words:

More specifically, this phenomenology of practice is meant to refer to the practice of phenomenological research and writing that reflects on and in practice, and prepares for practice. When we understand something, we understand practically (van Manen, 2016; p. 15).

However, two elements were deemed less appropriate for my research. First, Phenomenology of Practice’s firm reliance on textual data (e.g., participant’s written story, interview transcripts) did not correspond to the type of data I gathered (e.g., video recorded observation/play sessions). Second, the level of *bracketing* demanded was hardly feasible. While I was attentive to avoid infusing my notes, commentaries, and analysis with personal assumptions, presuppositions, and biases through extensive reflective journaling, I could not make an abstraction of my being ‘neurodivergent’. I could not analyse the data through a non-neurodivergent lens.

Provided the salience of technology in my research, I was also attracted to Don Ihde’s (1990) phenomenology of technology, which he developed to investigate the “relations between human beings and technological artefacts” (Rosenberger & Ver-

beek, 2015; p. 9)—the so-called Postphenomenology. According to Ihde, the world reflects the perpetual negotiation between human and their tools, creations, and devices. His claim that since we interpret the world through our technologies, its meaning varies with users and evolves over time struck a chord with the human diversity theme underpinning my research. As compelling an argument as it was, the emphasis on technology seemed to overshadow the personal dimension of the user’s experience with the said technology. Considering my research question, ‘*How do autistic teenagers learn to play Minecraft in Autcraft?*’, I realised this approach was unfit to account for the depth of my participants’ learning experience. Following this understanding, I will now explore the last candidate, Interpretative Phenomenological Analysis, and illustrate how the research question, the participants, and my neurodivergence called for this approach.

4.3. Interpretative Phenomenological Analysis

Interpretative Phenomenological Analysis (IPA) is an experiential qualitative method resting on three fundamental principles. Rooted in *Phenomenology*, it explores the participants’ lived experiences, and drawing from *Hermeneutics*, it views interpretation as an iterative process between the particular and the whole of an experience, considering the data from multiple perspectives. Equally influenced by *Idiography*, IPA examines individual experiences in depth and within their respective contexts to capture their nuances. Echoing Husserl’s claim that phenomenology demands going “back to the things themselves” (Smith et al., 2009; p. 12), this model emerged in response to the need for a qualitative approach that integrated a “pluralistic psychology” (Smith et al., 2009; p. 4) focusing on how participants perceive and understand their experiences.

As a method, IPA gave me the latitude to be flexible and creative to adapt to the needs of my participants while providing a structure (e.g., combining observation and play sessions, using each participant’s preferred communication system). IPA aims to highlight *meaning-making*, in other words, the *learning* that emerges from an experi-

ence. This approach enabled me to bring to the fore the meaning that arose from the participants' learning experience of playing Minecraft in Autcraft.

In the next section, I present IPA's ontological and epistemological positions before addressing its tenets – *phenomenology* (lived experiences), *hermeneutics* (interpretation), and *idiography* (particular), which, taken together, further explain its appropriateness for this study.

4.3.1. Ontological and Epistemological Position

There are two widely recognised ontological perspectives, namely realism and relativism. *Realism* posits the existence of an external and objective reality that stands apart from perception. Alternatively, *relativism* contends that reality is intricately woven through the intersubjective process of making sense of and understanding the world. In this relational perspective, the concept of an objective reality is rendered non-existent. *Positivism* and *relativism* come into contention when viewed through an epistemological lens. In line with realist ontology, positivist epistemology asserts that events present fixed causal relationships that can be scientifically identified and measured, thus emphasising the objectivity of reality. Conversely, an interpretivist perspective claims that reality is subjective and constantly evolving through social interactions. In contrast to quantitative research methodologies, which are embedded in the positivist paradigm, qualitative methodologies are anchored in interpretive and constructionist traditions, where perception and cognition are never divorced from subjective reality. Ergo, Interpretative Phenomenological Analysis endorses the notion that researchers co-shape the reality of their research alongside their participants.

Immersed in the literature, I came to appreciate the versatility of IPA, which Larkin et al. (2006) referred to as “epistemological openness” (p. 116). Moreover, I was compelled by Smith and Osborn's (2003) description of the methodology as “especially useful when one is concerned with complexity, process or novelty” (p. 53). Although I do not dismiss the physicality of the world and, therefore, the existence of some fixed elements, I do believe that a shift in emphasis towards the realm of

meaning informed by a multiplicity of experiences is necessary to fully understand the experience of people living on the margin of society.

4.3.2. Phenomenology - Lived Experience

While unassumingly easy to grasp at first glance, the concept of *Lived Experience* reflects different nuances. Hence, it seems judicious to untangle the meaning of *lived experience* in IPA and within the context of this study since the participants' experience of playing Minecraft in Autcraft constituted the data. During our sessions, some participants were still learning to play the game following Minecraft's constant updates; others were new to playing the game on the Autcraft server. I was unsettled by this notion of 'ongoing experience', which contrasted with the passivity and finality of the past tense used in the term 'lived experience'.

A closer look at the translation helped me better understand the phenomenological meaning of *lived experience*. In 'Causeries', a French radio broadcast Merleau-Ponty started in 1948, he clarifies the meaning of the 'lived world' of perception by saying it is revealed to us through *l'usage de la vie*, in other words, through *living*, hence suggesting continuity through time (Eidos84, 2011). Elegantly, van Manen (2016a) defines lived experience as "Life as We Live It" (p. 39) and, turning to the German definition, reaches a similar conclusion:

The verb *erleben* literally means "living through something", so lived experience is this active and passive living through experience (p.39).

Although the 'lived world' emerges from 'living in the world', our understanding is rooted in reflection. Mutually enriching *experience* and *reflection* are understood in conjunction with each other. Smith et al. (2009) describe this meaning-making relationship through an emergence of awareness, a reflective movement on the experiential continuum, which they characterise in four reflection layers (p. 189). Informed by Sartre's minimal level of awareness, the first layer suggests that the experience, as it takes place, contains a pre-reflective reflexivity lingering beneath the surface. The sec-

ond layer, which is more reflective, brings out the deeper meaning of the experience. It draws on imagination and memory, allowing something less obvious to come to the surface. The third layer asks for even closer attention. Through what could be called attentive reflection, the body and mind start to wake up to the full weight of the experience, pulling it into sharper focus. The third layer, attentive reflection, awakens the body and mind to the significance of the experience and commands greater attention. The last layer, deliberate, controlled reflection, implies a reckoning of the experience when the past event is conscientiously reviewed, analysed, and understood.

In relation to my research, it was expected that the participants only travelled some of the four layers as they recollected past experiences during our sessions. At the same time, it was also anticipated that our interactions may ignite new perspectives, leading them to revisit previous experiences. In my own journal practice, I made sure to pay attention to all the layers when writing down my personal experience after each session. Furthermore, when analysing the transcripts, I meticulously explored the last layer to capture the fullness of the living experience in Minecraft.

Nevertheless, we have to keep in mind that, once brought to the surface as we turn our attention to them, all lived experiences, regardless of the format, only reflect *transformed* perceptions of the original experiences and, as such, belong to the past. Provided that “lived experiences gather hermeneutic significance as we (reflectively) gather them by giving memory to them” (van Manen, 2016; p. 37), I maintained a careful journalling practice throughout my research.

4.3.3. Hermeneutics

Heidegger (1927/2010) exposes the undeniable alliance between phenomenology and hermeneutics in ‘Being and Time’, asserting that lived experiences can only be reached through interpretation. This process of interpretation facilitates the emergence of the phenomenon at the centre of the experience and makes sense of it (Smith et al., 2009). The hermeneutic circle is a significant concept in IPA. It brings to light the synergy between the *part* and the *whole* of a lived experience. In other words,

examining the entire experience (whole) helps make sense of its details (parts), and a closer look at the details facilitates the understanding of the whole, that is, the lived experience (Smith, 2007). IPA applies a double hermeneutic inspired by Ricoeur's (1970)²¹ interpretative positions: *Hermeneutics of Empathy* and *Suspicion*.

The hermeneutics of empathy aims at “reconstructing the original experience in its own terms” (p. 36), thus offering an insider perspective. It seeks to understand and connect with the participant’s lived experience from their perspective in an open and non-judgmental way. For example, when Alex described his experience of bullying, I used the hermeneutics of empathy to faithfully reflect how it shaped his world and his sense of self, staying as close to his words as possible. On the other hand, drawing on existing theories to understand the experience—using a hermeneutics of suspicion (Smith et al., 2009)—allows for a more critical angle. It looks past what the participant says on the surface and tries to uncover deeper patterns, hidden influences, or meanings that the participants themselves might not fully recognise. This approach allowed me to examine and question how the societal stigma around his communication difficulty and mental health influenced his experience and narrative. However, Smith (2004) proposes a less polarised position. Considering hermeneutics of empathy as an approach centred on the participant’s recollection of meaning, he places the researcher “in their shoes”. Moreover, instead of suspicion, he introduces the notion of hermeneutics of *questioning* in which the researcher critically engages with the participant’s lived experience through analysing a broad range of literature. Translating an interpretative movement between the “researcher making sense of the participant, who is making sense of the experience”, the hermeneutic circle also highlights my dual position as a researcher being ‘like’ the participants through empathy and ‘unlike’ them through questioning (Smith et al., 2009; p. 39).

21 As cited in Smith et al. (2009), p. 36.

4.3.4. Idiography

IPA is not a nomothetic inquiry examining experience at the group level (quantifiable measurements). On the contrary, interpretative phenomenological analysis investigates individual experiences, case by case, within their context. In that sense, IPA is idiographic. It contrasts with Giorgi's (1997) empirical phenomenology, which, in line with Husserl, aims to reveal the underlying general structure of experience. Therefore, IPA's emphasis on details demands systematic and in-depth analysis as much as painstaking attention to how participants understand the events, processes, and relationships involved in their lived experiences. That said, IPA does not abstain from generalising aspects of experience, for it weaves them in the *particular*. Although the analysis begins with scrutinising each case, it then explores the similarities and differences, the convergences and divergences across the individual experiences, thus highlighting nuances and patterns of meaning (Smith et al., 2009).

4.3.5. Bracketing

Bracketing is a significant aspect of Phenomenology. Husserl argued the need to set aside all that is *taken-for-granted* based on personal experience to enable the emergence of the meaning structures concealed in each participant's experience (Smith et al., 2009). Thus, he put forth two opposed yet complementary approaches: the *Epoché*, in which assumptions, beliefs, and previous knowledge are placed between parentheses to access unencumbered the lived meaning of the phenomenon at that moment, and the *Reduction*, in which attention is focused on the phenomenon itself as presented in the experience. Leaning on Heidegger's (1927/2010) claim that interpretation is "grounded in fore-having, fore-sight, and fore-conception" (p. 146), thereby implying that it is "never a presuppositionless grasping of something previously given" (p.146), IPA offers a slightly different perspective. It posits that *bracketing* is inextricably entangled in an iterative process alternating interpretation with reflection. In that sense, bracketing cannot be fully attained (Finlay & Gough, 2008). This reflexivity practice allowed me to consciously acknowledge the bias inherent to my role as a neurodivergent woman, researcher, and mother of neurodivergent children and to capitalise on the personal insights this triad brought to the research (Creswell & Poth, 2016).

4.4. Research Design

4.4.1. The Research Space: Autcraft

The phenomenon under study, the *learning experience*, occurs in a specific environment, Autcraft, from which it cannot be dissociated. Therefore, this research *space* must be understood to grasp the depth of each participant's experience. Autcraft (Duncan, 2013) is a private online multiplayer server created in 2013 by Stuart Duncan, known as AutismFather, to offer a safe environment to his two autistic sons to play their favourite game shielded from virtual bullying. After one social media post, the server went viral, access requests from parents of autistic children poured in, and Autcraft was born. The Autcraft community is heterogeneous; some players actively interact with others through playing together or messaging in the chat, while others silently build their bases. Nevertheless, communication is never interrupted, and the in-game mail and chat function are always *ready-at-hand*.

Autcraft is a *space* similar to a 'youth centre' but virtual. Minecraft is the *game* played within that *space* (Figure 9). Players must buy Minecraft from Microsoft to play the game (solo), and they also need to log in to a Minecraft server to play with other gamers (multiplayers). Access to Autcraft is free but conditional; players must apply to register, and approval (whitelisting) is granted to autistic players, their friends, or family, provided the Autcraft administrator team validates their healthy digital history. Today, the server counts 15,000 whitelisted players, caters to 1,200 monthly unique players, and welcomes about 50 players (children and adults) daily.



Figure 9. Autcraft world

The multiplayer version of Minecraft in Autcraft is similar to its single-player form; gamers can build in *Creative*, where all the resources are accessible without mining; in *Peaceful*, where mining the raw materials and manufacturing resources is required to build; or in *Survival*, where players not only mine resources, build structures, and eat to *survive*, they also need to kill mobs (e.g., giant black spiders, phantoms, skeletons, zombies, creepers).

Autcraft organises various events and group activities (e.g., Eggs Hunt and Love & Kindness Day), which players are free to attend (Figure 10). Members can play alone on their base while communicating with everyone else on the server via the chat (text), build sub-communities with other players (e.g., Panda Alley Shopping Centre; Figure 11), or visit and play in each other's base. Autcraft has no geographical borders, but all communication and activities occur in English. Although the server only authorises written communication, it offers different options; a public chat is always available from anywhere on the server, and players can create private channels (text) to communicate between themselves and send private direct messages or in-game mails to specific players.



Figure 10. Event in Autcraft



Figure 11. Panda Alley commercial centre in Autcraft

While the game is open-ended, meaning that players determine what they want to do and how they want to do it, playing on a server implies using slightly different game affordances and following community rules. All players must adhere to a code of conduct dictating how players are to behave when they communicate in the chat and when they play anywhere in Autcraft. All these rules and the consequences for breaking any of them are clearly stated on a wiki page on the Autcraft website (Annex

1). One of Autcraft's forces is that it includes areas dedicated to sensory regulation: 10 calm rooms (Figure 12) and 12 spam rooms. Calm rooms provide players with a space where they can regroup alone when they are stressed. Spam rooms, akin to virtual stimming, allow for spamming buttons or levers, to name a few (Figure 13). All rooms have a different style and can be accessed from anywhere via a single command `/warp calmrooms`.



Figure 12. Calm room



Figure 13. Auditory Spam room

Players are never left to their own devices; administrators or helpers are always present, playing alongside gamers, helping stressed players, offering building tips, and monitoring chat communication (private and public), whilst ensuring rules are respected. In case of emergency and in the eventuality that no administrators or helpers are logged in, players can type in a specific command */helpop* to alert staff. Autcraft is sustained through patronage and donations. The team of administrators and helpers consists of players (neurodivergent children and adults) who grew into their roles based on their good deeds and are all volunteers (Annex 2).

Before delving into the methodological practices, in the next section, I present the process I developed to become an Autcraft member, build a trustful relationship with the community, and respectfully encourage players to participate in the research.

4.4.2. The Researcher

I met with Stuart Duncan in the early stage of this project to discuss the purpose of my research and ensure its design aligned with the server's good practice. I followed the regular procedure of whitelisting to gain access to the server. However, I only logged in to Autcraft after receiving approval from the University of Strathclyde Ethics Board and reaching the data collection phase. I did not practice playing beforehand; upon starting, I only had rudimentary experience with Minecraft. I wanted to discover Autcraft and learn to play as any new player would. I purposefully wore a skin (Figure 14) and created a username (Cici_Sparkle) that did not reflect my researcher role so my presence would not be intrusive, making the community uncomfortable.

However, I introduced myself and the reason for my presence on the forum (Annex 3) and my profile page (Annex 4). I was transparent about my identity and motive when players approached me or when the subject arose in conversations. I read several months' worth of posts on the Autcraft forum to immerse myself in the community's dynamic and become familiar with the lingo, the topics, and the server's functioning. I acquired a gaming desktop computer capable of running Minecraft, Autcraft, and Discord simultaneously. AutismFather (Stuart Duncan), with a few players,

took me on a tour of the server and taught me a few basic actions (e.g., how to break a tree to gather wood, how to walk on the edge of a cliff without falling, how to move around others without bumping into them; Figure 15).



Figure 14. Researcher's avatar - Cici_Sparkle



Figure 15. Visit with Stuart Duncan (AutismFather)

I built my first house in Creative, where I could access all resources without mining. This approach allowed me to hone a certain level of building skills. Armed with new knowledge, I acquired land in Survival (Peaceful), where I tested various techniques read on Minecraft wiki pages and built structures while watching YouTube tutorials. Additionally, being able to ask questions in the chat and get answers instantly was helpful and tremendously sped up my progress.

I immersed into the life of the community by being invited to Birthday Parties, attending the Player of the Week event on Saturdays, visiting various farms owned by players, helping players mine for specific resources, receiving gifts and offering gifts, and attending the Autism Awareness Day hosted by Stuart Duncan via his Twitch TV channel. I joined the Panda Alley Shopping Centre community (Figure 11) and built an Autism Research Centre/Library where I shared positive and empowering information about autism by summarising published research papers and books by neurodivergent researchers and authors.

Conversely, I never engaged with members in a helper capacity; I did not recruit participants via the chat to avoid stressing or spamming players. I did not intrude on any player's base unless explicitly invited. I did not comment when questions about autism were asked in the chat, so as not to overstep helpers/admins. When not in session with a participant, I was a player among other players. Overall, I spent approximately 300 hours in Autcraft, discovering, learning, building, and interacting with the players and the game.

4.4.3. Neuro-Affirmative Research Design

The design of my research follows an autism-centred framework in tandem with a neurodiversity perspective on autism. It allowed me to 1) prioritise a research topic that autistic young people value (e.g. Minecraft); 2) collect data in an environment that the participants enjoyed and where they felt safe (e.g., Autcraft); 3) emphasise the participants' agency (e.g., choices); and 4) include the participants in the data validation phase (e.g., approval). Moreover, the concepts of neurodiversity underpinning the

research created distance from the deficit-oriented view of autism, giving room to the autistic voice by drawing on the participants’ lived experiences and insights into Minecraft. Thus, having established the tenets upon which this research was designed, I will now describe how the participants were recruited and the data gathered.

4.5. Participants’ Profiles and Recruitment Process

4.5.1. Identifying participants

Although Autcraft caters to the autistic community, for my research, I needed to reach those willing to share their experiences and who would also fit the inclusion criteria (Table 3). I aimed to focus on the participants’ lived experiences in Autcraft; subsequently, inclusion criteria did not account for gender, race, ethnicity, or social class. I used purposeful sampling to “intentionally select[ing] individuals and sites to learn or understand the central phenomenon” (Creswell, 2011; p. 206). Since Phenomenology calls for in-depth exploration, I limited the number of participants to six (Creswell, 2007). I spent time on the server daily, but at different times, to be seen by and interact with players from various countries.

Table 3 - Participants inclusion and exclusion criteria

| Inclusion | Exclusion |
|--|---|
| Be diagnosed autistic (including ADHD, dyslexia, etc.) | Having learning difficulties preventing the understanding of the research |
| Between 12 and 15 years old | |
| Be located in a workable time zone | |
| Communicate in English | |
| Be an active player in Autcraft (whitelisted) | |

To simplify the recruiting process, I created a password-protected page on my website (Annex 5) where I shared the details of the project, such as a video introduction, a link to a Qualtrics questionnaire, which included the Informed Consent Form (Annex 6), another link to the Participant Information Sheet, which presented the project and explained what participating involved (Annex 7), and a walkthrough video demonstrating how to fill out the form. With Stuart Duncan's approval, I placed an advert (Annex 5) and the link to the webpage on the Autcraft forum. The recruitment process started in January 2023 and ended in May 2023. Two recruitment phases were organised over five months.

I enrolled the first four participants in the initial phase based on the inclusion criteria. I encouraged participants to invite their friends (snowball sampling; Harding, 2013) to join the project. However, the strategy yielded few leads.

In the second phase of the recruitment, I contacted players who demonstrated a good command of the game's functionality in their world (e.g., transforming red stone to generate electricity to power the train on their base) and recruited the final two participants (n=6). Five participants²² were excluded and their data were deleted. One of them was over 20 years old; one participant had a co-existing condition that was incompatible with phenomenological research, and another suffered distressing anxiety on the morning of the first session and opted out. One participant had to pull out following the loss of his home due to a hurricane, and finally, one participant was unreachable.

The Autcraft community's recognition of the importance of autism research greatly supported the recruitment process, although aspects of my approach proved less effective than I had intended. At the outset, I thought that placing the questionnaire and consent form on a webpage would make participation more straightforward. In practice, however, this choice led to complications that I had not anticipated. Some players were only allowed to play online for a limited time, and for some, only some

22 I use the term 'participant' to distinguish players who filled out the form and signed the consent form from those who only expressed their intention to participate.

days; stepping out of the game to visit the website and fill out the form impacted their playtime. Others meant to do it once they had left the game but needed to remember. In insight, a more suitable alternative would have been to create the questionnaire and the consent form directly in Autcraft.

A total of six participants were recruited to account for the eventuality that one or two would opt out before the end while remaining within the range of three to six participants as recommended by Smith et al. (2009); however, none did. The data presented in this thesis follows the chronological order of the sessions with the participants²³. However, after compiling the data for the first four participants, I reached a saturation point. I had two options: either I stretched the word count of this thesis or further synthesised each participant's experience. None of these options were satisfactory. Upon closer look at the material, I realised that the accounts from the final two participants brought forward powerful themes, especially around grief and collaboration, which needed more careful attention than I could give within the scope of this thesis. Because of this, I chose to centre the study on the first four participants. The experiences shared by the other two will be explored separately in future academic work. The four participants included in this study are profiled below (Table 4). However, I will introduce each participant in greater detail in the following chapter (see [Chapter 5. Findings](#)).

23 Since I was still gathering data with Dave after my sessions with Dipper were completed, I started the analysis with them (Dipper). After, the analysis followed the order of the participants.

Table 4 - Participants' profiles

| Pseudo | Minecraft Mode | ADHD/ Autism | Pronoun | Interests | Country |
|--------|----------------|--------------|---------------|--|-------------|
| Dipper | Peaceful | ADHD/Autism | They/Them | Animals, sciences | U.K. |
| Dave | Survival | Autism | All/They/Them | The Empire, business, books | U.K. |
| Alex | Survival | Autism | He/Him | Mathematics, collectibles | USA |
| Space | Peaceful | ADHD/Autism | She/Her | Minecraft, mathematics, art, gaming in general | New Zealand |

4.6. Data Collection

Leaning on Heidegger's claim that human beings are *persons-in-context* who are *intersubjectively* involved in the world, I chose three data collection methods that naturally accommodated the autistic needs of the participants and suited the technological landscape inherent to the research site (Autcraft) while also being consistent with phenomenology. The methods also emphasised three types of data: *contextual*, *experiential*, and *supplementary* (Table 5). I created a participant questionnaire (mandatory) and a parent questionnaire (optional) accessible online to obtain participants' consent and gather contextual information. I employed video-recording participant in-game observation and play sessions to capture experiential data and *interview* the participants' avatars. I supplemented the data with the participants' digital footprints. The data collection phase was realised over a period of six months. A diagram illustrating the data collection process is provided at the end of this section (see Figure 16).

Table 5 - Data types

| METHOD EMPLOYED | DATA TYPE | DATA COLLECTED |
|---------------------------------|---------------|--|
| Participant questionnaire | Contextual | High-level information about video games played |
| Parent questionnaire (optional) | Contextual | General information (e.g., sensory sensitivities) |
| Observations and play sessions | Experiential | Three video recorded sessions (around 12 hours/4 participants) |
| Digital footprints | Supplementary | Posts on Autcraft forum, personal in-game mails and messages, chat conversations with me |

4.6.1. Questionnaires

Following the University of Strathclyde’s recommendation, I used the online survey software Qualtrics (n.d.) to collect *general* background information from the participants and, optionally, their parents. The high-end firewall systems guarding Qualtrics’ servers protected the participants’ data. Both questionnaires consisted of a combination of simple multiple-choice questions (e.g., What is your favourite Minecraft mode? Possible answer: Survival, Creative, Hardcore, Adventure) and multiple-choice questions with built-in logic (e.g., What is your favourite way(s) to communicate?) where the answer triggered the display of the following question (e.g., Since you chose Discord, please provide name). As a result, the form only showed questions relevant to the participant’s previous answer. The questionnaire also included open-ended questions (e.g., What do you like about Minecraft?). This method allowed me to minimise the process by presenting the questionnaire and the Informed Consent Form in a single instrument (Annex 6).

However, two participants were concerned about disclosing their names on the questionnaire. One participant gave a fake name, which made following up with them challenging. To prevent the issue from recurring, I changed the wording on the webpage presenting the research, stating that they could use their Autcraft username.

To obtain more contextual information (e.g., sensory sensitivity), I also created a parent questionnaire (Annex 8). The parent questionnaire was not sent by default since parental consent was not required for participants aged between 12 and 16. Participants had to provide their authorisation for me to send the questionnaire to their parents. Only one participant gave their authorisation. Likewise, participants could accept or refuse their ‘story’ being sent to their parents. Only four of them accepted; however, they asked to wait until they were ready. Those who refused commented, “If the research is about me learning then it’s me telling”, “my mom is too sensitive, she doesn’t like talking about my autism and besides she doesn’t like me getting distracted from schoolwork,” and “this is my world, not my parents”.

4.6.2. Participant Observation and Play Sessions

Since “the best way to enter a person’s lifeworld is to participate in it” (van Manen, 2014, p. 68), I organised three in-game sessions using video-recording participant observation and play sessions to gather experiential data. Aligning with the principles of Phenomenology, the method facilitated a natural inquiry that was unobtrusive and, in that sense, supported the participants’ well-being. Nevertheless, I constantly shifted between three roles throughout the research: *complete participant*, *participant-observer*, and *observer-participant* (Angrosino, 2016). At the onset, I was a *complete participant*, spending time *being* and *playing* with the participants to immerse in their life-worlds (Minecraft bases) and understand their experiences first-hand. As the game and the community became familiar, I fluctuated between the roles of *observer-participant* and *participant-observer*. I adopted the former to observe, from a distance, the interactions between the participants and the overall Autcraft community. I took detailed field notes, saved specific observations via screenshots, and practised daily reflection through journaling and memoing to record the nuances and intricacies of the participants’ experiences. This practice enabled me to explore the subtle details, nonverbal cues, and contextual factors contributing to the participants’ lived realities. I acted as a *participant-observer* when in sessions with the participants but also outside of these sessions when gathering data from activities such as birthday parties, mining with players, visiting the bases of non-participant players, and attending events like the Player of the Week and the Autism Awareness Day.

This indirect data collection approach helped me build rapport, so the participants were comfortable and engaged in the sessions. It also facilitated a trusting relationship that was “as close as possible while retaining a hermeneutic alertness” (van Manen, 2014; p. 68).

I entered each first session without a prescriptive objective other than the intention to be attentive to what the participant shared. I noted interesting anecdotes as they arose to be reviewed in detail later via the video recording. However, this data collection method has been contested. Bateson (1972)²⁴, for instance, has disputed the objectivity of observations, arguing that the observer is always undoubtedly tied to the phenomenon. I mitigated the risk using three data sources, writing detailed memos, and journaling daily. Additionally, this method enabled an iterative data collection process in which each session was designed based on the previous one, allowing for various layers of sharpness.

4.6.3. Organisation of the Observation and Play Sessions

We scheduled the first in-game session once participants completed the questionnaire and signed the Informed Consent Form (Annexe 6). Participants were free to decide how they wanted to communicate in the sessions. Two participants opted to interact via Discord (voice). However, using the application generated important system lags for them. I created a private chat channel (text) in Autcraft to solve the issue, which we used for all subsequent sessions. At the start of each session, I explained the purpose of the session and the participants were made aware that they could opt out at any time until I started the analysis. During each session, I inquired multiple times about their well-being, reminding them that if, at any point, they felt stressed, we could pause or reschedule the session. Likewise, I ensured participants were well before leaving their bases. The three sessions were organised as follows:

24 Cited in Angrosino and Rosenberg (2011), p. 467.

4.6.3.1. *In-Game Observation and Play Session 1*

The first session aimed to discover the participants' worlds through their eyes, to let them share what they wanted to show and explain what they considered meaningful. I logged in to Autcraft at the scheduled time, and after greeting each other, the participant offered me a tour. It lasted around one hour, and our interaction was conversational. This fluid format allowed me to fluctuate between two roles organically, the *player* experiencing another player's world on the one hand and the *researcher* discovering the participant's world on the other. Encountering my own experience first rather than dismissing it, making it explicit rather than fully bracketing it, cleared the space to give room to the researcher's observations. However, all the participants expected an 'interview format' even though the layout was explained in the video introduction and the Participant Information Sheet (Annexe 7). They were initially overwhelmed by what seemed to them an unstructured approach. To mitigate their frustration and assuage their discomfort, I offered them prompts such as "What are you the proudest of?", "What did you build first?", "Show me the part that took you the most time to build?" or "Show me your most complex build?" to give them a sense of direction.

While in session, I predominantly focused on what the participants showed and explained in the private chat channel. Nevertheless, many distractions competed for my attention: lines of text from the chat continuously danced, the status bar monopolised the bottom part of my screen and let us not forget the threat of flying phantoms or other mobs that demanded immediate actions. For all these reasons, it was difficult to observe and retain, in real-time, the details of their builds, their movements and gestures, and the scenery changes. Hence, video recording the sessions was essential as I could watch them afterwards from a distance many times over.

Once the session was over, I immediately reflected on the participants' experiences and the insights they had shared. In a research journal, I relayed my thoughts, impressions, ideas, and feelings about the process as a researcher, which helped me be aware of my assumptions and potential biases by acknowledging them in my writing.

I transcribed each session into a Word document referring to the participant as *P* and the researcher as *R*. I reviewed each participant's video recording separately while taking notes and screenshots. I reviewed the recording a second time while recording detailed descriptions of what I was watching. I also transcribed my field audio notes. The data was organised by participants and consisted of a) in-game observation and play session video recordings, b) session transcripts, c) audio field notes transcripts, d) written field notes, and e) screenshots. Finally, I outlined the second session based on the insights garnered thus far.

4.6.3.2. In-Game Observation and Play Session 2

Reviewing the video recording of the first session gave me the necessary distance to reflect on the meaning of the participants' gestures, movements, organisation of their bases, and layout of the structures, to name but a few. It also brought to the fore details that were glossed over and which required further investigation to determine their significance (e.g., In the room next to us, you have a signboard that reads 'Cod is named God', what does it mean?). Additionally, it highlighted broader aspects calling for further inquiry (e.g., You said you have a passion for mathematics; how do you use it in your builds?). Session two was, therefore, structured around these clarifications.

For this session, the participants and I remained put in one place on their base (e.g., sitting on the sofa in the castle). It lasted around 35 minutes. After the session, I journaled my own experience, kept track of my emotions, and paid attention to my progress in learning the game. Then, I followed the same process as in Session 1. The session was transcribed. I reviewed the recording multiple times and wrote detailed field notes; additional audio notes were transcribed. Then, I reached out to all participants to schedule session 3.

4.6.3.3. In-Game Observation and Play Session 3

The first three participants repetitively asked me why I was not asking any personal questions since the research regarded their autistic experience. After consideration, I followed their lead and used the data from the first two sessions to develop four

axes of exploration, which I conveyed to each of them beforehand. Upon receiving their approval on the format, I organised the third session around four axes: a) Tell me about your experience of being an autistic teenager, b) Tell me about your experience of playing Minecraft, c) Tell me about your experience of playing in Autcraft, d) Tell me about your experience of freedom and responsibility considering all the Autcraft's rules. The session lasted about 90 minutes. Likewise, the session's video recordings were transcribed, field notes were written, and screenshots were taken.

In retrospect, this approach had two benefits. First, it gave the participants the needed structure and the freedom to share their experience on their own terms or *'the way they wanted'*. Second, it gave breadth to the data gathered in the first two sessions and enriched it with deeper meaning. The contrast between the format of session one and session three emphasised a paradox. While the first session was open and unstructured, thus offering maximum freedom of expression, the participants were overwhelmed, needing help knowing where or how to start. Conversely, the structure of the third session helped the participants expand on their personal experiences with depth and candour. The data from this session turned out to be vital to identify bridges of meaning between the participants' autistic way of being in the physical world and their avatars in the virtual world.

4.6.4. Participants' Digital Footprints

Online human activities leave digital footprints, offering valuable characteristics about the participants. *Digital footprints* are broadly defined as any data related to online activity. In other words, they are the traces users leave after their visits. Participants' digital footprints were gleaned from posts and like(s) clicked on others' posts on the Autcraft forum, conversations in the chat, in-game mails, YouTube channels, other video games participants played, and many screenshots. Additionally, I collected data outside the sessions while spending time with some participants who asked me to 'mine' with them, becoming a member of two communities, and collaborating on a library book exchange initiative.

4.6.5. Interviewing the Avatar

Interviewing the avatars brought to the fore the relationships the participants developed with their digital representations, the game itself (Minecraft), and the Autcraft space. Etymologically, the term interview comes from the French verb *s'entrevoir* in which *entre* refers to *between*, *voir* means *to see*, and together they translate “to see each other, visit each other briefly” (Adams & Thompson, 2011; p. 3). In other words, interviewing the game is “to catch insightful glimpses of the artefact in action, as it performs and mediates the gestures and understandings” (Adams & Thompson, 2011; p. 3) of the participants through their avatars. I collected data from two different perspectives to glean insight from the participant’s avatar. First, I focused my field notes on the avatar’s appearance, movements, gestures, and positions; then, I considered these elements within the participant’s experience.

4.6.6. Data Collection Workflow

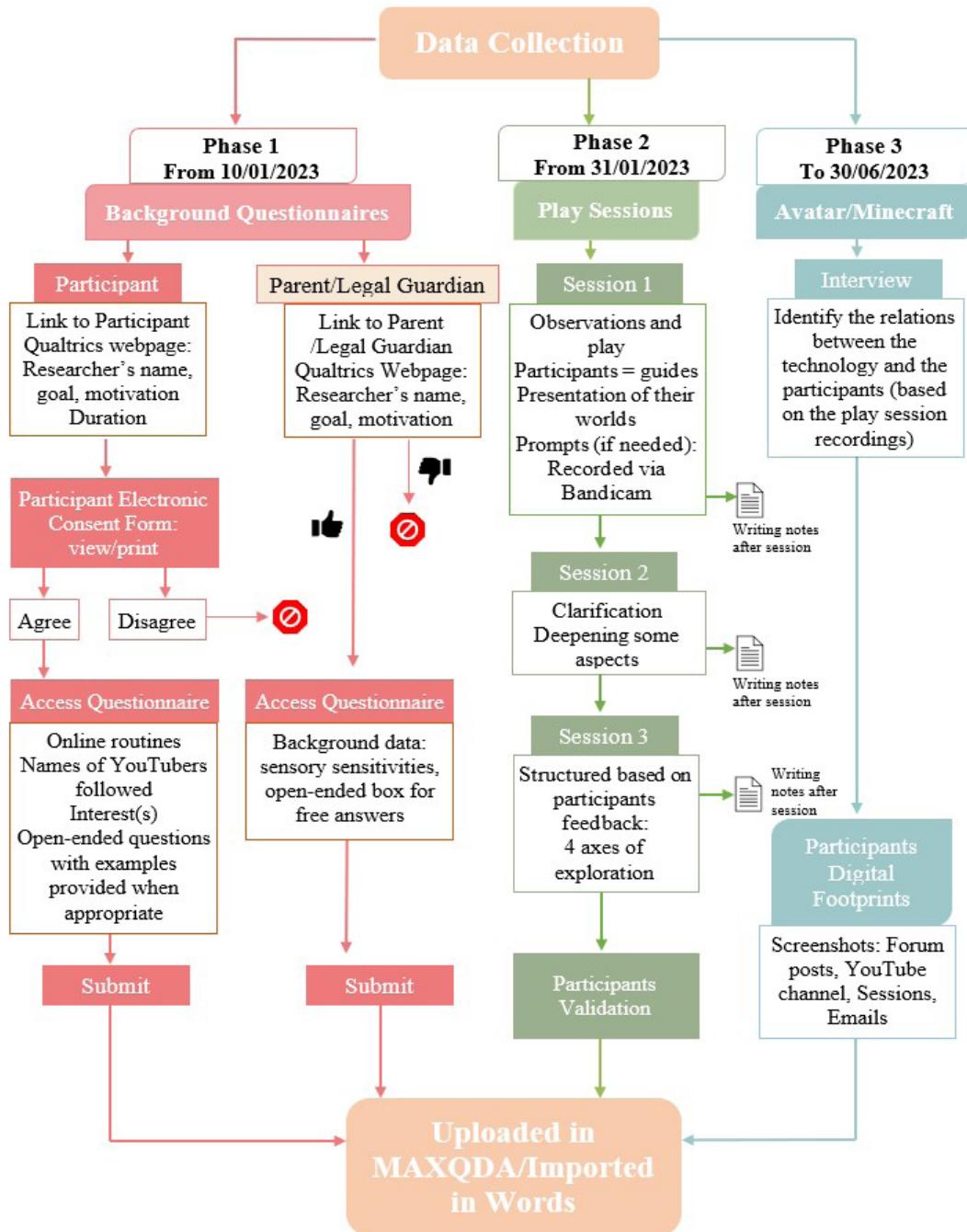


Figure 16. Data collection workflow

4.6.7. Transcription

The observation and play sessions took place over a five-month period and were fully transcribed verbatim. Therefore, transcripts include, for example, filler speech, repetitions, laughs (symbols), interjections, false starts, run-on sentences, and

unfinished sentences. Although I did not account for the duration of pauses since some were due to server lags, I am confident that the transcripts faithfully captured what each participant said along with their tones and rhythms.

4.6.8. Data Storage and Safety

All the data was collected and maintained digitally. Participants' data, such as completed questionnaires, signed Informed Consent Forms, and video-recorded in-game sessions, were alpha-numerically anonymised. Other than the video recordings, the original files were stored on the University of Strathclyde OneDrive. The transcript data (video recordings excluded) will remain for two years and the data analysis for ten years on the University of Strathclyde OneDrive after submitting this thesis to facilitate publications, but no more than five years and ten years respectively. At that point, it will be securely destroyed (Annex 9). However, all sessions' video recordings will be deleted upon completion of the research.

All information identifying the participants or the people they mentioned in the sessions was also modified. Field notes, screenshots, research journaling, and memoing were stored in password-protected files on my computer. A backup copy of each file was kept in the cloud and Dropbox to prevent potential data loss. A version of all the recordings and their related transcripts, field notes, screenshots, research journaling, and memoing were dated, organised per participant, and maintained via an external hard drive for additional security. Participants were renamed P1, P2, P3, P4, P5, and P6 to protect their identities until they gave me pseudonyms (Dipper, Dave, Alex, Space, Fans, and Jack). The participants were also informed of the measures taken to ensure the confidentiality of their data, as mentioned above.

4.7. Data Analysis

For the analysis, I retained data that contributed to the understanding of the participants' lived experiences as they engaged with Minecraft and the virtual environment of Autcraft, in particular data where participants described how they made sense of their experiences, how they acted within them, and how they managed themselves

in order to engage, persist, or adapt. Thereby, I focused on the segments that offered experiential depth, highlighted tensions, or brought forth processes participants employed. I excluded data that was purely descriptive or explanatory without experiential or analytic value, such as factual descriptions of game mechanics, conversational fillers, or repeated statements that did not add further insight. For example, when participants explained how a specific Redstone mechanism worked, these descriptions were included only when they were connected to how the participant learned, regulated themselves, or understood their abilities; when they remained purely technical and disconnected from lived experience, they were not included for analysis. Importantly, these decisions were made to maintain the analytic focus of the research, not to limit participants' accounts: all transcripts (interactions and observations) were preserved in full, and exclusions applied only to what was carried forward into analytic claims.

I analysed the data following the procedural step-by-step described by Smith et al. (2009). However, I leaned on Smith and Nizza's (2022) recent review to title the steps and employed some creative liberties, which I describe below. Initially, the sessions were transcribed on Word documents and then uploaded into MAXQDA, where the data ought to be analysed. However, I soon realised that using technology was counter-productive. It was paradoxical, provided the research took place within a technological environment. IPA is iterative by nature; hence, ideas and understandings came in waves. They respected no time zone and disappeared if left unattended. Writing them down in a notebook as they occurred added the need to reconcile the 'on-the-fly' notes with the corresponding lines in the transcript. Consequently, I extracted each transcript from MAXQDA to preserve the line numbering and printed them. Working on the paper version made for a more fluid analysis; I could go on a walk with a transcript. In the likes of Sartre and Merleau-Ponty, I often proceeded with the first three IPA steps: *Reading and Re-reading, Exploratory Notes, and Formulating Experiential Statements*, with a coffee 'ready-at-hand' sitting in a Starbucks corner. Finally, in step four, I *looked for connections and clustered the experiential statements into themes* before *Moving to the Next Case* in step five and *Considering the Data Across Cases* in step six. The decision process involved in step two, three, and four is documented through extracts from Space's analysis. In addition, an illustration of the overall six-step process is included at the end of this chapter (Figure 17).

4.7.1. Step 1 - Reading and re-reading

I immersed myself in each participant's experience separately, reading the transcripts while watching the corresponding video recordings, watching the recordings alone, and reading the transcripts alone. Approaching the data from different perspectives allowed me to become truly familiar with each experience. Through re-reading the transcripts, I started to notice how often participants repeated the same word or how they glossed over certain experiences while detailing other ones, which highlighted their narrative rhythms. Viewing my journal entries and notes in parallel with the transcripts and the recordings acted as a form of 'bracketing', which helped me separate my thoughts. Journaling was a significant source of insights. From these notes, meaningful questions emerged, which I would not have thought otherwise, such as *why did I conceptualise Dipper as a gentle, sensitive, and soft teenager? What did they say or do? What did I see or understand that led to this idea?*

Smith et al. (2009) warn about the tendency to summarise the data rather than explore it. An inclination I was guilty of and that I attributed to months of reading, analysing, and reviewing various literature, which had trained my mind to scope and abstract critical information in a succinct manner. At this stage, my focus centered on where to dwell rather than what to extract. Upon re-reading, I underlined passages highlighting repetition (e.g., words, ideas, or actions), intensity (e.g., emotional, narrative, or behavioural), or disruption (e.g., breaks in flow, hesitation, or contradiction) because they seemed to be particularly significant to the participant. However, I refrained from interpreting any of these sections. Any emerging interpretations were noted reflexively in my journal. It helped me be attuned to the participant's experiential world as it unfolded.

Moreover, this step led to an iterative process alternating phases of theoretical learning with phases of practical learning. It was a slow, non-linear, and frustrating route paved with many trials and errors. However, it was also illuminating, enriching, and validating. The more I went back to reading the first transcript, amending or expanding my exploratory notes many times over, the brighter the principles underpinning IPA shone through the data, confirming its suitability for my research. As I

became familiar with each data set, I decided to narrow my attention to the back-and-forth movements in the transcript between general information about the participant's experience and their personal perception (e.g., thoughts, feelings). Highlighting the sections providing the most details revealed exciting angles such as ambiguities, contradictions, and sometimes paradoxes demanding further exploration.

4.7.2. Step 2 - Exploratory notes

When taking exploratory notes, I had to determine how to engage with the data without collapsing description into interpretation. Smith et al.'s (2009) suggestion to focus on *descriptive*, *linguistic*, and *conceptual* data types strongly resonated with me. It served as a lifeline, a thread I followed to stay on course without being constrained into a rigid protocol. Working my way through the first transcript, I started by signposting descriptive and linguistic elements, taking note of the links and associations between them as they seemed to appear. However, this led to unreadable, multicolour, and chaotic annotations. I decided to concentrate on descriptive comments first, thus emphasising relationships, places, and events meaningful to the participants and highlighting signs of emotion in their descriptions or my reactions. Second, I paid attention to the participant's language, such as pronouns, transitions between present and past tenses, pauses (with context), hesitations, expressions of emotions in a textual manner, abbreviations, repetitions, and gamers' lingo. It helped me gain a general sense of rhythm and a better appreciation of their changing tone from one session to the next. I then circled all metaphors and noted their potential synergy with descriptive comments.

Echoing the hermeneutic circle, I questioned what I read in the transcripts, underlying words, constructions of phrases, or unfinished sentences, taking note of my understanding and examining them in relation to how the participants made sense of them. To engage with the transcript on a more conceptual level, I leaned on Smith et al.'s (2009) *free associating* strategy (p. 91) and James' (1890/2000a) *stream of thought* (pp. 224-290) to delve into sections of transcripts, writing down my ideas, impressions, and perception when reading the text. I moved away from the explicit description and cautiously introduced conceptual comments, framing them as open-end-

ed questions (e.g., What is shaping how the participant makes sense of this experience? What seems to be enabling or limiting their actions in this moment?). I treated repetition as an indicator of what mattered to the participant, rather than what stood out to me as a researcher. In other words, when a meaning, concern, or way of describing an experience appeared repeatedly across the transcript, I understood it as central to how the participant made sense of their experience. Focusing on these repeated patterns helped me avoid developing interpretations based on isolated moments that might reflect my own theoretical interests over the participant’s meaning-making.

This approach led me to identify 29 concepts (Table 6), which I used to code the transcripts. Table 7 illustrates the process of associating conceptual codes to participants’ quotes through an extract from Space.

Table 6 - IPA - Step 2 - Coded Concepts

| | | |
|------------------------|-----------------|----------------|
| Emotion | Self-Efficacy | Goal |
| Learning by Doing | Movement | Planning |
| Function | Intentionality | Time |
| Teaching by Doing | Sensory | Friendships |
| Appropriation | Self-Perception | Structure |
| Space | Senses | Community |
| Automatization | Collaboration | Safety |
| Evaluating information | Freedom | Responsibility |
| Agency | Family | Location |
| Communication | Regulation | |

Table 7 - Extract from Space’s Quotes – Coded Concepts Association

| Quotes | Page/Line | Coded Concepts |
|--|-----------|-----------------------|
| I hate not having things in line. | 8.67 | Structure; Emotion |
| I was only diagnosed at 12 so all my time has been known to be autistic. | 28.22 | Time; Self-Perception |
| I find it’s really hard to study for exams and to be able to commit to doing things. | 28.23 | Regulation; Planning |

| | | |
|---|-------|---------------------------------|
| Such as doing my homework every day. | 28.24 | Responsibility; Planning |
| I find it hard to keep on top of things that I'm not interested in. | 28.25 | Regulation; Self- Perception |
| Brain | 34.77 | Senses |
| Ears | 35.78 | Senses |
| When the class is screaming and I'm hearing the teacher talking on top of the people coming and out and then people talking to me all at the same time. | 35.84 | Sensory; Regulation |
| I think mainly like some things irritate me much more than other things. | 36.90 | Sensory; Emotion |
| And it also depends on how much I've achieved in the day. | 36.91 | Regulation; Time |

4.7.3. Step 3 - Formulating experiential statements

I reviewed iteratively the transcripts in parallel with my exploratory notes to formulate experiential statements. However, I first defined what type of data would reflect experiential significance. Thereby, I considered events (data entries) as experientially significant when participants linked their actions or experiences to their sense of self, articulated why something mattered to them (e.g., intensity or difficulty), or connected in-game activities to broader meanings about autonomy, identity, or learning. I paid particular attention to sections associated with recurrent coded concepts or marked by a shift in tone, focus, or perspective.

Then, I extracted the data (quotes) which I had flagged as experientially significant. In that sense, the selection illuminated the participants' meaning making through the depth of the "relationships, connections, and patterns between exploratory notes" (Smith et al., 2009; p. 91). To facilitate the emergence of experiential statements, I arranged the coded quotes based on shared patterns of meaning. In other words, I reviewed all coded concepts and grouped them based on conceptual similarity and ex-

periential relevance (e.g., co-occurrence of meaning, experiential function, orientation of the experience, tension and contrast, context, and phenomenological coherence). An extract from Space’s analysis illustrates the decision process in Table 8. Then, I examined these groups across quotes to identify recurring patterns in how experiences were described and situated within the participants’ accounts. Quotes were organised around the functional role of experiences (e.g., regulation, protection, expression), the participant’s orientation toward particular demands or situations, and the tensions evident within these experiences. Contextual factors, including environment, time, and relational setting, were also taken into account to ensure that experiential statements reflected situated lived experience. Finally, I also retained the groups where quotes demonstrated phenomenological coherence, capturing a shared quality of experience for the participant. While each statement reflects a specific topic evidenced by quotes from the corresponding transcript, I endeavoured to bring forward the conceptual layer I had identified in the exploratory notes in a chronological order to highlight the participant’s mental process and its context.

Table 8 - Extract from Space’s Quotes, Codes, and Experiential Statements

| Quotes | Page/ Line | Coded Concepts | Experiential statement |
|--|---------------|-----------------------------|---------------------------------|
| I hate not having things in line. | 8.67 | Structure; Emotion | Perception of her autism |
| I was only diagnosed at 12 so all my time has been known to be autistic. | 28.22 | Time; Self-Perception | Diagnosis ADHD and autism |
| I find it’s really hard to study for exams and to be able to commit to doing things. | 28.23 | Regulation; Planning | Distinguishing ADHD from autism |
| Such as doing my homework every day. | 28.24 | Responsibility; Planning | Distinguishing ADHD from autism |
| I find it hard to keep on top of things that I’m not interested in. | 28.25 | Regulation; Self-Perception | Perception of her ADHD |

| | | | |
|---|-------|---------------------|--------------------------------|
| Brain | 34.77 | Senses | Perception of her autism |
| Ears | 35.78 | Senses | Perception of her autism |
| When the class is screaming and I'm hearing the teacher talking on top of the people coming and out and then people talking to me all at the same time. | 35.84 | Sensory; Regulation | Sensory sensitivity challenges |

Once the experiential statements were identified, I revisited the data using questions informed by the theoretical framework to make explicit how aspects of the participants' experiences exemplified self-directed and self-regulated learning (e.g., Where is the participant taking the lead here, rather than being directed by someone or something else?; What is the participant doing to manage themselves in this situation so they can keep going?). Focusing on the analysis of the chosen sections encapsulated how interpreting the data became a collaborative construction between me and each participant, exemplifying the hermeneutic circle.

4.7.4. Step 4 - Finding connections and clustering experiential statements into themes

Smith et al. (2009) propose various clustering approaches, such as *abstraction*, *subsumption*, *polarisation*, *contextualisation*, *numeration*, and *function*, to bring themes to the surface (pp. 97-99). Thereby, I examined each experiential statement in relation to the others to determine the nature of their relationship. Next, I leaned on a series of questions (e.g., Are these statements saying similar things about the participant's experience, even if expressed differently?) to select the appropriate clustering approaches. The clustering decision process and analytical rationale is demonstrated through an extract from Space's analysis presented in Table 9. I used abstraction when experiential statements were similar; polarisation when meaning was shaped through contrast or tension; contextualisation when experiences were anchored in specific temporal or situational contexts; and function when statements emphasised the role an experience played in the participant's life. Finally, I examined the data through the lens of self-directed learning

and self-regulated learning and considered what the clustered experiential statements collectively revealed about the participants' ways of navigating, understanding, and making sense of their lived worlds to articulate the themes (Table 10).





Table 9 - Extract from Space's quotes, codes, experiential statements, SDL/SRL, clustering, and Themes

| Quotes | Page/Line | Coded Concepts | Experiential statement | SDL/SRL | Clustering approach | Theme |
|--|-----------|-----------------------------|---------------------------------|--|---------------------|---|
| I hate not having things in line. | 8.67 | Structure; Emotion | Perception of her autism | Regulation preference shaping task organisation | Polarisation | Reconciling two ways of being (Autism and ADHD) |
| I was only diagnosed at 12 so all my time has been known to be autistic. | 28.22 | Time; Self-Perception | Diagnosis ADHD and autism | N/A | Contextualisation | Reconciling two ways of being (Autism and ADHD) |
| I find it's really hard to study for exams and to be able to commit to doing things. | 28.23 | Regulation; Planning | Distinguishing ADHD from autism | Difficulties with self-regulation affecting sustained engagement | Polarisation | Reconciling two ways of being (Autism and ADHD) |
| Such as doing my homework every day. | 28.24 | Responsibility; Planning | Distinguishing ADHD from autism | Planning and follow-through difficulties | Polarisation | Reconciling two ways of being (Autism and ADHD) |
| I find it hard to keep on top of things that I'm not interested in. | 28.25 | Regulation; Self-Perception | Perception of her ADHD | Interest-dependent regulation shaping engagement | Polarisation | Reconciling two ways of being (Autism and ADHD) |
| Brain | 34.77 | Senses | Perception of her autism | N/A | Polarisation | Reconciling two ways of being (Autism and ADHD) |
| Ears | 35.78 | Senses | Perception of her autism | N/A | Polarisation | Reconciling two ways of being (Autism and ADHD) |

While the abstraction method broadly served all the data sets to identify emerging themes and cluster statements around concepts, the other methods were used more specifically. As opposed to *abstraction*, which aims to identify similarities, *polarisation* helped me notice the differences. It highlighted the contrasts within a study case, for example, between Dipper's experience of being distracted (Di, 9.74) and focused

(Di, 11.92) and across cases, as exemplified in how differently the participants perceived their autism diagnosis. I used the *contextualisation* method to organise Space’s data in temporal clusters, which revealed the significant role Minecraft played at different moments of her life while providing her with a means to record her continuous progress (Sp, 3.24). As I clustered Dave’s data around their Emperor persona, the function approach allowed me to perceive how they grounded their identity into the hero of their world (Da, 37.296). The authors also suggest breaking down the list of experiential statements into separate pieces of paper that can be organised freely into clusters to identify themes. However, working with the experiential statements alongside their associated quotes was more enlightening. Therefore, I used a Word document to move, shuffle, and regroup statements and quotes together and ordered the emerging themes by colour (Annex 11). It helped me remain close to the data while allowing theme patterns to emerge organically.

Table 10 - Participants’ themes

| | THEME 1 | THEME 2 | THEME 3 |
|--|---|--|--------------------------------|
|  DIPPER | Unfeeling the physical world | Being true to oneself | At home in one’s virtual world |
|  DAVE | Leading with skills | Building a community | Learning and innovation |
|  ALEX | Communicating differently | Facing bullying | Rebuilding himself |
|  SPACE | Reconciling two ways of being (Autism and ADHD) | Moving between the virtual and physical worlds | Becoming is a lifelong journey |

4.7.5. Step 5 - Moving to the next case

Smith et al. (2009) emphasise the importance “to treat the next case on its own terms, to do justice to its own individuality” (p. 100). Admittedly, abstracting every-

thing I had read and analysed before transitioning to the next case was not an easy endeavour. I planned a three-day break between each analysis to gather some distance and start afresh. Moreover, I decided to physically separate each participant's data by dedicating a binder to each of them. Each binder contained the following sections: transcripts, screenshots, my notes, an overview diagram, and the participant's story (Annex 12). In turn, this organisation facilitated the next step, that is, the analysis of the data across cases.

4.7.6. Step 6 - Considering the data across cases

This stage involved comparing the themes developed for each participant. First, I reviewed each participant's analysis and table of experiential statements, one after the other, while paying particular attention to similarities, differences, convergences, divergences, or variations, which I highlighted as they appeared to me. Then, based on the consolidated data set (all participants), I repeated steps 1 through step 4. To ensure the traceability of the experiential statements back to their corresponding transcripts, I maintained their original page/line references (e.g., Di, 4.56). In addition, it allowed me to emphasise the hermeneutic circle by highlighting how the participants' particular themes informed the whole of the shared themes and how the shared themes also contributed to a deeper understanding of each participant's individual experience. The comparison between the participants' experiences brought to light a series of patterns, thus facilitating the emergence of shared themes, which, taken together, underlined a broader meaning. Deepening the interpretative layer, I connected the participants' shared themes through three superordinate themes, namely, *Self*, *Communication*, and *Space*. The logic leading to the identification of cross-themes is included in Annex 13. Finally, these three encompassing themes acted as stepping stones to address my research question: *How do Autistic Gamers Learn to Play Minecraft in Autcraft?*

4.7.7. Data Analysis Workflow

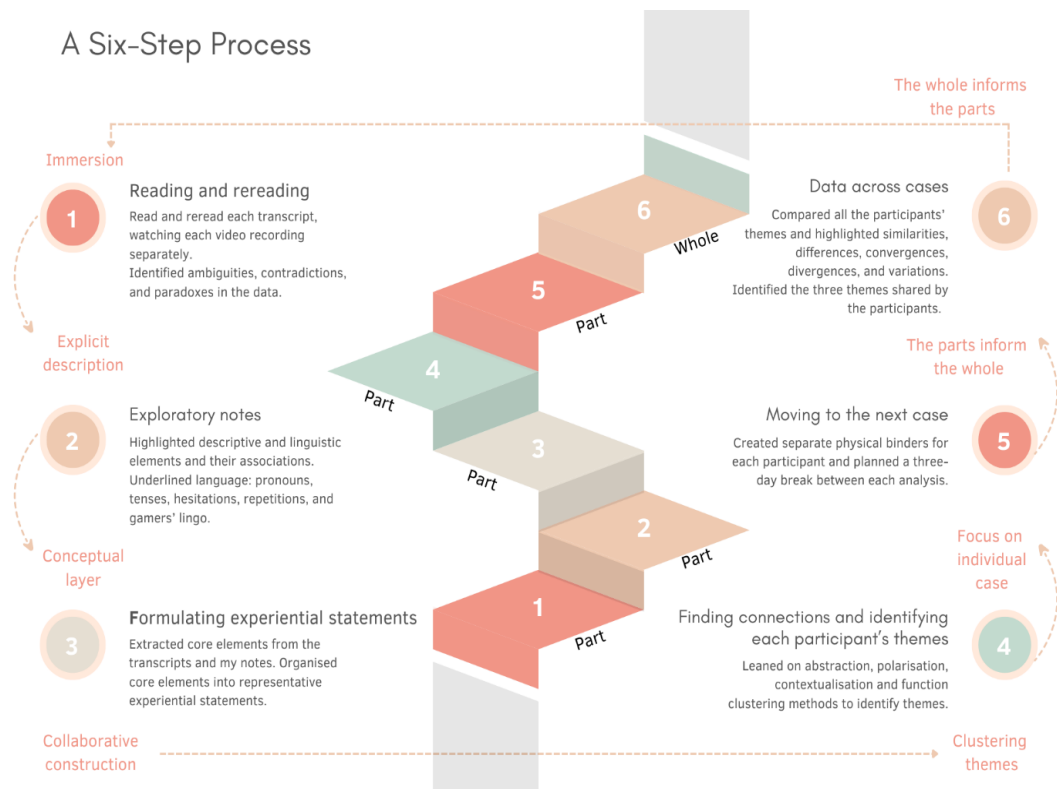


Figure 17. Data analysis workflow

4.8. Methodological Reflections

In this section, I address the ethical aspect of the study before discussing my objectivity and the quality criteria observed during the research.

4.8.1. Ethical Considerations

This research was approved by the University of Strathclyde's Ethics Committee and was conducted in adherence to the ethical principles stipulated in the Code of Practice on Investigations Involving Human Beings (CPIIHB, 2013). In the following sections, I describe how concerns about consent, safety, anonymity, and confidentiality were addressed during the study.

4.8.2. Participant Contact and Informed Consent

All interested players had the opportunity to contact me via email (mentioned in the study advert) if they had any questions. I also offered to organise online discussions if the potential participants needed to meet me beforehand. Interested players received the link to a password-protected webpage where they had access to a video introduction to the study, the participant information sheet detailing the project and a link to the Qualtrics questionnaire which included the consent form. Following the UNICEF's recommendation that adolescents (10-19 years old) should be able to consent to take part in research independently and in agreement with Scotland's law stating that any child or young person who is able to understand what the project involves can consent to participate in research, parents/legal guardians' consents were not requested. However, potential participants were encouraged to consult with their parents/legal guardians about their interest in the research. Authorisations were sought from the participants to contact their parents/legal guardians in order to send them a specific questionnaire gathering background information. All the participants refused, but one.

The data collection only started once I received the consent form. Participants were made aware from the outset (e.g., study advert, participant information sheet, consent form, questionnaire) that their participation was entirely voluntary and that they had the right to withdraw from the project at any time before the start of the analysis of their data (Annex 14). They were also reminded of the possibility of opting out of the research at the start of each play session. The participants received an email reminder one week prior to the start of the data analysis. They were also informed that in case of withdrawal, all their digital data (e.g., recordings, transcripts, digital footprints) would be deleted, and all printed data would be destroyed no later than 24 hours after receiving their request via email.

4.8.3. Participants' safety

All the participants were active Autcraft members who regularly played Minecraft on the server; therefore, participating in the research did not impact their use

of Minecraft. As members, the participants had been previously whitelisted²⁵ by the Autcraft admin staff. Although Stuart Duncan acted as a gatekeeper, participants were always surrounded by staff such as Admins, SrHelper, Apprentice, Helper, and Buddy, who received a schedule of the sessions.

4.8.4. Anonymity

Participants' names and their corresponding Autcraft names were anonymised in the transcripts and my notes, both in terms of the information that could be used to identify them and the people they may have mentioned during the play sessions. Participants benefited from three-level anonymity: (1) The participants were playing in Autcraft under a 'game name' (not their legal name), (2) I replaced their Autcraft names with the letter P + number, (3) Finally, all the participants chose the pseudonym to be used in the analysis. The analysis of the participants' play experiences was only shared with their respective parent/legal guardians when the participants had given their authorisations (Annex 15). The names of third parties (e.g., schools, teachers, friends, and family members) were not included in the thesis and will not appear in any subsequent publications and presentations. The video recordings were not shared with a third party during the analysis and will never be included in any subsequent presentations or publications. These recordings are currently stored on the University of Strathclyde OneDrive and will be deleted upon the submission of this thesis.

4.8.5. Confidentiality

Although I conducted each play session from my home office, I used a headset to ensure discretion and confidentiality. Files containing the transcripts of the play sessions were password-protected. A backup copy of all the data (except play session recordings) was maintained via the UK Data Service (www.ukdataservice.ac.uk). The stored data will remain on the University of Strathclyde OneDrive for two years after the viva to allow for publications to be made and no more than five years, at which point, it will be securely destroyed.

25 Term used by Autcraft.

4.8.6. Participant Observation and Objectivity of the Researcher

Participant observation was the most appropriate data collection method for my participants since it was minimally invasive. The nature of this approach required that I engage with the participants by playing with them and that I gain a certain level of trust to be able to open the dialogue while maintaining a balance between participation and observation. On the one hand, I fully immersed myself in each participant's world to ensure the depth of my understanding. On the other, I developed a comprehensive notetaking process to progressively detach myself from the experience through my writing (Willig, 2008).

1. I documented my first impression after each session.
2. I transcribed the session's dialogue.
3. I documented the setting of the participant's world, the colours, the texture, and the theme (substantive notes).
4. I described the appearance of the avatar, the connection between their avatar and mine, and how the avatar moved to communicate (substantive notes).
5. I practised daily reflective writing to ensure I remained objective. In doing so, I identified the elements that worked well and the areas in my approach that needed to be improved or modified to adapt to the participants' needs (methodological notes).

4.8.7. Quality criteria observed

How the criteria of reliability, replicability, and validity are applicable to qualitative research is still up for debate. Conversely, researchers have also claimed that criteria used in quantitative research do not apply to qualitative study since "Qualitative data collection procedures are often highly flexible [...] and the person of the researcher is an intrinsic part of the conduct of the inquiry" (Barker & Pistrang, 2005; p. 207). From this perspective, Lincoln and Guba (1985) proposed that qualitative research is best assessed through the elements of trustworthiness and authenticity, highlighting credibility, dependability, transferability, and confirmability.

Thus, I assessed the quality of this study using Lincoln and Guba's (1985) framework, applying these criteria to interpretative phenomenological analysis, which considers quality in terms of transparency, reflexivity and analytic coherence (Smith et al., 2009) while taking into account the study's virtual research context.

Moreover, Smith et al. (2009) state that quality emerges through idiographic engagement, reflexive interpretation, and a clear analytic trail that allows the reader to follow how claims were developed. These elements were particularly significant, provided that the research was conducted in a virtual environment, where participants interacted through avatars. Research has increasingly recognised avatars as meaningful conduits of human experience in virtual environments. Qualitative researchers have used participant observation of avatar behaviour to make sense of social interaction in graphic online worlds (Williams, 2007), and have shown that strong user-avatar relationships can shape participants' perceptions and actions beyond gaming mechanics alone (Szolin, 2023). Hence, these perspectives supported the use of in-game discussions, observation, and avatar interactions as data in understanding participants' lived experiences in Autcraft.

4.8.7.1. Credibility

Through this study, I sought to understand the learning experience of autistic gamers playing Minecraft in Autcraft. To do so, I chose interpretative phenomenological analysis, which afforded a flexible design adaptable to participants' needs and aligned with the exploratory nature of the research question and participant observation. In this research, credibility relates not only to the accuracy of participants' accounts but also to the authenticity of their self-expression in the virtual environment. In Autcraft, avatars served as meaningful extensions of the participants' self, fostering comfort, agency, and openness. In that sense, the avatar reinforced credibility.

Credibility was strengthened through intense field engagement and by presenting the analysis to each participant as a storyline, which they validated for accuracy and trustworthiness (Annexe 14). For example, participants confirmed that the expe-

riential statements and storylines accurately reflected their in-game actions, their felt learning experience, and the way they self-regulated in Autcraft. Credibility was also supported through triangulation across participants' video-recorded sessions, digital footprints, and questionnaires, allowing consistency between what participants said, did, and explained.

4.8.7.2. Dependability

The findings resulted from the co-construction of the data and my analysis; therefore, the present research might be difficult to replicate exactly. Given IPA's idiographic commitment and the evolving nature of a virtual world such as Autcraft, dependability was assessed through transparency and coherence in the research process rather than procedural reproducibility.

It could be said that the virtual research environment and the avatar-mediated interaction might have led to contextual variabilities preventing the research to be replicated. To mitigate the risk and support dependability, I documented the data collection and analytic process in detail, including session procedures, participant observations, analytic steps, and reflexive decision-making. For example, analytic decisions, such as the definition of conceptual codes, the development of experiential statements, association with the theoretical framework, clustering approaches, and the emergence of themes were explicitly recorded (Annex 13), enabling readers to follow how interpretations were produced and to assess the methodological integrity of the study.

4.8.7.3. Transferability

While qualitative research does not aim for statistical generalisability, it can point to the transfer of concepts to other contexts. In this study, transferability is supported by rich, contextualised descriptions of participants, the Autcraft environment, and the learning experiences observed. For example, detailed accounts of how participants used space, structure, and avatar-mediated interaction to support regulation and learning experience allow readers to assess the relevance of these findings to other

virtual learning environments or neurodivergent educational contexts. In this way, the study offers conceptual insights that may be meaningfully transferred beyond Autcraft.

4.8.7.4. Confirmability

The findings presented in Chapter 5 are substantiated by quotes selected from the participants' transcripts and storylines, as well as screenshots extracted from the video-recorded sessions. This evidential grounding allows the analytic process and decision-making to be traced back to the data rather than to my researcher's preferences.

Confirmability was further supported through reflexive awareness of my role as researcher throughout the analytic process, recognising interpretation as co-constructed. In the virtual context of this research, confirmability was strengthened by the ability to revisit recorded gameplay and interactions, enabling consistency between participants' reported experiences and observable in-game actions to be examined. Furthermore, the Discussion (Chapter 6) demonstrates how the findings support or challenge previous research, and the Contributions of the Thesis (Chapter 7) highlight how the study's results enrich knowledge through a novel interpretation of the autistic learning experience in Autcraft.

4.9. Summary

In this chapter, I presented the key scholars who fashioned my perspective and my understanding of phenomenology. I discussed my methodological approach and how it was employed to conduct this research. I examined three different methodologies and explained why I did not retain the Phenomenology of Practice (van Manen, 2016a) or Postphenomenology (Ihde, 1990) before justifying my decision to use Interpretative Phenomenological Analysis (Smith et al., 2009). I described the concept of lived experience and highlighted how the understanding of the term acted as a lifeline, which grounded me throughout this research, from the gathering of the data to the analysis and, finally, the interpretation. I have also outlined the phenomenological tenets of hermeneutics and idiography, which signposted my research. I outlined in detail how

participants were recruited and how the data collection process was amended based on the participants' feedback. Since the beginning of my research, I have immersed myself in the world of my participants by playing and participating in events with them in Autcraft, thus alternating between the roles of player, observer, and researcher while creating space for the data to emerge from the participants' experiences. In the next chapter, I present 'what I saw when I looked'. I demonstrate how each step of Interpretative Phenomenological Analysis allowed the richness of the autistic young people's experience to come to the fore and be captured in their specificity within the meaning of human experiences in general.

5. FINDINGS

5.1. Introduction

In this section I introduce each participant and describe their respective world before revealing the findings illuminated through their individual experience. These results are based on the data gathered from sessions in which I alternatively played and observed the participants playing in their virtual world as discussed in the previous chapter (see [Chapter 4. Methodology](#)). They also include parents' input whenever they had offered comments via the parent questionnaire (Annex 8). In the findings, here-after presented, I detail the individual themes that emerged from each participant's experience (particular) whilst illustrating their roles in shaping the participants' learning experiences.

The findings are reported on a case-by-case basis. Each participant is introduced individually before their experiential themes are presented. I organised each case using the narrative structure that I originally developed to present the data back to the participants for sense-making and validation. By preserving their storylines within the findings chapter, I aim to maintain the integrity of the data and ensure continuity between data capture, participant validation, and reporting. Within the cases, I present verbatim extracts from the participants' in-game text-based interactions from the Autcraft chat. These sections were selected to illustrate moments of experiential significance as they seemed meaningful for the participants. Moreover, they highlight meaning and nuance within each participant's lived experience. I also include parents' input whenever they have offered comments via the parent questionnaire (Annex 8) and use it as a supplementary perspective.

The tone I adopt in this chapter is intentionally more conversational than the formal academic voice used elsewhere in the thesis. The sessions with the participants were lived, relational, and affectively charged, thus I chose an evocative mode of writing to invite the reader into the experiential texture of the sessions.

When including participant quotes, I refer to each participant using an abbreviated identifier, such as Di (Dipper), Da (Dave), Al (Alex), and Sp (Space), followed by the page and line number from the transcript file (e.g. Di, 3.13). It helps me keep the text readable while allowing each quote to be easily traced back to the original data file.

Following the individual case presentations, I identify three cross-case experiential crossovers, which simultaneously reinforce the uniqueness of each individual experience, thus emphasising the hermeneutic circle.

5.2. Dipper the Animal Whisperer

5.2.1. Introduction

Dipper²⁶ (Di) was diagnosed autistic and ADHD. They live in the United Kingdom with their family, attend high school, and are passionate about animals. Fuelled by their passion, Dipper entertained the idea of becoming a veterinarian but later reconsidered, realising that they “did not want to see animals getting hurt” (Di, 24.46). Instead, they decided to study Sciences and maybe open a hotel for animals in the future. While primarily playing Minecraft, they also enjoy the role-playing game called Sims.

Once I posted the advert on the Autcraft forum, Dipper answered in just a few words: “I’m interested in this 😊” (Annex 15). The smiling emoji seemed to translate their enthusiasm. I sent, via Autcraft, the login information to access the introductory video and the questionnaire link, including the consent form. The next day, I received the signed form and the completed questionnaire confirming their genuine interest in the project. Dipper was the only participant who authorised me to contact their parent. A few days later, Dipper’s mum filled out the parent questionnaire, and I scheduled the first session with Dipper. To communicate during the sessions, they chose to use

26 Dipper identifies as non-binary; therefore, the pronouns *they-them-their* are used when appropriate.

the Autcraft chat. Thus, I created a private channel²⁷. In all our interactions, Dipper appeared collected, attentive to our exchanges, and always contributed meaningfully. They taught me a lot and were pleased, saying, “I’m happy I helped you learn things” (Di, 18.152). When I first met Dipper, they wore a nice skin, which combined a turquoise top with soft purple trousers. Facing Dipper, their eyes caught my attention: green and red (Figure 18).



Figure 18. Dipper the Animal Whisperer

5.2.2. Dipper’s World

Dipper’s world, or base, as it is called in Autcraft, was situated in what is referred to as an *amplified world* in Minecraft. In a cascade of hills and mountains of various heights, the landscape complemented how Dipper organised their constructions (Figure 19).

²⁷ A private channel called AR (Autcraft Research) was created before each session and was only visible to the participant, the researcher, and the Autcraft Administration staff. The channel was closed and deleted after each session.



Figure 19. Amplified world - Aerial view of Dipper's base

Once Dipper invited me to their base for our first session, I landed in front of the main building. Upon entering, I realised it was more spacious on the inside than let off from the outside. There, I met with Sloppy Joe, a red cow dotted with grey patches. Welcoming Dipper back home, it barely acknowledged my presence. Sloppy Joe (Figure 20) was the roomkeeper; it communicated in 'meow' and walked freely on the ground as much as on top of the chests lining up the wall on the right side. Marching to and from, it was hard to know if it guarded the place or tried to escape.



Figure 20. Sloppy Joe welcoming Dipper back home

The room was generously lit, yet there was no window. Three red torches illuminated both sidewalls while an amethyst flower and a blue torch, also called a soul torch, irradiated from the room's far end. Some of the chests against the right wall were locked by signboards upon which it was written '[Private] Dipper#'. Above the chests, a row of blocks shaped like avatar heads sat beneath the ceiling like gargoyles around a spire. Banners accompanied each protruding face. They faithfully reproduced the colour combination of their neighbouring avatar heads, showing their affiliation. The dark eyes of the avatar heads, however, shined in their absence. There was no black strip in any of the banners (Figure 21).

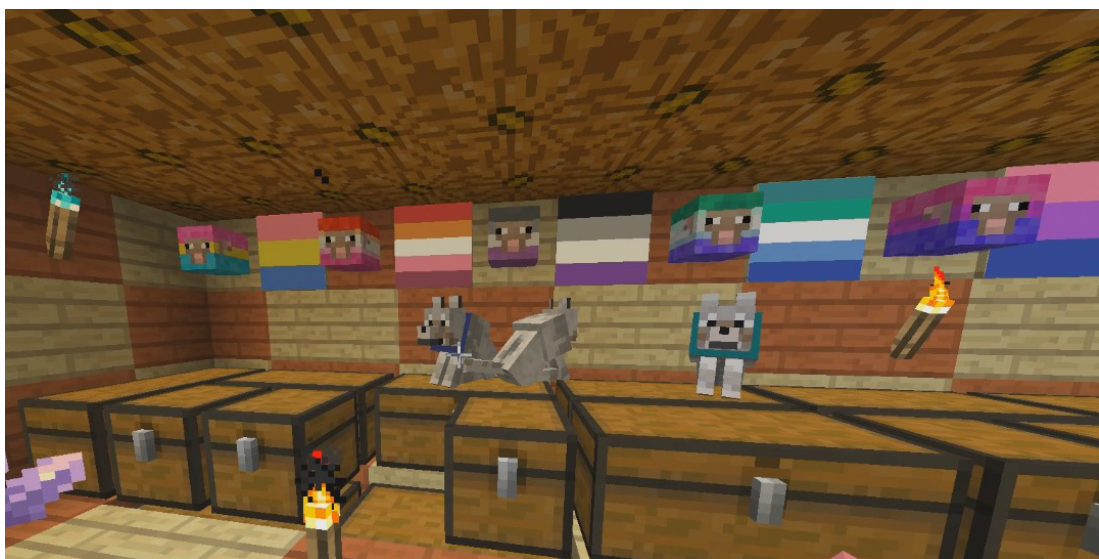


Figure 21. No black strips representing eye colour in the banners

The wood floor resembled a checkerboard, alternating beige birch timbers with orange jungle slabs. A series of furnaces rested against the left-side wall. There was a stone block in front of each furnace as if to prevent the eventual spark of fire from setting the room ablaze. Further down, a poster bearing the 2022 Pride colours and the Autcraft logo was hung on the wall (Figure 22). On the opposite side, two dogs, Nino and Delilah, were excitedly moving about while staring at us, happy to see Dipper and oblivious to the sight of me (Figure 23).



Figure 22. Pride 2022 poster and Autcraft logo in a highly visible place



Figure 23. Nino and Delilah looking only at Dipper and oblivious to me

Leaving the building, Dipper took me on a tour. Their world revealed an intricate patchwork of little spaces woven together with a spiderweb's precision (Figure 24).

Watching my every step while Dipper graciously hovered away inches from the ground, we stepped on a barrel block, pivoted right, and went down two-barrel blocks onto a narrow dirt passageway (Figure 25).



Figure 24. Aerial view of Dipper's base highlighting the spiderweb connectivity



Figure 25. On the edge of the narrow dirt passageway

The sight was sickening; my stomach churned, hit by waves of nausea and deaf to the calls of my brain reminding me that I was sitting at my desk. I stopped breathing as I reached the edge of their world, where the void seemed to inhale everything between the heavens and the ocean beneath (Figure 26). The visit to that area ended with another four glass steps marrying below and above into a two-story tall fish tank,

the Axolotls room, which I ungraciously slipped into trying to avoid killing myself by falling from a high place. Unfazed by my poor coordination, Dipper patiently waited until I had negotiated the ladder out of the water. The fish tank traversed the entire base through a series of corridors, a waterway for the axolotls to move around and mingle in the community (Figure 27).



Figure 26. Path made with glass blocks – sensorily immersive



Figure 27. Waterway allowing axolotls to mingle in the community

Then we walked on a path made of glittering black blocks, at the end of which sat Dipper's Head room. Stepping into this shiny black structure feels like entering the night sky between two stars. Inside, the room had a magical aura. A carpet of purple amethyst blocks making a sound when stepped on, covered the floor and illuminated the room. Rows of avatar heads lined the walls. Dipper's favourite ones were on display on a podium (Figure 28).



Figure 28. Second Head room – Dipper shows me her favourite head

The second Head room was not connected to the first one; reaching it meant jumping far enough to leap above the void below and land on the stairs ahead (Figure 29). Naturally, I embraced the gap and *fell from a high place*. A red hue covered my screen, and the following message appeared: *You Died!* After clicking *Respawn*, Dipper brought me back directly inside the Head room.

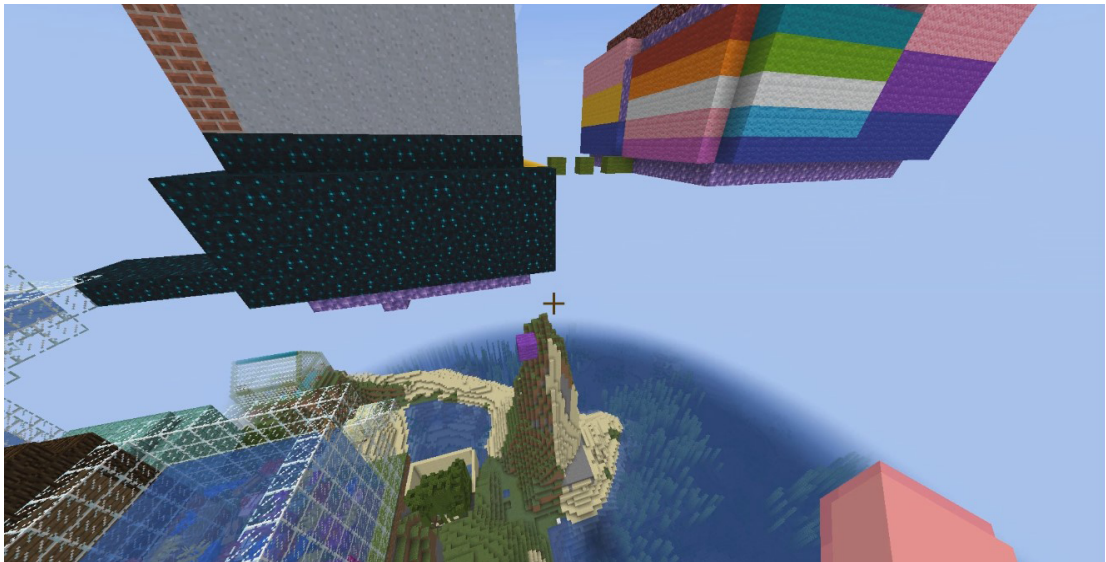


Figure 29. Access to second Head room is a disconnected path at high altitude

It was time to look at the animal-shaped rooms; no dangerous stairs were involved. We simply jumped into the fish tank two levels down. Three smaller structures connected through sky-high slender lanes caught my attention as we strolled on a dirt passageway above the dreadful emptiness. Each was built in the shape of an animal: a fox, an allay, and a cat. The Cat room turned out to be an auditorium (Figure 30). Like the Cat, the Allay and Fox rooms were personalised according to the animals' colours (Figure 31).



Figure 30. Cat room serves as auditorium where Dipper introduces new pet members in the community.



Figure 31. Personalised animal rooms – a home for each pet member

Then, we visited the bottom part of Dipper's world. Now, on solid ground, we passed a turtle in a tiny mangrove swamp on our way to the Axolotl Sanctuary (Figure 32), where Dipper rescued animals and cared for them before releasing them in the wildness of the game. The room was turned into a lush cave where pink azalea blocks embellished a mosaic of mini pools (Figure 33).



Figure 32. Axolotl Sanctuary where Dipper rescue axolotls and bring them back to health



Figure 33. Sanctuary transformation of the cave into interconnected small pools

As Dipper showed me other parts of the base and explained the purpose each served, I became deeply immersed in the liveliness of their virtual world. It was easy to get attached to its unusual inhabitants. It felt natural even. An hour later, the tour was over. Moving my mouse around to glean at the expanse of Dipper's world rising above me, I was mesmerised. Finally, we walked towards the nearby wooden fence. "Yay it was fun showing you around," (Di, 17.147) said Dipper before we parted ways (Figure 34).



Figure 34. Dipper saying goodbye to me

Thus far, I have presented Dipper to reflect my perception and how they viewed and expressed themselves through their world. In the section below, I share the themes that the analysis of Dipper's experience illuminated.

5.2.3. Dipper's Themes

Dipper's experience highlighted three main themes. *Unfeeling the physical world* revealed how sensory sensitivities influenced Dipper's perception of and participation in their environment. *Being true to oneself* illustrated how projecting their inner self (e.g., personality, interest, emotions) acted as a sounding board that contributed to their self-regulation. *At home in one's virtual world* demonstrated how Dipper created a virtual home that reflected who they are and where they felt they could safely be themselves. An illustration of Dipper's themes is included at the end of this section (Figure 46).

5.2.3.1. Unfeeling the Physical World

Dipper's daily life involved facing many sensory challenges. A salient theme that emerged throughout our sessions was how Dipper navigated the sensorily overwhelming physical world and developed an alternative way to feel through playing in Autcraft. Illustrating the difficulty in school, for example, their mum explained:

School is increasingly difficult due to the hum of crowds and varying noises. [Dipper] gets overwhelmed and becomes mute and panicky. [They] only wear certain clothes and struggle with layers and choosing weather appropriate clothing (Di, 43.1).

The virtual world Dipper built in Autcraft appeared to circumvent these struggles. That said, moving around their base had the opposite effect on me. I was highly uncomfortable; taken by vertigo I lost my sense of direction. Dipper's base extended towards the sky through a series of glass blocks, making my ascension all the more daring. Touring the base made me physically sick. Meanwhile, Dipper seemed impervious, unaffected by the sensory challenges, hovering above the ground like a butterfly,

climbing transparent stairs with agility and confidence, or staying on the very edge of narrow paths (Figure 35). When I said: “You are not scared of heights, I see, (Di, 4.29)” Dipper explained: “I like it here because I can make rooms under my base and be above the ground (Di, 4.30).” I was intrigued by the organisation of Dipper’s base. Since their mum had mentioned Dipper’s sensory sensitivities, I had expected Dipper to be sensorially triggered by their chosen vertical arrangement of structures, yet their ease of movement demonstrated the opposite. Dipper illustrated how their well-being was shaped by spatial and sensory conditions, saying:



Figure 35. Dipper standing on the edge undisturbed by the empty space beneath them

As the conversation flowed in our last session, Dipper considered how online technology, such as Autcraft, starkly contrasted with the physical world, shedding light on how online technology could afford autistic players a solid alternative to communicate with others while feeling the world differently. Dipper helped me understand by explaining:

In the physical world they can be very quiet but online they can talk to more people than they usually do sometimes because sometimes it is hard to talk to people in the physical world and on places like Autcraft they are with people like them (Di, 32.22). So, some people find it’s easier to talk (Di, 32.23).

In the same token, when discussing how being in school could be generally challenging, Dipper confessed that when the teacher asks questions, even though they knew the answers, they usually did not answer for fear of saying something wrong, hence reinforcing their previous statement that “sometimes, it is hard to talk to people in the physical world (Di, 32.22).”

Additionally, Autcraft offers Mini Games, a space created by the Autcraft admin team where members can play solo or with other members. Most of the games call for specific competencies. One of them, *Parkour*, specifically demands dexterity and precision to jump from one block to the next in a crescendo of difficulty without falling (Figure 36). Therefore, it made perfect sense when Dipper said:

I like doing parkour so that is why I have this [vertical structure] (Di, 8.68).



Figure 36. Minigame Parkour showing a similar structure than Dipper's base and both requiring agility

Autcraft is truffled with treasures. Some of them are special blocks designed to represent *Heads* at the effigy of people (e.g., Crankles Head, Christmas Zeddy Head) or reflect tokens of character (e.g., Kindness Head). Since they are valuable in Autcraft, especially shiny and ‘special’ ones, players collect them, expose them in showrooms, or use them as commodities. I learned that one way to get a Head is to buy it.

The alternative is to fight for it. Although fighting can be sensorily challenging since it involves being closely surrounded and touched by mobs (attacking NPCs), when I asked Dipper if they had fought to get them, they answered:

Yeah, in the darkness and madness (Di, 5.43).

Catering to its autistic members, Autcraft provides a sensory area featuring several calm rooms where players can go whenever they need it (Figure 37). Some rooms aim at satisfying sensory-seeking needs, while others are designed to help soothe sensory overload. Some of these rooms follow a vertical arrangement of constructions similar to Dipper's (Figure 38). It highlighted the dynamic synergy between Dipper's sense of space and their world's particular architecture.



Figure 37. Calm rooms open to all members in need of sensory soothing



Figure 38. Shroom room showing a vertical organisation similar to Dipper's base

5.2.3.2. *Being True to Oneself*

Dipper's non-binary identity was subtly reflected in the way they designed and decorated their virtual rooms. Across different spaces, they combined vivid colours (Figure 39) and contrasting materials — for example, soft wool alongside rough stone or dirt (Figure 40). This spatial expression seemed to echo not only the complementarity that characterises their gender identity but also the duality inherent in their neurodivergent experience as autistic and ADHD player. The interplay of textures and colours seemed to mirror their ongoing negotiation between sensory sensitivity and stimulation, structure and spontaneity — recurring themes in their daily life. In this sense, their Minecraft world seemed to offer a medium through which intersecting identities were not just expressed but harmonised.



Figure 39. Banner room highlighting Dipper's use of vivid colours echoing their dual diagnosis of autism and ADHD



Figure 40. Room showing a combination of mixed with textures highlighting a parallel with Dipper's dual diagnosis of autism and ADHD

Being true to oneself unavoidably requires making choices, which could be difficult for Dipper, as illustrated in their words below:

Some choices I find really hard and take ages deciding but others I decide quickly but sometimes don't know if it is a good choice (Di, 39.78). I was making an egg for easter, and I had to decide if I should use purple and orange blocks or orange and cyan blocks, I picked purple so that was easy (Di, 39.80). A hard one would be I had to decide if I wanted to get patreon or diamond rank and I took ages to decide. The consequence makes it harder to decide (Di, 40.81).

Dipper approached their character not as a separate or fictional persona, but as a continuation of themselves. They infused the avatar with aspects of their embodied identity — expressing their emotions, preferences, and way of being through it. In this way, the digital character became an extension of Dipper's lived personality, rather than a departure from it. Discussing their Autcraft's name and skin, Dipper explained:

I used to use an ocelot skin and if I didn't have a name for something I would just try to add a Y to the end to that is how I thought of my name and the skin I like Enderman, so I was looking for an Enderman skin and I really liked this one (Di, 34.38). I love cats and I like the patterns of an ocelot (Di, 34.40).²⁸

While it could be argued that the avatar facilitates stepping into a different self to become someone else, contrastingly, Dipper seemed to embody their true self. They did not leave their 'self' on the gaming chair at their desk, only their bodily shell, without which they were free to be who they truly were. Unlike other participants who preferred building a community with other players, Dipper's base was oriented towards their 'self' and felt very personal.

Standing inside the main building while Dipper was describing in great detail what they had built and why, it occurred to me that the beautiful artefacts exuded an emotional flair that imbued the entire room. On the far left of the storage room was a white bed, home to two cats: a black and white one called Mittens and its black companion, Enderchest. Looking down as they reckoned with the painful memory, Dipper explained:

28 The letter 'Y' refers to the participant's Autcraft name which is different from the pseudonym used in this thesis.

The black and white I have it in all my worlds, so I thought I needed to get it (Di, 2.13). I accidentally hit my black one and killed it; I was very sad, so I got another one that looks like it (Di, 2.16).

The white bed was also a shrine; it leaned against a wall of remembrance where two signboards hung (Figure 41). The first one, bearing the mention ‘*I loved you soo much EnderChest*’ guarded the souvenir of the cat who was killed, replaced, but never forgotten. The second begged forgiveness – *EnderChest, sorry I accidentally hit you with my sword*. Then, as if sadness had suddenly evaporated, Dipper pursued their description, pointing at the black cat and jumping up and down, indicating that another pleasant souvenir brought them back to the current moment:

The other one I found when looking around a swamp (Di, 2.14); I tamed it and used a wooden hoe on it to tp it to my base (Di, 3.18).

The memory of the cat was not confined to the walls of the storage room. On the outskirts of their base, Dipper built a tomb for EnderChest (Figure 42).



Figure 41. The wall of remembrance highlighting the emotional connection between Dipper and the cat they lost



Figure 42. EnderChest's tomb further reflects the humanization of the cat NPC and further emphasises Dipper's emotional regulation

Visiting the Axolotl Sanctuary, I discovered that the game design afforded a fluid interplay between emotion and responsibility. Showing me a fish in the mini pool, Dipper, whose shoulders had tilted over their chest, further explained (Figure 43):

I need to set them free soon (Di, 14.124); even though they will just despawn, I still like saving them and setting them free (Di, 15.126). I know [it is time to set them free] because I always keep them for like a month (Di, 15.128). If it despawns, it means if you go back to them, they won't be there (Di, 15.129). Yeah, if no one is around them for a certain amount of time, they will despawn (Di, 15.131).



Figure 43. Dipper is looking at the fish exhibiting sadness through their avatar posture

A moment later, outside the sanctuary, Dipper’s sad emotion had vanished as they said with a hint of pride:

The pink sheep I found just spawned naturally, and that’s very rare, so I kept it (Di, 15.133).

Minecraft being an open game, the system does not always predict the players’ actions. In that sense, emotions can be a choice. Standing on the edge of the fish tank looking at the fish staccato in their glass home below, wondering how I could get a fish too, Dipper explained:

I just found it [fish] in the sea near my house. I was going to feed it to my cat, but it kept following me, so now it is my pet (Di, 5.37).

Reviewing the recordings later, I realised that visiting Dipper’s world had been more than taking in the vista; it felt as though I had stepped into something deeply personal — into their heart. While the tour itself unfolded in the present moment, the

experience evoked a striking sense of temporal dislocation. It was as if I had been transported into Dipper's imagined future — a projected vision of the life they hoped to live.

Through investing *their true self* into their digital persona, Dipper created a particular relationship, thus facilitating a bi-directional exchange between their physical self and their virtual counterpart. Explaining how their perception of the game evolved over time, from being simply entertaining to becoming essential for their well-being, Dipper said:

At first, I just liked the game but now when I get upset or angry, I play Minecraft to calm down, it helps me relax (Di, 35.44).

Dipper's mum substantiated this point, saying, "Autcraft is the only thing that seems to regulate her [sic] (Dipper) and keep them happy (Di, 44.3)."

In our last session, we explored both Autism and ADHD and what these meant to Dipper. They explained their autism in those terms:

To me it means finding things a bit harder than other people but being able to do specific things better and taking a while to understand things sometimes but being good at it when I understand (Di, 30.7). Things that I like I focus on more like Minecraft and science (Di, 30.9).

Anchoring their perception further in the physical world, Dipper volunteered that when focusing on their body, they would feel their autism in their brain and head. They candidly offered that 'things had changed' since receiving their autism diagnosis, saying:

It is different because before I just knew I had ADHD, so I was just thinking it was that but now I know it is autism (Di, 30.13) and I know it isn't just me being weird (Di, 31.14).

Furthermore, Dipper confessed that they could not always make the distinction between their ADHD and autism explaining:

When I get distracted and really hyper, I always think it is the ADHD and when I don't really want to do that much or there is too much going on I think that it is my autism (Di, 31.16). Sometimes they kind of overlap and I can't decide what I want to do (Di, 31.18). And sometimes when that happens, I just freeze (Di, 31.20).

5.2.3.3. At home in one's virtual space

When Dipper logged in to Autcraft, the game appeared on their screen exactly where they had left it off the day before. Their avatar did not mine the cave or build a wall in their absence. Each time they returned to the main building; the storage room anchored the space from which Dipper's world sprung. It was the place where they kept all their treasures. It was also the place where they felt safe. However, Dipper did not create the base from scratch. They continued the work their older brother had started before them, explaining:

When I first joined, my brother had played a bit before, so he had already built a tiny bit of the base, so it was easy to start (Di, 1.6).

Dipper did not follow any YouTubers to learn Minecraft. They learned by watching their brother play, memorising their many moves and fighting strategies until they were in front of the keyboard, thus perpetuating their legacy. Rooted in the familiarity of the space, block after block, Dipper made their brother's base their world.

When we stepped into the second Head room, the ceiling pulled me in, offering a geometric pattern of textures and colour light blocks (Figure 44). I was drawn to it; like a mandala, it was soothing almost hypnotic. There were no windows. Still, it was bright as day. As we both looked up, contemplating the design, Dipper shared:

The roof is my favourite part (Di, 7.57). It was fun to make and get the things for the roof (Di, 7.59).

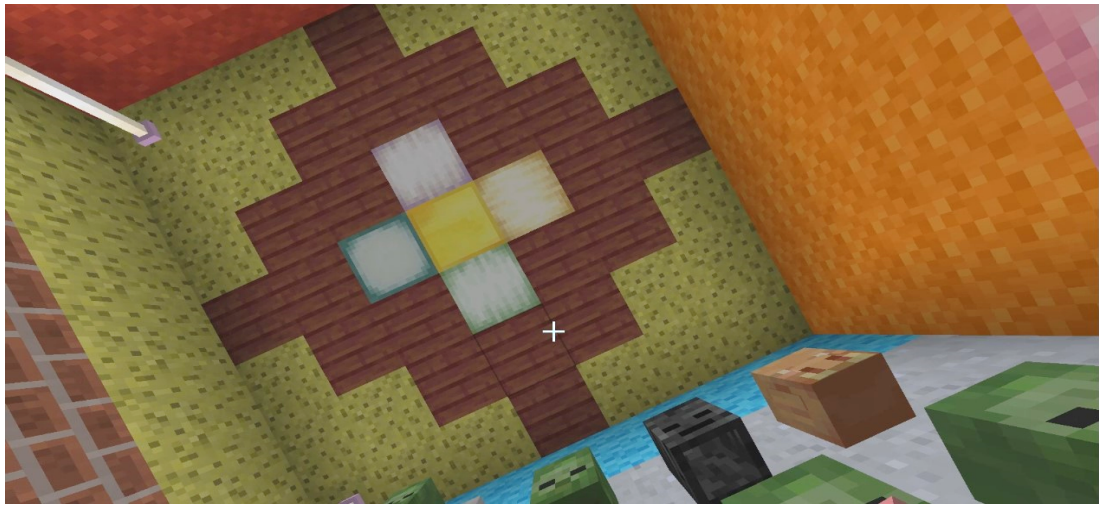


Figure 44. The ceiling of the second Head room, which resembles a mandala, seems to be sensorily soothing

We entered the newest room after walking on a rope-like stretch of blocks between two skyscrapers. The spacious and vividly coloured place was empty, which Dipper justified by saying:

In here, I think I was going to put all my favourite blocks and items, but I got distracted (Di, 9.71). My friend gave me an allay egg, so I wanted to make a home for it, then I forgot about this place (Di, 9.74).

The salience of having and providing a home for their animals was unmistakable, especially in the Auditorium (Figure 45), where Dipper explained:

In here is a place where I sometimes make big announcements to my pets if I am bored (Di, 9.78). Like if I have a new pet or making another important room sometimes. I bring my cats to them [new pets] sometimes and my dogs to say hi unless they would hurt each other (Di, 10.81). Wolves hurt foxes, so I don't bring them to see my fox (Di, 10.85).



Figure 45. The auditorium where Dipper reinforces the sense of belonging by introducing new pet members to the community.

While players referred to their worlds as ‘base’, Autcraft used the term ‘home’. Thus, members typed the command `/sethome` to register their plots of land. The word ‘home’ was also used to save areas on the server where players wanted to return, as exemplified by Dipper:

At the start of the month the worlds are different, so I was looking at my sethomes in those worlds and exploring them (Di, 26.61). Sometimes, I sethomes places but forget they are important then delete them (Di, 27.70).

The notion of *being at home*, in tandem with a sense of space, transpired multiple times throughout our sessions. Dipper’s entire base was designed around the concept of providing a home with sufficient space for the animals, which was reminiscent of their comment about not having enough space in the bus. The following statements from Dipper further illustrate how both concepts interweaved:

My friend gave me an allay egg, so I wanted to make a home for it (Di, 9.74). This is my head room, I had to make another one I didn’t have enough room (Di, 5.40). I like making rooms for my pets it gives me something to focus on (Di, 11.92).

Dipper's use of space also highlighted a deliberate strategy for managing attention and focus. It became evident in the way they created dedicated homes for their pets, constructed patterned geometric ceilings, and designed interconnected structures that gave their world a sense of coherence. These spatial arrangements suggested a methodical and intentional engagement with the environment. Linguistically, Dipper's use of phrases like "*I planned*" and "*I wanted*" indicated a comfort with setting goals and envisioning structured outcomes. However, this goal-directed behaviour was easily overridden when Dipper was interrupted, particularly when something emotionally salient occurred — such as the appearance of a new animal. In these moments, Dipper would revert to their habitual and emotionally soothing routine of building homes for animals. This tendency provided both comfort and a kind of attentional drift, often pulling them away from their original intentions as exemplified in the comment below.

In here I think I was going to put all my favourite blocks and items, but I got distracted (Di, 9.71) My friend gave me an allay egg, so I wanted to make a home for it then just forgot about this place (Di, 9.74).

By contrast, Dipper explored the resource world around their base and roleplayed with their animal NPCs when bored. They did not build structures out of boredom, thus suggesting that getting distracted by mining resources helped them assuage the temporary ennui (e.g., repetitive movements).

If I'm bored, I would just explore the resource world and just collect stuff if I think I would need it (Di, 16.142). In here is a place where I make big announcements to my pets sometimes if I'm bored (Di, 9.78).

Autcraft offered an environment where Dipper could build a world true to themselves and that they could call *Home*. Discussing what Autcraft represented to them, they said:

To me, it means a safe place (Di, 36.57). Being with people like me (Di, 37.60).

While Dipper perceived Minecraft as a “place to build and do whatever you want and be very creative” (Di, 32.26), Autcraft was where the magic happened. Feeling safe and surrounded by people who understood them, Dipper developed skills (e.g., academic) beyond the game’s mechanics while playing in Autcraft, they shared:

It helps me with math because when I build things I have to craft them, so I have to find out how much things I need, and I learned about coordinates as well (Di, 35.49).

Although Dipper seldomly answered questions [in class] in case they would say something wrong, after playing in Autcraft for some time, they felt more confident to talk, saying:

It helps me with talking to people without panicking well less than I did before (Di, 38.67). I answer more question still not a lot but more than I used to and if my friend is with her other friend that I don’t know before I would not have said anything but now I will (Di, 38.69).

Autcraft is organised around rules by which all members must abide. These rules are published on the website, and helpers and administrators monitor their applications. Rules in Autcraft are fundamental and have consequences. Breaking them can result in the member being banned from the server. The server’s rules insist on mutual respect, acceptance and celebration of human difference. Therefore, players generally follow them, thus making banning a rare occurrence. This positive alternative sharply contrasts with schools’ controlling and normative approaches. Dipper further explained:

In school you have to do what the teachers say and aren’t allowed to leave without a teacher’s permission but on Autcraft the rules are about not being mean and annoying people and cheating so those rules are important so are the ones in school, but they get very angry when you break one of the rules once well that’s what happens in my school (Di, 40.85).

Playing video games is a family enterprise in Dipper's home. Dipper shared that both of their parents like playing video games, gleefully saying:

Even my mum and dad like Minecraft (Di, 33.31). My dad plays lots with us (Di, 33.34). My mum likes Minecraft dungeons (Di, 34.36).

A shared interest in video games has weaved a supportive family dynamic, which helped Dipper learn from their older brothers in an entertaining, safe, and familiar environment, explaining:

My older brothers played the game a lot so I would watch them, and they would teach me how to play so I kind of grew up playing the game (Di, 33.29).

5.2.4. Summary

The most significant insight I gathered from my sessions with Dipper was how real the virtual world could feel, even to outsiders like me. Although this feeling of *immersion*, could be perceived as *escapist*, Dipper demonstrated that they were not escaping the physical world. On the contrary, they were unfolding their 'self' in this digital liminal space. Their base in Autcraft symbolised a lifeline, a grappling hook anchoring them in the present to project them into their future 'self'. In the Autcraft space, Dipper seemed to be able to manage their intentions (attention) and needs (distraction). Overall, Autcraft helped Dipper regroup and focus on the goal ahead (e.g., their future self) to learn to become a scientist and open a hotel for animals.



Figure 46. Dipper's themes and subthemes

5.3. Dave the Emperor

5.3.1. Introduction

Dave (Da) lives and attends high school in the United Kingdom (Figure 47). While they use the ‘Any/All’ pronoun in Autcraft, I will employ the ‘they/them/their’ form throughout this thesis.²⁹ Dave also enjoys playing a range of video games including *Doom*, *Blade and Sorcery*, *Gorilla Tag*, and *Animal Crossing*, all of which, like *Minecraft*, offer the option to mute the sound. Although they have intense sensory sensitivities to touch, smell, and sound, they explained that travelling to school by bus was not an issue, stating:

I have headphones music and my friend that I’ve been friends with since forever really, so it’s ok (Da, 73.2).



Figure 47. Dave the Emperor

Dave experiences autism through their sensory sensitivity, which they perceive as an asset. Discussing what their autism meant for them, Dave gave the following example:

²⁹ In agreement with Dave.

If I'm in a room, I am most likely able to smell a wide range of scents that normally people could not (Da, 55.17). I also don't remember people by face, I remember by smell and voice, but there is a few who I remember by face (Da, 55.17). Some is just day to day experiences with people (Da, 55.21). Everyone is different (Da, 56.25). Well, if I know someone well enough, I will remember them by face too, but if I don't then, it will be smell and voice (Da, 56.28). Sight is the strongest just smell is the only thing that not a lot of people experience, so that's why I link it with autism more and hearing is strong too just as much as smell. It's just that smell is more useful to me (Da, 56.31). Some days it's not working though like when it blocks or something, but a lot of the time it is normal for me but obviously since I'm human it varies day to day, but it's stronger than a normal person (Da, 57.36).

That said, Dave could easily recognise players in Autcraft, for their names hanged above their avatars. While their sensitivity to smell had no relevance in the on-line environment, auditory sensitivity remained a potential challenge. However, Dave described being able to manage it to some extent, particularly when sound served a functional purpose, such as detecting nearby mobs. They explained:

I can't smell Minecraft, and sight isn't a problem since I can make it how I like it (Da, 41.22). Hearing is sometimes a problem, but I need it to tell if there is a mob nearby (Da, 41.24).

Being diagnosed as autistic positively influenced Dave's life. It helped them connect with themselves. It helped others understand them better and adjust accordingly. Illustrating the long-term impact of the diagnosis on their life but also on their environment, Dave shared:

Life has changed a lot from my diagnosis like joining this server also general happiness has increased a lot and school and everything is easier than it ever was before. I used to have meltdowns every day in school before I was diagnosed (Da, 57.38). Also, other people knowing what to do and how to change

everything that they were doing wrong like sometimes they used to do it on purpose because it was funny to them (Da, 58.40).

Dave was especially drawn to the business and multiplayer elements of Minecraft and expanded their knowledge of construction styles and techniques by watching YouTube videos. Dave was the first player to respond to the advert on the forum. They were one of two participants who preferred communicating through Discord. However, Discord (voice) was only used in the first session. At 14 years old, Dave spoke like a consummate professional. I was astounded by their mastery of the game's most complex building functionalities.

When I first met Dave, they wore a purple skin from head to toe. I learned later that purple means the skin is protected against different attacks. They also carried a purple shield, a semi-transparent cape, and a black banner with a gold crown hanging behind their head. During our sessions, Dave hovered high above the ground or flew by so fast that they seemed to vanish, only to reappear further away. Dave, at times, appeared to split their attention (e.g., helping members, answering a player's question). However, they consistently maintained their train of thought and returned to our conversation exactly where they had left off, making their absences feel seamless. At the end of the first visit, I was so deeply immersed in Dave's world that I forgot the Empire was nestled in Survival. Feeling something behind me, not knowing what was suddenly happening, I screamed: "I just got hit, I'm going to die!" (Da, 28.223). My screen turned red (Figure 48) and a message stating, *You Died! Cici_Sparkle was slain by Phantom ~ Hard: (36168, 66, -14375)* appeared.

Once back in the Empire, Dave resumed the visit undisturbed by the mishap, "this house here was built yesterday, I think" (Da, 29.234), they continued. Nevertheless, another phantom decided I was easy prey. "I'm going to try to kill the phantom; give me a second" (Da, 29.238), they said, akin to a knight fulfilling their protector's duty.



Figure 48. Message appearing on the screen when the player dies in the game

Once our sessions were over, I had the opportunity to contribute to the Empire by gathering specific resources under Dave’s guidance. I will address these unexpected interactions in detail in another section (see [Chapter 5.3. Learning and Innovation](#)). Dave was so enthusiastic about the project that when I reposted the advert on the forum, they wrote: “It’s worth it,” publicly showing their support (Annex 17).

5.3.2. Dave’s World

We agreed to meet in the Autcraft lobby at 5 pm U.K. time. At 5 pm sharp, Dave hovered above me wearing a scintillating purple armour and a golden crown. Once I accepted their invitation, I landed in front of a castle where black banners bearing the effigy of a golden crown encased both sides of the entrance. I realised then that both represented the insignia of the castle, and that Dave was not wearing a crown but a banner reflecting their affiliation to the base, which they called the Empire. The castle sat as a fulcrum around which a formidable gatehouse stood vigil between the heart of the Empire and the surrounding villages. The castle was Dave’s pride, for they built it themselves (Figure 49).



Figure 49. The Castle is one of the two structures Dave built

Looking up at the concentric edifice dressed in grey bricks and wood slabs, I was intimidated. There was no drawbridge or moat. After we passed the curtain wall, we entered the enclosing courtyard before stepping inside the inner part of the building. There, Dave stopped, turned around and said:

I don't live inside of this castle, I live underground, underneath everything (Da, 4.27).

Giving me the tour, they orderly indicated which rooms were empty and why (e.g., moved content to another room, built the room but had yet to work on it, or needed to know what to do with it). Following Dave, we went up the stairs and walked through a landing decorated with armour stands before ending in a Meeting Room, which Dave explained was reserved for the members of the Empire. The room was spacious even though the ceiling was low. A long table made of quartz blocks dictated the seriousness of the discussions when the members leaned against the wooden doors, which served as the back of the tall chairs hanging around the table. The fire in the right corner crackled with a cozy whistling that warmed the coolness of the quartz. Under the vigilant eye of a red parrot perched on the edge of the impressive white furniture, bookshelves encircled the firepit, guarding the knowledge shared within the walls. (Figure 50).



Figure 50. The Meeting room in the castle highlights Dave's interest in the business sector

The staircase at the far end of the Meeting Room took us to a bedroom where bunkbeds hugged the walls and pink and blue rugs in a geometric formation cushioned our every step. Although stylishly decorated, nobody slept there (Figure 51).



Figure 51. The member's room, located in a hallway, conveys the notion of temporary stay, with guest members coming and going

Another level up, we reached a landing from which several construction sites could be seen in the village below. Since I was surprised to learn that the members were building the village for them, Dave explained:

I provide the resources and the money to build it, and they do it (Da, 8.61).

Although I could not see their face, Dave's voice carried a mature pride that no facial expression could have conveyed better. Sizing the persona, a warm leader with astute business acumen, Dave shared that they like building as much as running things, humbly adding:

I like building, but my skill isn't as high as the person who's building with me (Da, 8.65).

As everything was said, Dave took me to David's room. David is a non-playing character (NPC), a zombie who lives in a cell (Figure 52). The door was open; David was not in jail. Moreover, to assuage any concern I may have had, Dave clarified:

David's fine. He likes it in there (Da, 5.39).



Figure 52. Dave the Zombie in an open cell highlights the importance of freedom for Dave

Leading me to the top of a tower, a sort of keep overseeing the expanse of the Empire, Dave pointed towards the left side, showing me the windmill they had also built (Figure 53). When I asked Dave what their favourite part was, they said confidently:

Um – um, mostly like the castle with the walls (Da, 9.76). The walls and everything inside of it (Da, 10.80).



Figure 53. The Windmill is the second structure Dave built.

Back inside, there were several levels down below that Dave wanted to show me. We needed to use a water tube (Figure 54). Anticipating my difficulty, they explained warmly:

So, you're going to have to get out of this little water thing down here. When I get off because there are multiple layers and some players kind of get – struggle with it sometimes (Da, 11.94). Fall in the water and then come out the water when I get out of the water (Da, 12.96).

“Ok, fall in the water. Where is the water?” (Da, 12.97) I asked, becoming self-conscious about my apparent lack of basic skills. As I walked towards the stairs, they popped up and said, “Follow me!” (Da, 12.98). At that moment, I realised that the tubes were concealed at the feet of the stairs. Seeing Dave in the left tube, I jumped to the right. “This one. Not that one” (Da, 12.100), I heard them say as they came back up a little to make me understand that ‘this one’ meant the left tube, the one in which they were. However, I missed the exit and ended up two levels below.

Changing the order of the visit to accommodate my mistake, Dave offered to see that floor first before going upwards. We were now in a large, empty wooden room save for a corridor hosting rows of shelves with many Heads on display.



Figure 54. Water tube used to move between levels highlights Dave's command of the game's affordances

Dave showed me an impressive Head collection, sharing:

So, this is like, I haven't fully finished this room since it's mostly empty. But I do have a head collection. Because people – players collect heads on the server, and you can get like shiny versions of them that are rare. And this is my collection of them (Da, 14.112). Well, I mostly trade and buy them from people but do kill them sometimes. And then they've got all the different sheep colours. You can get shiny versions of all the different colours as well. To get like a like a shiny one you've got to kill like hundreds just to get one (Da, 14.116).

Off this room, we entered a particular place, the Vault, which is the room where Dave kept their most valuable artefacts, saying proudly:

And then there's the vault. It's just rare stuff but my favourite one is this book (Da, 18.148). It is signed by Gimini 2³⁰ (Da, 19.152). If you don't know who she is, she's like a famous YouTuber or something (Da, 19.154). I don't really watch her, but it's from her, it's rare so (Da, 19.156).

Going back up a level, we stepped into the Farm room, the heart and soul of the Empire. As I walked into the room, the term *Empire* took all its meaning at the sight of the industrial feat. Flying next to me, Dave revealed how they ran the base:

The Empire's more, we takeover part of land and put farms and we, I don't force people but I get a high amount of people working for me (Da, 16.128). Most of the time for free, which I do ask them if they do want payment and they always say 'No' (Da, 16.130).

As I illustrated above, Dave's expertise shines throughout each block of their base in Autcraft. Dave's extensive reliance on their technical skills laid bare a soothing process, which is detailed in the next section.

5.3.3. Dave's Themes

The predominant themes from Dave's sessions were as follows: *Leading with Skills* highlighted how Dave leaned on their business acumen, engineering competencies, expertise in automated farming to grow and develop their Empire. *Building a Community* demonstrated how Dave recruited new members and gave them a sense of belonging. *Learning and Innovation* reflected how Dave strategised the development of the Empire by designing learning opportunities to help the community grow. The data I gathered from working (playing) alongside Dave outside our sessions further substantiated these themes. A diagram presenting Dave's themes and subthemes is included at the end of this section (Figure 72).

30 Name was not anonymised since Gimini 2 is a public figure.

5.3.3.1 *Leading with Skills*

Building in Minecraft is not limited to adding blocks together. Players can add functionalities to their assemblages by including mechanisms (e.g., creating light, automatic doors, moving water). However, it requires some knowledge of electrical current, a domain in which Dave excels and plans to develop further through school to build a career. Discussing their future, they said:

I'd like something in electronics like computer electronics with soldering or just a general electrician since they also do that too sometimes (Da, 73.4).

Dave leaned on their engineering skills to respond to the demands of their growing Empire. The manufacturing facility displayed a high production efficiency, aiming to prevent any shortage of resources, thus ensuring the expansion of the Empire across newly acquired lands (Figure 55). Showing me various automated stations, Dave explained while giving me a demonstration:

This is my [cobblestone] generator. So, if I break it another one go, takes its place (Da, 16.130). Infinite (Da, 16.132). And then this one does [lava]. But it doesn't do it automatically. So, you put the lava up top up here and then lava drips down, so it's pretty much infinite lava (Da, 18.144).



Figure 55. Cobblestone generator demonstrates Dave's planning for an increase in members and the need to automate resources

Dave led me to the adjacent room and proudly pointed towards the right side (Figure 56), saying:

Um this is my super smelter. So, it connects a bunch of smelters, or furnaces. And all you do is put what you want to smelt in here, and you put the, flick the fuel in this one. And you flick both of these. And it will smelt ten times faster than anything else (Da, 22.182).



Figure 56. The super smelter demonstrates Dave's self-efficacy through their engineering skills

Next, we visited the Storage room, where a sophisticated logistics mod ensured Dave always knew what was in stock and in what quantities, allowing him to reorient production lines if one item was to be low (Figure 57). Dave explained while showing me:

Um if you're wondering why the other chests over here aren't labelled, they actually do have items in them. But I have a mod that I downloaded that tells me everything I have and which chest it's in (Da, 23.182). Tell me an item or a block and I – I probably have it. Name – name a random block and I'll (Da, 23.184) instantly find what chest it's in (Da, 23.186). "Uh Quartz," I said (Da, 23.187).

Here we go it's over here (Da, 24.190). Right here (Da, 24.192). The mod glows up the chest, like it puts like a border around it that changes colours to the one that I surge up (Da, 24.194). Out of the catalogue. So, the mod, it tells me everything I have in – in what quantities I have it. And I can search any item I want that I own (Da, 24.196). But I label these ones because it's very specific, so I don't bother putting them on the register (Da, 24.198).



Figure 57. The storage room with automated logistics shows that Dave sought storage optimization outside the game (through a mod) and integrated it into the game

Dave's interest in business, which they mentioned on the questionnaire, transpired several times. We entered Dave's trading room at the end of the underground visit. Although it was still under construction (Figure 58), Dave's eagerness to show me how it worked exulted in confidence, saying:

So, this room, you place the thing you want on the hopper, so you drop it on there. And the per – and the other person puts their stuff on their hopper. Then each person goes in the room and flicks this. When they're both flicked the items go to the other person's chest. This way, they can't scam you (Da, 22.178).

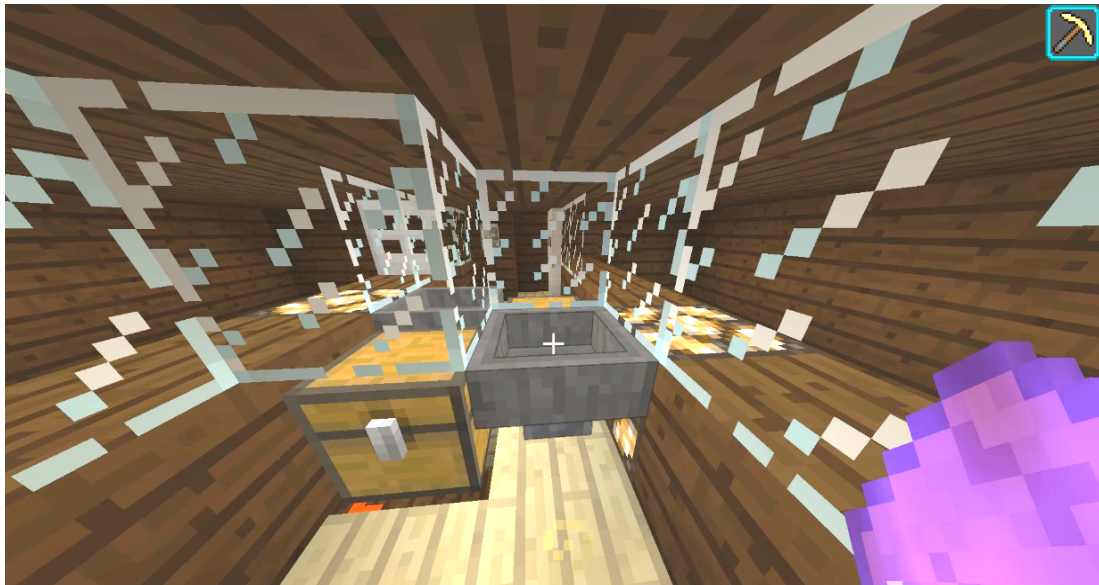


Figure 58. The trading room is another symbol emphasising Dave's interest in the business sector

Business transactions were daily occurrences in Dave's world. They were conducted with etiquette, even if they took place as a form of play. When I accepted to showcase some of my books in Dave's library, they assured me that:

You have 'build' permissions on my claim temporarily so you can put your signs for your books in (Da, 79.10).

Dave also owned a Taverne at Panda Alley Shopping Centre in Autcraft, where many other players created their shops. The tavern was built with the same blocks as the castle, bearing the Empire's black banner and gold crown, suggesting Dave knew about branding strategies. Autcraft members could visit Panda Alley anytime and buy food and refreshments at the tavern (Figure 59).



Figure 59. The Empire's Tavern at Panda Alley Shopping Centre shows Dave's business skills through marketing and branding

Dave's leadership through expertise also influenced the base's agricultural sector, which embraced automation to secure reliable and timely production, even if the Empire initially did not feed its people. Dave explained:

We don't feed people. We have food but we don't feed people because the people that we do have um provide their own foods to themselves. They have the option to use mine, but they don't (Da, 18.146).

Food is vital when playing in Survival. Players must eat to regain energy to defend themselves against attackers. Hence, as the Empire grew, Dave's strategy of associating perks with membership yielded returns; some members happily took on the free food offer. Consequently, Dave increased the industrialisation of the farming processes.

State-of-the-art farming techniques, such as vertical farming, hydroponics, and automated irrigation systems maximising crop yields, guaranteed production continued in their absence. Harvesting machines collected crops with outstanding efficiency. The Farm extended several floors, each partitioned based on the food produced (Figure 60). We walked around while a passionate Dave pointed towards the various sections, explaining:

This is my automatic cactus farm. It all goes into this chest. This one's cocoa beans. This one – one over here is blueberries. And all behind it all on the wall is vines (Da, 16.130). And this the melon farm. So, you see the little guys with the little faces? (Da, 17.138). So, when they see the little plant move, when it moves, a little melon spawns next to it. And the wood thing pushes it, and it goes into the water into the chest. And it's full. This one does the same but with pumpkins. And that one over there, which you don't really need to look at, but you can see it from the, um, this one does the same with sugarcane. So, when the sugarcane grows high enough, it breaks it (Da, 17.140). And then it goes down the stream (Da, 18.142).

The integration of these advancements helped many members who would have struggled on their own. Dave's approach positioned the Empire as a beacon of community in the world of Autcraft. Everybody knew Dave; many were eager to pledge allegiance to the Empire.



Figure 60. The size of the Empire's farm demonstrates Dave's planning skills in ensuring they can meet the demands of a growing community

5.3.3.2. *Building a Community*

When I entered the Empire, the first thing Dave said was:

I have members in my base, but they're not online right now (Da, 1.7).

I only grasped the meaning of this innocuous comment when I stepped outside the castle's walls and walked around the villagers' village (Figure 61). Dave was not alone in their virtual world. The castle was Dave's home. The Empire was home to the community. It extended beyond the castle's borders and hosted many players and NPCs (non-playing characters) living and working together. The community they had built was brewing with life. Showing me the expanse of their territory, Dave shared '*the main goal of the Empire*', explaining:

I get, well we or technically me, get as rich as I possibly can in the game, richest player on the server. And that will take about four or five years I um that dedicated I will breeze through it. And then I plan to get all my wealth and I plan to write a book. And the book will be 'If you find this book, you get all my land'. And if they find the book, they get all my land, my wealth, everything. At the end of those five years (Da, 32.256).



Figure 61. The Empire includes a villagers' village highlighting its scale and reinforcing the notion of an empire with subjects

The growth of the Empire appeared systematic, organised, and almost autonomous, echoing the effectiveness of the farm. Dave had a goal and a plan to achieve it:

Since I'm going to be here for five years this will be massive, like massive, massive. There will be like villages as big as this. Well pretty much this entire area, in different places are on the server. All claimed by the free and then I'll have people running those places for me. And then in those places people live there. And then they all report to me saying what's happening and everything. And then they would go to the meeting room in my castle, and we'd talk about it all (Da, 37.296).

The presence of landmarks such as a bank and a town hall further gave purchase to Dave's idea of developing a sort of 'auto-building' community built by and for its members (Figure 62). As they showed me the newly constructed town hall, Dave clarified:

This is [townhall] all built by GGGGGGG³¹ because the main builder, YYYYYYYY³² is taking a break from mc [Minecraft] at the moment but has put down plans for when he comes back (Da, 49.96).



Figure 62. The Town Hall, a structure built by members, demonstrates how the members co-develop the Empire while fostering a sense of community and belonging

31 Name was anonymised.

32 Name was anonymised.

Then, we reached another signpost, a giant purple tree resting splendidly in the middle of the village. Purple glass blocks complimented pink light blocks to form the leaves. Up close, the blocks seemed suspended mid-air, majestically defying gravity. It was the Magical Tree (Figure 63). The central location of the tree reminded me of the place held by churches in villages. A place of gathering. A place of safety. However, contrarily to most parts of the Empire, the tree did not have a specific function. Dave explained:

That's the magical tree. Big tree, mm (Da, 31.254). Um a---a different builder actually built this. Their name is FP³³. You can go inside the tree but there's nothing in there, there's an entrance right here (Da, 31.256). There's nothing in there though, it's just different floors all the way up (Da, 32.256).



Figure 63. The Magical Tree, located at the centre of the Empire, was built by member as gathering place, thereby underlining the significance of a sense of community

Down the path, we walked into a small building on the right, where Dave showed me another perk available to the community: the Game room. It included a pool table and a nought and cross-game (Figure 64). Dave said almost apologetically:

33 Name was anonymised.

I'm planning to add more games but there isn't much to add. Because most minigames are massive and require lots of work to build (Da, 31.250).



Figure 64. The Game room acts as another anchor for the sense of community

A sense of responsibility, agency, and freedom intertwined with Dave's entrepreneurial attitude permeated life in the community. They shared:

They [members] can take breaks whenever they want (Da, 66.103) and can pick what jobs they would like if they keep refusing to do a job I will only ask nicely (Da, 66.104) and they don't really need to at all the responsibility depends on how much the person want but a lot of it comes with [sic] (Da, 66.105) that its more people also working hard too. So, they sometimes follow them or copy them (Da, 66.106).

Endorsing their leadership role, Dave understood that, although they were also free, their (Dave) freedom was not a priority, saying:

My freedom is less [important] since I would have to do a lot more to even let the empire grow but I can have a break or do whatever when I want but I just don't (Da, 67.110).

Even though members belonged to the same virtual space, the Empire, they physically lived in various parts of the world, and therefore, different time zones, thus challenging social interactions between players. During my first visit, I stopped in front of several wooden signs, (Figure 65), which acted as communication devices. Realising I was not following, Dave flew back and explained their peculiar communication system:

Um so the signs that are here are for, because me and the builder, the main builder tend to not talk to each other in like, in game because we play at different times (Da, 28.222).



Figure 65. Wood signs are used as communication devices between community members living in different time zones

Flying and walking, both taken by the conversation, another wooden sign caught my attention. This one was used to provide feedback and bore the following message: *'well it looks amazing anyway WOW'* (Figure 66). Taking notice of my distraction, Dave patiently came back above me and said:

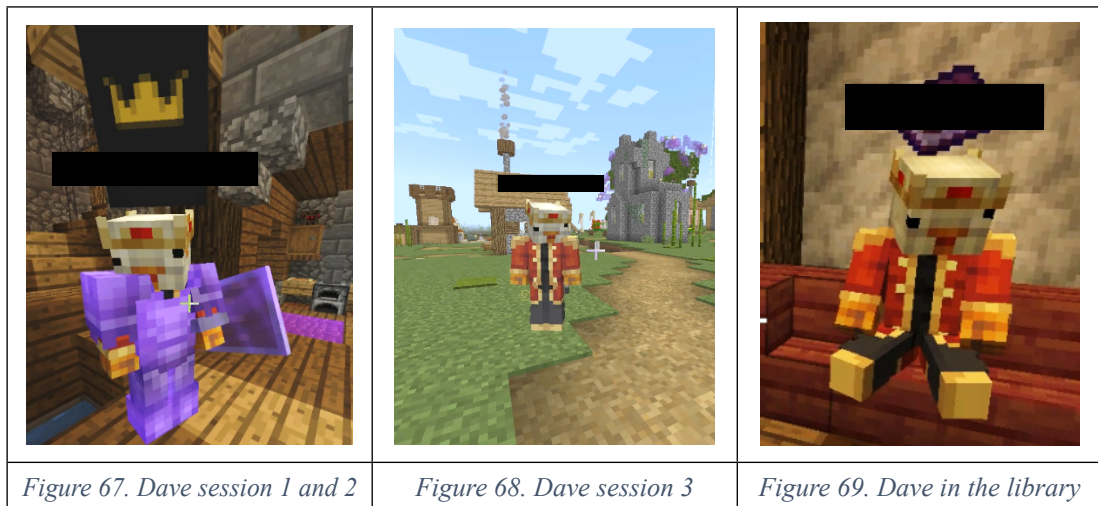
The sign there is me saying it looks amazing. Because they said it didn't look that good (Da, 35.280).



Figure 66. Dave also uses wood signs to provide members with encouragement and feedback on their builds

Players' names and skins also facilitate communication in Autcraft. Dave was dressed differently depending on the context. In the first two sessions, as they were coming back from fighting mobs, Dave wore a protective skin, hence the purple colour (Figure 67). However, in the third session, they wore their traditional outfit without the Empire banner (Figure 68) and in the library (see [Chapter 5.3. Learning and innovate](#)), they wore a purple book in lieu of the banner (Figure 69). Intrigued by the variation of skins, I asked Dave if their skin had any meaning. Dave simply replied:

I want them [members] to think seriousness since it is a king but also like a creator since the chicken makes the egg that's what I think people might think but it can be whatever people want (Da, 62.76).



5.3.3.3. *Learning and Innovation*

While Dave seemed to recruit new members quickly, they also understood that recruiting alone would not suffice to sustain the community in the long run. Hence, Dave ingeniously developed activities to weave a sense of togetherness into the community fabric through learning opportunities. They created a Game room (see [Chapter 5.3. Building a community](#)), several training areas, and a library, which included a tavern and an auditorium.

Members needed to survive many mob' attacks to enjoy life in the Empire. To survive, they had to learn how to feed and defend themselves. Dave solved the former by offering free food and the latter by designing training areas.

Over here is meant to be like the training area where you like you smack them. You know but I don't really have anything to. If you want like a zombie, I would just it here, but I don't have infinite zombies (Da, 36.288). And the reason that there's the little rocks here that go up and down is because it's a shooting area. So, they stand in here in this little booth and then they shoot at the target. And the rocks make it harder to shoot (Da, 35.284).

However, Dave was quick to specify that training was a solo endeavour:

And you can't fight players so they can't actually like train with each other so instead they've just got to smack this. It isn't that good but. I wish we could like fight players, but it gets too toxic (Da, 36.290). Yeah, they banned Bed Wars³⁴ because of that. They had like a Bed Wars minigame on the server, and they got rid of it because of that (Da, 36.292).

Weeks after our last session, Dave invited me to visit the Empire's library. On the outside, the library was a colossal statue representing an Emperor standing with wide open arms (Figure 70). There was no door. Players ought to be invited to enter the library, after which they could 'record' the place (/sethome) to come back.



Figure 70. The Library building represents a space for knowledge exchange, where members can lend books they have written to other members of the Empire

At the entrance, the librarian (NPC), with an advert above its head saying '2 new books every 2 weeks', welcomed me from behind its desk. A cosy feeling permeated the place. Lines of shelves striated the room, which nicely complimented the two-colour wood floor and wool carpeting (Figure 71). Dave was waiting for me, sitting on a sofa next to the reception area, turning their head towards me as I materialised. Since I had also created a library in Autcraft, Dave offered to exchange books and showed me the shelf dedicated to that effect, saying:

I find that those books being around the server may help people (Da, 81.28).

34 Game offered in the world called 'MiniGames' in Autcraft.



Figure 71. The Empire's Library (inside) conveys a realistic atmosphere

Dave needed books for the library, thus decided to discuss the library project with their librarian at school. Enthralled by the idea, she donated copies of books that Dave transformed into Minecraft books. Additionally, the library showcased books Dave had written:

I'm writing little stories for the younger kids of Autcraft to read (Da, 64.92).

While pursuing the tour through a few rooms adjacent to the library, such as the auditorium (Annex 18), the Monarch's Market (Annex 19), and the Library Tavern (Annex 20), we had a detailed and engaging conversation about the new bookshelves being introduced in version 1.20 of Minecraft. The exchange stood out to me for its tone, pace, and the dynamic it revealed. For that reason, I have reproduced the full dialogue below. To provide some context, earlier that same morning, I had a comparable exchange with my son around a Minecraft functionality I was trying to optimise. In both conversations, a distinct divergence in perspectives emerged — one focused on pragmatic limitations, the other on potential and aesthetic possibilities. That same dynamic was reflected here in my interaction with Dave:

R: You know apparently, we'll have real bookshelves with 1.20 coming out on the 7th (Da, 81.33).

P: That may be true, but they store so many books most libraries on the server will be very small (Da, 81.34). And people stealing them is easier than ever (Da, 82.35).

R: Yes, but I think it will still be nice to have real shelves. Now hopefully it is still manageable (Da, 82.38).

P: Also, with the real shelves it is also awkward since you can't tell what book you are going to pick up unless you placed it there (Da, 82.40).

R: Maybe there'll be a way to prevent stealing the books, but I guess here in AC it's not so much of an issue (Da, 82.41). Have you checked how they are? I haven't, I just read it and FunMummy³⁵ told me the other day. I'll have to look more into it (Da, 82.42).

P: Yeah, it doesn't tell you what books are in it just tells you that there is a book in it (Da, 82.43). And you can't read the books without taking it out the shelf unlike a lectern (Da, 83.44).

R: Ah yeah, I see how players would just take the books then, forgetting they have them. Humm we'll need to come up with a way then... (Da, 83.45).

P: Lectern (Da. 83.46).

R: Ahahahahah yeah, but I mean a way to secure the books when using the new shelves. Or maybe these would fit better a bookstore kind of place (Da, 83.47).

35 Name of senior helper member used with their authorisation.

P: If it's a bookstore then they can easily just take the book unlike a lectern (Da, 83.48).

R: I hear you. I got the issue. I just would like to have the best of both ahahaha (Da, 83.49).

P: If it's a private library then I understand that (Da, 83.50). Like the use of the shelves (Da, 83.51).

R: Yeah, maybe you're right... maybe I'll be able to just create my own big library (Da, 83.52).

P: I would use the shelves for like records but other than that I wouldn't really use it for anything else other than décor (Da, 84.53).

Learning, for Dave, seemed indissociable from doing. In the first session, Dave had volunteered that building was not their strong suit, so they relied on friends who were more talented to build but also to teach him, saying:

So, what they do is they kind of teach me while they're doing it and I help them along (Da, 8.67).

During the farm tour, Dave went to great lengths to explain the various processes and offered a few demonstrations:

The observer sees it has grown too far and then tells the piston to move and break the 2nd lowest part of the plant (Da, 45.56) and then it falls into the water and into the chest room and I can show you later if you want (Da, 45.59). See (Da, 45.61). The pressure plates stop the water going back on itself and make it go forwards only (Da, 46.62).

In between sessions, I helped Dave gather some of the resources the Empire needed. It allowed me to observe them endorsing the role of instructor. Unfortunately,

our first time working together failed. Collecting sand was easy enough. Doing it while being attacked by enormous spiders was sensorily too overwhelming for me. I proposed gathering iron from my land in Peaceful mode instead. At the end of our second session, considering my sensory triggers, Dave asked me:

Would you mind changing the resource that you are gathering (Da, 69.130)? Iron is getting back to a stable level so it's not as needed anymore, but gold is starting too so do you have a problem with pigmen, they can't hurt you in anyway (Da, 69.132)?

We both went to the farm, where Dave taught me while demonstrating how to do it.

Along with learning by doing, trial and error was another fundamental element in Dave's learning process. The most eloquent example transpired in our conversation regarding walkthrough videos. As most gamers do, Dave watched many YouTube videos to progress in the game. Although information about Minecraft is widely available online, identifying its validity can be daunting. Dave explained:

Well now I know just by looking if it's fake or not, but back in the day I would test it and if it didn't work then it was fake (Da, 67.116). Well after all the times I have got it wrong over the years all the information that I gathered I can judge by that and tell if it's a mod because it doesn't look polished like Minecraft but also sometimes it's just a thing that I know they would never add (Da, 68.122).

Down memory lane, Dave reckoned with their journey in Minecraft, highlighting how the game had changed and how their perception of it had evolved:

Well, it was harder then but back in the day it was the only game I had to play so I just had to deal with it, and I stuck (Da, 59.52). But also, it was more pleasing to the eyes and when I first started it was a much simpler game (Da, 60.55).

Furthermore, Dave was aware of joining Autcraft's positive influence on their academic learning. Even though Dave could not explain how they did it, they shared:

Well instead of taking business [in school] I'm doing this and doing just as good as if I were to take it and my English lessons have increased in grades ever since I joined (Da, 64.87). I don't know but since I joined [Autcraft] my grades have increased by a lot even though nothing changed in school (Da, 64.89).

5.3.4. Summary

Dave's business acumen and technological savviness were evident throughout their base. While their experience could easily be framed in terms of 'interest', Dave consistently demonstrated that it was their awareness of personal strengths — and, perhaps more crucially, the ability to draw on those strengths as needed — that supported their capacity to learn organically. In this way, it was not simply interest that fuelled their engagement, but the dynamic use of ability in context. Thus, building a complex industrial site on their base highlighted how they strategically used their skills. At the same time, their desire to surround themselves with a community of players whose skills complemented each other underscored their leadership drive. In addition, playing in Autcraft gave Dave insights as to how they could marry their skills with their professional aspirations.

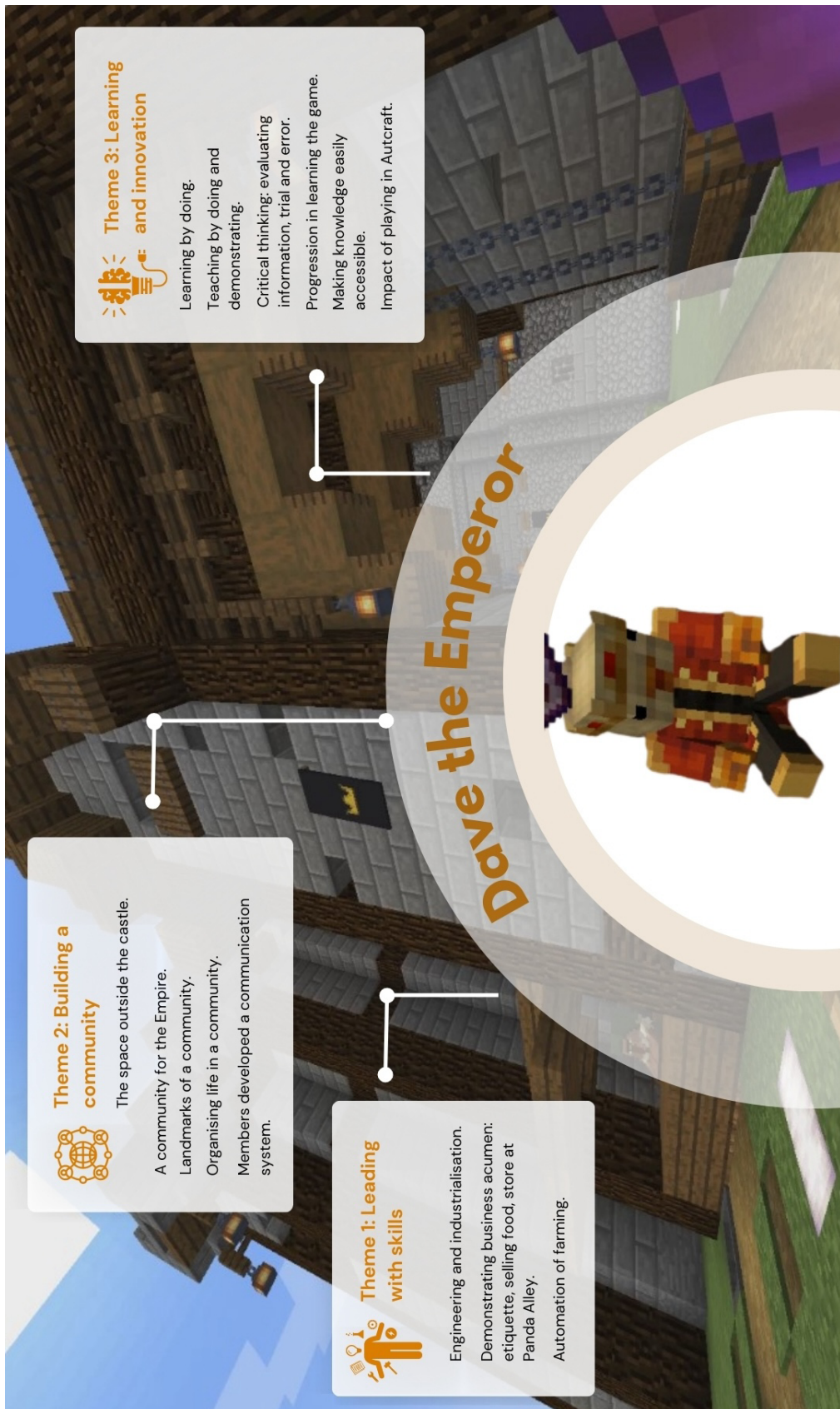


Figure 72. Dave's themes and subthemes

5.4. Alex the Advocate

5.4.1. Introduction

Alex (A1) is a heart-warming teenager who faced more than his fair share of pain. He lives in the United States, and although he has siblings, they do not live together. He is open about his autism and often shares his experience on the Autcraft forum (Figure 73). Interestingly, Alex was the only participant who said not having any sensory sensitivities. Explaining how being autistic made him feel different, he said:

I'm a very unique person, to begin with (A1, 13.118). I'm very different compared to most of society, and I'm even different in my own family (A1, 13.119). I have autism (though it's like light autism, it's not severe) (A1, 13.121) but my family members do not have autism (A1, 14.122). I'm an introvert and shy at heart (A1 14.129).

I'm not officially diagnosed with dyspraxia, but I do have some trouble learning (unless it's math related), and I need a bit more understanding about what's going on- which is why I'm not a sports person either, but I do my best to learn things. I also have trouble listening at times, which is a huge part of why it affects my learning.

Figure 73. Alex openly shares his learning difficulty without fear of being judged, which highlights how safe he feels in Autcraft

The pervasiveness of this sense of otherness was almost palpable in the words Alex put together on his keyboard. The feeling seemed to always lurk in the shadow, ready to cast its darkness even when he was with family members.

I'm not able to talk well and do less activities than my siblings (A1, 14.127). I still do some activities but not as much as they did, since I have autism is hard (A1, 14.128). It can sometimes be hard, but they [family] help me (A1, 14.124).

Over the years, Alex encountered significant challenges in school. His difference made him a target for bullying by peers. The daily taunts, mocking, and exclusion tolled his self-esteem and made school difficult for him to navigate.

Although my impairment is definitely 1 reason why, the bullying I get faced with also impacts me, because I don't wanna get judged. But tbh I don't really care what I say. Because I'm free to express myself (A1, 32.33).

Feeling isolated and desperate for respite from the relentlessness of being perceived as an outcast, Alex turned to the virtual world. One day, while exploring various online communities, he stumbled upon Autcraft. The description of the server intrigued him. It promised a safe and inclusive space where he could play Minecraft with others who understood his experience; Alex filled out the registration form on the Autcraft website. From the first day, the Autcraft community embraced him with open arms, and although he was the only person in his room, at that very moment, he was no longer alone. As Alex recollected his first experience in Autcraft, he shared:

It helped me know that there are still good people, and that we care for each other, I aint gonna let anyone down (A1, 42.119).

In all our sessions, Alex wore a simple black and white skin and was the only participant whose Head did not feature eyes or mouth. However, his skin reflected his passion for mathematics (Figure 74), particularly π ³⁶, because it was, as he said, “my fav number and one of the first irrational numbers” (A1, 40.101). Although he was an aficionado, his base was devoid of mathematics symbols and relatively unsophisticated. Alex explained:

Well Minecraft is not too much about math really, unless u talk about loot drops and such (A1, 21.18). Like for example, what is the probability of getting 10

36 Anonymised to protect the participant's identity.

ender pearls from 139 gold (trading with piglins). You use stats and a graph to calculate that (A1, 21.22).

While Alex played Minecraft for about ten years, he was an Autcraft member for less than a year when he signed up to participate in this research.



Figure 74. Alex's avatar

5.4.2. Alex' World

As I logged in to Autcraft at the agreed time, I received a private message from Alex saying: "Ready for the tour?" Landing on his base, I saw on the top of my screen: Welcome to Alex's Place, the math land. We both crouched to greet each other, and Alex shared before we started:

Btw, a few people live in my base, so don't mind the other names (A1, 3.23).

Like most places I visited, the tour started in the storage room (Figure 75), where a collection of banners and Heads were showcased on the left wall (Figure 76). As Alex turned towards the banners, he said:

Those banners are from other players, as anyone is free to decorate. I do this because there is uniqueness (A1, 4.25).



Figure 75. Alex's storage room is where the visit started

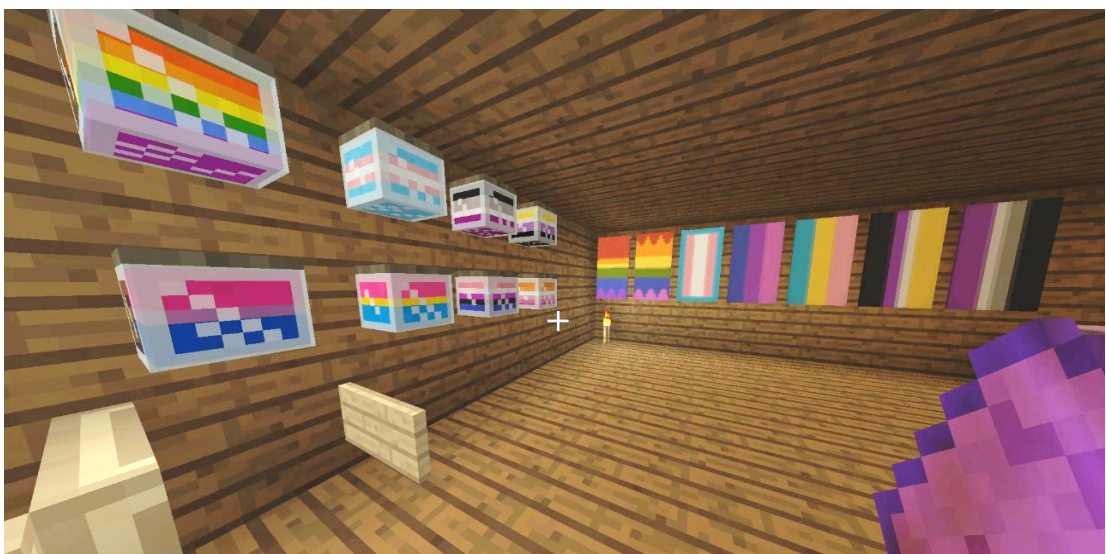


Figure 76. The wall showcases banners from hotel residents, demonstrating Alex's commitment to creating a space members can make their own

At the end of the room, Alex showed me a wall filled with wood signs, which he was using to credit the members who had contributed to the community somehow (Figure 77). Most members on his base shared the storage room, and the name on the sign locking the chests signalled their ownership.

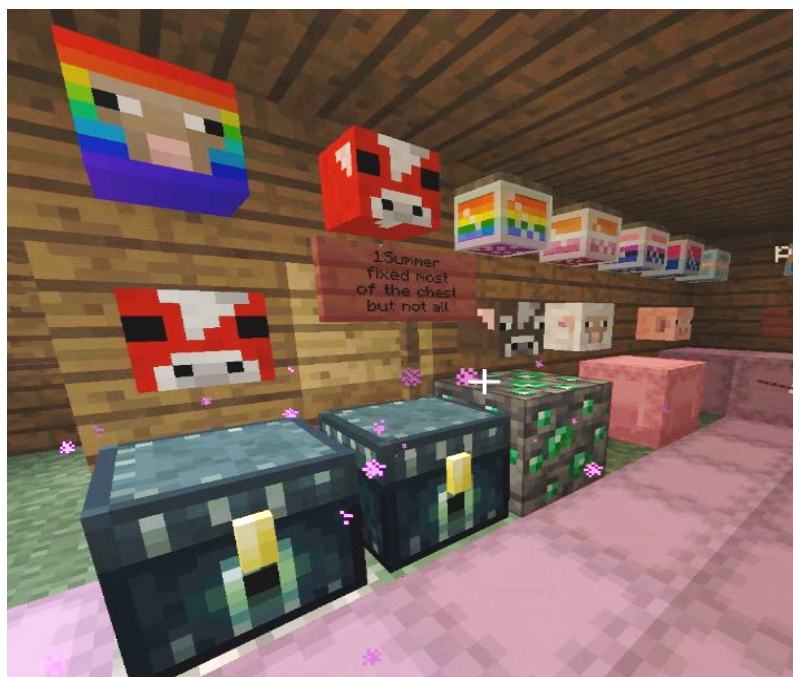


Figure 77. Credit given to a member emphasises the notion of providing personal space to hotel residents

Stepping outside the storage room, Alex turned around to point at an imposing structure (Figure 78). When I asked why the building was so tall, he said, “Because so I can accommodate other players (A1, 8.67).” Feeling I was not fully grasping his meaning, he added: “Think of it like a hotel (A1, 9.69),” before adding:

I believe in helping people which is why I created this, and you don’t have to pay anything to stay here, although any donations are greatly appreciated ofc :D (A1, 9.71).

Mesmerised by the size of the building in front of me, it took me a while to realise that Alex was trying to get my attention, jumping up and down and waving his right hand next to me. Once I did, we walked inside the hotel.

Mirroring Minecraft’s beautiful landscapes, the hotel’s architecture incorporated colours that brought the virtual world to life. However, there were no windows. Wood signs with motivational quotes similarly ornated the lobby of the hotel.



Figure 78. Alex' Hotel

Then, we climbed to the first level using an automated wood ladder. A series of beds rested against the room's right wall, followed by chests locked with wood signs. Colourful banners hung on the left side. Various Heads protruded from the wall next to the beds, and meaningful posters (e.g., Autcraft, Human, and Spread Kindness) decorated the wall next to the ladder (Figure 79). The hotel offered many levels still 'in construction'; hence, we did not visit them. Alex explained:

Each room by default is empty and so players can customize it (A1, 9.74).



Figure 79. Alex uses inspirational posters to create a safe environment for the hotel residents

In step with each other, we climbed the ladder again to reach the top of the building, where Alex said the view of the base was breathtaking. The ride up was long and fun. It was pitch-black when we accessed the roof. I barely walked two steps when I heard a strident noise; a giant phantom was approaching rapidly, and I was its target. At the sight of the threat, I instinctively sought protection behind Alex and his shield. When he asked me if I was “ready to go down? (A1, 11.87) or enjoy the view” (A1, 11.88), I was already gone, waiting for him one level down.

We exited the ground level hotel through a hidden trap (Figure 80). A few seconds later, Alex joined me, saying, “And that’s the tour of my base” (A1, 12.96). Checking the time, I realised we had been together for an hour and apologised. Before leaving, Alex turned towards me to say:

Don’t feel like you’re spending too much of my time. I am glad to do these :D (A1, 17.151). Aww thanks u made my day! Glad to meet you too :D never really done this before but this is awesome (A1, 17.155)!



Figure 80. We use a hidden ladder to exit the hotel, which contrasts with the size of the building

As described above, Alex's desire to help others infused every part of his base more than his passion for numbers could ever do. In the next section, I closely examine Alex's experience.

5.4.3. Alex' Themes

Alex's experience illuminated three significant themes. *Communicating Differently* illustrated how Alex understands and addresses his socialising difficulties. *Facing Bullying* captured how he capitalised on his traumatic experience to help others. Lastly, *Rebuilding Himself* highlighted how Autcraft helped him regain faith in others to heal himself. A visual summary of Alex's themes and subthemes can be found at the end of this section (Figure 86).

5.4.3.1. *Communicating Differently*

Whereas Alex said communicating and conceptualising ideas on paper was challenging and making school assignments difficult, still he found solace in journaling, saying:

Sometimes when I'm writing an essay for English, I sometimes write very unclearly, (or I don't write it at all) (A1, 32.36) but I have it in my heart, it's just sometimes it's hard for me to say it (A1, 32.37).

Moreover, playing Minecraft in Autcraft offered him a way to communicate on his own terms, sharing:

Since I have socializing issues (not severe), I have trouble communicating with people, and that's why I struggle learning subjects in school (a lot is communicating and words) unless it's math (A1, 31.24). Sometimes I write a journal (alone) (A1, 33.40). It's where I can clear my brain without other people, it's not that my parents are judgemental or mean in any sort of way, writing and expressing my thoughts without anyone in sight seems to help (A1, 33.41).

Alex spread messages of kindness, empathy, and understanding throughout his base's virtual walls. Anti-bullying posters adorned the corridors, while wood signs acted as bulletin boards displaying heartfelt stories and inspirational quotes such as, *'Remember to be your kind self, be yourself and to stay strong'*. Other signs reminded members of the rules: *'Please do not edit or remove the signs, thank you'* (Figure 81), thus ensuring that everyone who entered felt respected and safe.



Figure 81. Inspirational message - helping hotel residents heal

Further down, the communication board became a space to support others through sharing his personal journey with his members (Figure 82) or to entice them to be respectful and set boundaries (Figure 83).

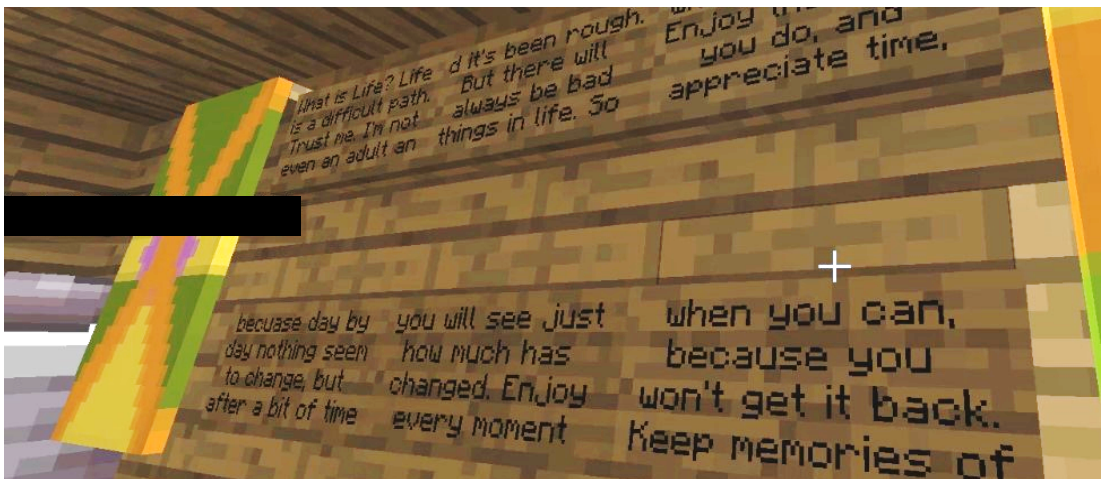


Figure 82. Alex shares his personal journey as a way to heal himself



Figure 83. Alex establishes boundaries for the hotel residents

5.4.3.2. Facing Bullying

On another wall, the message became personal. Alex yearned to share with his fellow players what he had learned so they would know what to do if they were bullied in the physical world (Figure 84). He wrote:

What is bullying? To sum it up, it means people saying or doing very mean things. I have been bullied many times. Find my experience written on these walls. It's hard, including me, but I promise after a while, they will stop bcoz they won't find it "fun" when you stop reacting. The reaction is what they want.

Figure 84. Alex shares with the hotel residents what bullying means to him

The impact of bullying seemed to reinforce Alex's communication difficulties, he explained:

Sometimes when my parents tell me how I got bullied, it's not because I'm afraid to say it, it's just saying it isn't very clear, or I don't say it at all. But it's in my heart (A1, 33.38). The world is not a safe or nice place. And getting faced with bullies is not a new thing for me (A1, 15.136).

When we were discussing the freedom Minecraft offered in the regulated environment of Autcraft, Alex was concerned that I might view him as an oppressor and said:

Well AC has some rules so there's some experiences that I want to say and share and talk about certain topics, but to respect the rules there's some things I can't say, but outside of AC I say what I think. Now don't view me as a bully after this (A1, 48.166), I just want to express myself like talk about things outside of ac (A1, 48.167).

Nonetheless, the support Alex continuously received in this virtual community allowed him to slowly find his voice, speak out against bullying, and advocate for others facing similar hardships. Inspired by his unwavering belief in the power of kindness, he embarked on a mission to create an inclusive haven within Autcraft. Therefore, Alex built the immense virtual hotel on his base with sheer determination and countless hours of effort.

5.4.3.3. Rebuilding Himself

Many Autcraft members faced similar challenges, providing Alex with a level of understanding and acceptance that he longed for in the physical world. In Autcraft, he discovered a newfound sense of belonging, a space where he could be himself without fear of judgment or mistreatment. The camaraderie and support he experienced when playing on the server seemed to act as a shield against the bullying he endured in school. Describing what Autcraft meant to him, he shared:

I rate Autcraft a solid 10/10. Autcraft means everything to me, as it's the only safe place I can join without being bullied (A1, 15.131). With the world being full of bullies (in my school) it's refreshing to see good people on this server. I

can't imagine without this server (A1, 15.132), and as the whole world in general, glad to see there is still hope (A1, 15.133). It [Autcraft] helps me because there are bullies, and I can spend time in a safe place and learn stuff. And it does help me cope better (A1, 15.135). I should have joined earlier had I heard it earlier (A1, 15.136).

Through his interactions with other players, Alex gained confidence and developed coping strategies to deal with bullying in the physical world. Being a member of the Autcraft community helped him realise that it was possible to meet kind people and that the hurtful words and actions of others did not define him, he explained:

It really touches my soul that there are kind-hearted people somewhere out there. As you know, some people aren't very nice or even creepy (A1, 22.28). [In Autcraft], everyone is my friend. It's like we're a whole big friend group (A1, 6.42).

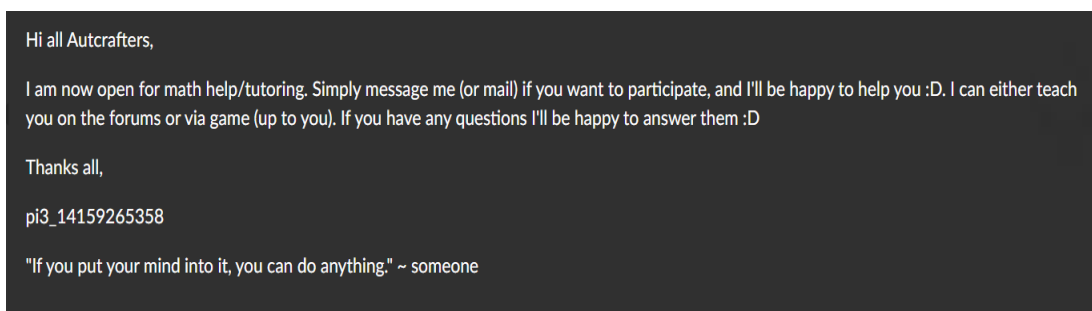
With time, he learned to appreciate his strengths and embrace his unique perspective while developing new skills and making new friends. Although the game, that is, the affordances of Minecraft, kept Alex engaged for the past ten years, playing in Autcraft also transformed him.

Because it [Minecraft] was an endless amount of opportunities – whether you wanted to make a simple house out of wood or build Hogwarts – the choices are endless. You could build whatever you thought. Unlike other games (A1, 38.85). And endless amount of opportunities means endless amount of fun, which meant hours of playing on end lol (A1, 38.86). It [Autcraft] made me more open, knowledgeable, and free to explore whatever I wanted without fear. It changed me 180 and made me view things very differently, so yea Autcraft made a huge impact on me, and I've only played on for 10 months (A1, 41,42.114). It also helped me make more friends online and better irl [in real life], like I said, I was less shy and more fearless (A1, 42.115). It made me appreciate life more, and to never give up, never gonna let you down (A1, 42.118).

Through building his community, Alex seemed to have ‘rebuilt’ himself and be able to confidently assume the responsibilities inherent to having members on his base. He perceived his responsibility towards his members in terms of following the rules in Autcraft. In similar veins, Alex had to establish and reinforce his own rules. In our conversation, he particularly emphasised the notion of private property. He explained:

Especially no entering my place or touching my stuff without asking. I’m very strict about that, and I don’t like it when people do that (A1, 46, 155). I get a bit agitated (A1, 46.157). And originally, I didn’t mind but because some people don’t respect my privacy at all or are using my stuff irresponsibly, I have decided to put that rule, and that applies to everyone (A1, 47.160).

After a few months of playing in the Autcraft community, Alex started to initiate interactions with members. Leaning on his passion, he placed an advert on the forum where he offered to help players with mathematics (Figure 85).

A screenshot of a forum post on a dark background with white text. The text reads: "Hi all Autcrafters, I am now open for math help/tutoring. Simply message me (or mail) if you want to participate, and I'll be happy to help you :D. I can either teach you on the forums or via game (up to you). If you have any questions I'll be happy to answer them :D Thanks all, pi3_14159265358 'If you put your mind into it, you can do anything.' ~ someone".

Hi all Autcrafters,
I am now open for math help/tutoring. Simply message me (or mail) if you want to participate, and I'll be happy to help you :D. I can either teach you on the forums or via game (up to you). If you have any questions I'll be happy to answer them :D
Thanks all,
pi3_14159265358
"If you put your mind into it, you can do anything." ~ someone

Figure 85. Forum post – Alex engages with and gives back to the Autcraft community by offering support

5.4.4. Summary

Notwithstanding his trauma from being repeatedly bullied, which could not be divorced from his experience, Alex held his autism responsible for his socialising difficulties and, therefore, his challenging communication. Building a haven on the backdrop of his traumatic experience allowed him to lean on his story to empower others who, like him, were in similar situations. As Alex became an advocate for those who suffered terrible fates, Autcraft provided a different way to express himself, using wood signs to heal himself.



Figure 86. Alex's themes and subthemes

5.5. Space the Architect

5.5.1. Introduction

Space (Sp), interested in the research, contacted me via the Autcraft chat. She completed the questionnaire the same day and emailed me, saying, “Hello, I just finished the survey 😊”. Then, we scheduled the first session. Similarly to Dipper, Space used emoticons suggesting she was keen to start. She did not authorise me to contact her parent; however, at the start of the second session, when I reminded her that she had the option to pull out from the research, she stated:

I told my mum about it, and she was fine with it so I don't think I will pull out as I personally really think your research is interesting (Sp, 27.12).

Space participated from New Zealand. Living on an island in the middle of the Pacific Ocean has a *verso*. Going to school is not a ride but a voyage. Even though Space said, “I don't like being touched and especially not on my back and I don't like crowded areas” (Sp, 33.63), she enjoys the daily journey using public transport, saying:

I catch a ferry to school and walk of a morning (Sp, 18.151). And then in the afternoon I walk, catch the ferry and then catch the bus (Sp, 18.153). I love public transport (Sp, 19.162). I can sit look out the window and listen to music on my phone (Sp, 19.163). Sometimes I'm so distracted I forget to press the stop button xD (Sp, 19.167).

When I first met Space, I saw a teenager like the many I had seen rushing out of their high school at the first sound of the bell. Her dark eyes overflowed into her black hoodie and trousers, while her blue tennis shoes screamed that patterns could, or rather, ought to be broken. Under the hood, her shiny, long blond hair flocked her shoulders, and a cortege of dazzling lights moved alongside her (Figure 87). This explosion of bright colours pulsated like wings when they appeared on Space's back and formed a shield when they gathered before her. The flying snowdrops were so dense at times that I could barely see her when she turned her back or when she hurried. When I compli-

mented her skin, Space answered, “My normal one is a Minecraft version of my irl [in real life] self” (Sp, 44.162). While Space was mostly jittery and constantly in movement, she was also unmoving and inert, as she had gone somewhere, leaving her body behind. Consequently, her presence seemed fluid, fluctuating between moments of deep attention and intentional distance. Our sessions danced to the rhythm of these oppositions.

Space had no members; her base was hers alone. She could not avoid the crowd of loud bodies and screaming teachers at school, but she was safe here, even if she shared her base with a friend. The social and individual layers intertwined when Space explained that Autcraft was soothing because:

It’s the fact that I don’t know anyone in real life (Sp, 17.143). It’s a way that I can be myself without being worried about being disturbed (Sp, 17.144).

Art seemed therapeutic for Space, who sketches building ideas and draws on her iPad at night when she cannot sleep. She shared:

I use an iPad daily for art (Sp, 21.177). It’s a great way to document your day (Sp, 21.178). I draw late at night (Sp, 21.182). When I can’t sleep (Sp, 21.184). I have my iPad on night mode (Sp, 22.189). It makes me calm and happy (Sp, 31.50).



Figure 87. Space’s avatar

5.5.2. Space's World

It was 8 a.m. in Glasgow when I was thrown into Space's Heads room, where she welcomed me. Located underground, the Heads Room was stylishly organised in a crescendo of importance. Landing in that room was not random; It was where Space awakened and fell back to sleep each time she played. It was where collectables guarded her memories and faithfully reminded her of what she had achieved thus far. She explained:

Well, there things I'm proud of and I often log off down here so when I login I'm reminded of all the cool things on the server (Sp, 3.24).

Space's artefacts were time capsules. The elaborate basement was a museum of some sort where she squirrelled away an impressive collection of Heads (Figure 88). The entire room was made of pinkish wood, which is not easily accessible in Minecraft, suggesting effort and attention to detail. Space did not fight to get those Heads, admitting, "Nope lol I bought most" (Sp, 2.11). Pinkish pillars partitioned the area like invisible walls between long aisles of blue carpet. Heads were not the only pieces on display; an assortment of jars shared the stage, while posters and awards ornated the walls. Space pursued the tour, babbling away:

These are all my admin heads (Sp, 4.26). Some are old admins, and some are new admins (Sp, 4. 27). And there's also my pride jars and my among us (Sp, 4. 28). They were given to me for player of the week (Sp, 4.31).



Figure 88. The Heads room, located on level -1, was the first room Space showed me during the visit

Following her lead, we descended an illuminated staircase made of white light blocks before entering another Heads room. Its centre hosted a splendid fountain from which four water pathways extended to the room's corners (Figure 89). The symmetry and refinement of the design offered an exquisite display that could have easily betrayed a colossal endeavour had she not created the entire area in just 3 hours. Space did not rely on a model or a plan; she did not even sketch the room before building it, saying: "Nope, just off my brain" (Sp, 3.18). She was fidgety, flying or spinning tirelessly amidst the stillness of the neatly aligned rows of Heads. Turning to me and flying down to stand on a block she had just placed in front of the wall she wanted me to look at, Space raised her arm and pointed to one head in particular, saying, "The unknown head up here is my rarest head, I think" (Sp, 3.16).



Figure 89. The Heads room on level -2 demonstrates how Space connected the four corners and created a sense of direction

Then, Space led me up another flight of stairs harbouring golden light blocks on its sides. Once outside, we faced an imposing bamboo gate revealing the fortress character of the surroundings (Figure 90). Looking back at the structure overhanging the Heads room from which we had emerged, I saw that the entrance was small and modest compared to the expansive galleries concealed inside. I could trace the edge of other buildings behind the gate, which, haphazardly organised, contrasted with the regiment of bamboo. Flying straight up to appreciate the base from higher ground, a tall, dark building caught my attention. It stood imperially on the right side. We passed it. Space wanted to show me something else first.

Making sure I knew which construction was hers, she explained, “Over here, I have my bridge house” (Sp, 4.33). The bridge house was not simply a bridge between two buildings. It was not only an alley carrying passersby from one side to the other; it was a suspended garden where crops grew (Figure 91).



Figure 90. The bamboo gate at the entrance of the Heads room protects Space's precious collection, which serves as a token of her continuous progress

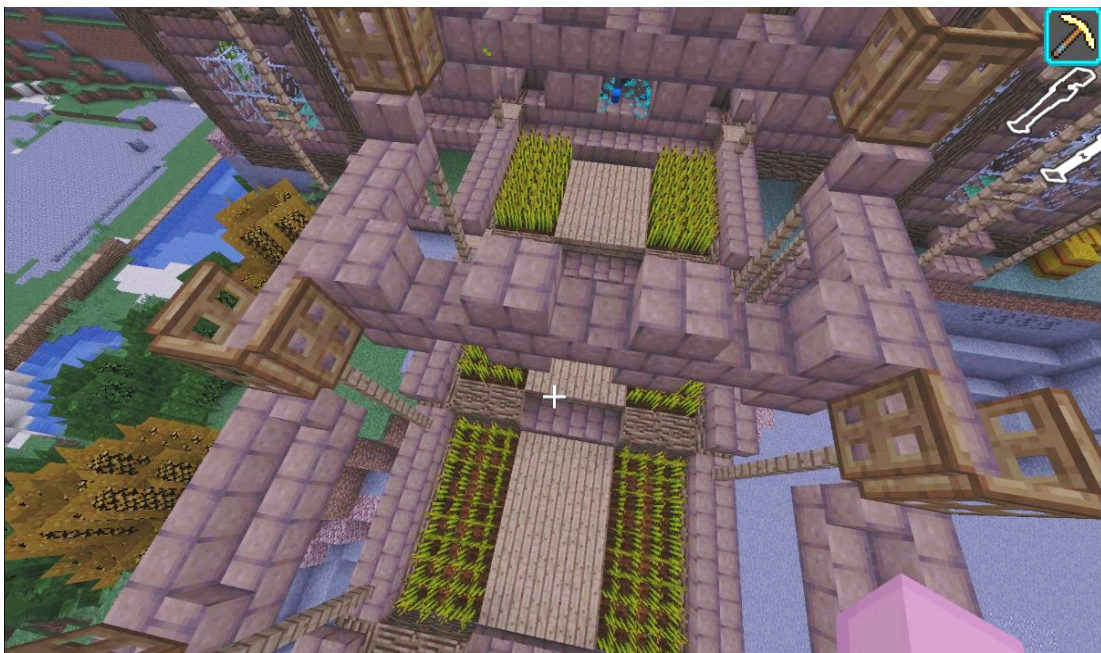


Figure 91. The Bridge House further illustrates how Spaces connects distinct areas of her base, making them one

Next, Space led me to her *exploding tree* (Figure 92) while explaining, “I’m planning on building a tree that explodes and is on fire high up into the sky” (Sp, 6.43) be-

fore confessing that “It isn’t quite finished yet” (Sp, 6.45). The tree extended into four imposing branches of roots akin to the fountain in the Heads room (Figure 89). When I inquired if the tree had any particular meaning to her, Space replied, “Not really, it’s just something cool like the Tardis at spawn” (Sp, 6.48), referring to a building in Autcraft modelled after Doctor Who’s phone booth and where players gather every Saturday to acknowledge and reward the ‘Player of the Week’ elected for their good deeds by the community. Nevertheless, I could see the imprint of Space’s constant struggle in each block.



Figure 92. Space’s Exploding Tree contrasts with the linear organisation of the adjacent crops, highlighting the overlap of two opposite forms

A freeway of vegetables was growing next to the bursting wood. Organised and disciplined lines of crops juxtaposed the unruly tree (Figure 93). As I contemplated her vegetable garden, Space flew around, jumping from one spot to the next, leaving a trail of shiny particles with every flap of her wings. Flying towards the next landmark, we reached a vast expanse where a larger farm was nestled. Space’s base included several farming sections. Looking down at the rows of carrots, she said, “Unlimited food storage” (Sp, 7.56).

However, since Space created her world in peaceful mode, she did not need food to sustain her avatar. Realising I was confused, she clarified, “I hate not having things in line” (Sp, 8.67).

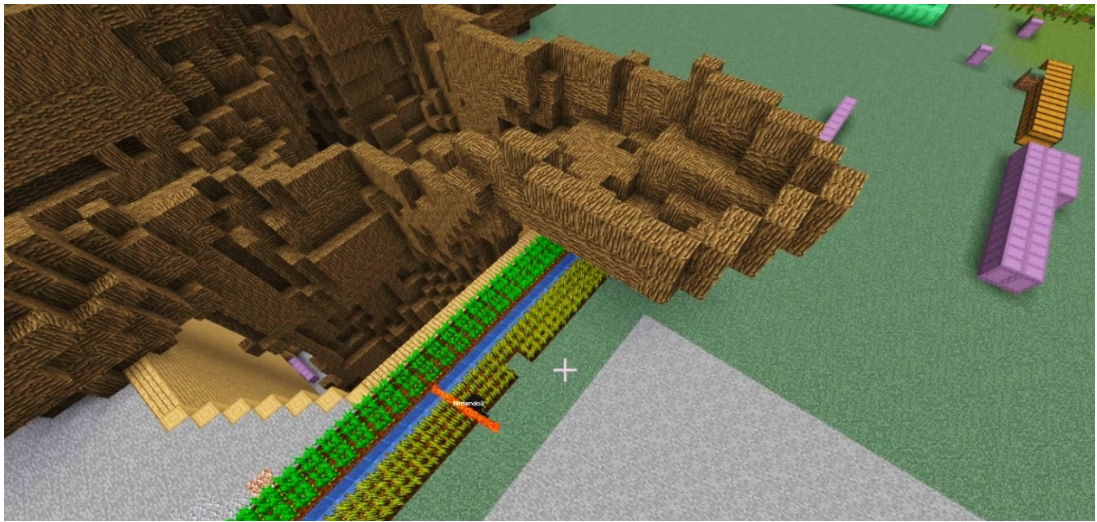


Figure 93. The freeway of vegetables offers another view of the contrast tree's form and the alignment of the crops

Eager to show me the *clou du spectacle*, she hastened around the corner and swiftly flew away, saying, “Let’s go to my castle now” (Sp, 9.71). Reaching the staggering structure a moment later, I hovered in a circle, trying to find a way in until Space poked out of a tiny opening at the bottom. The entrance had three little gold-framed doors wide enough to allow one avatar to step in. “So, this is my castle, it is the first thing I ever built” (Sp, 9.72), volunteered Space as I walked in (Figure 94).



Figure 94. The Castle includes a bridge connecting two towers, emphasising Space's design choice to avoid separation

The sun shining brightly through the many windows reverberated against the luminous blocks. Blue carpet in the shape of an arrow led the way; however, contrarily to the Heads room, the castle was considerably thought out as Space explained, “I started by planning all the towers out and then I built it layer by layer” (Sp, 9.76). The belly of the castle was an elaborate architectural feat marrying polished textures with vibrant colours to create the illusion of rooms, for the palace had no doors. Still, it was empty except for the odd presence of a small living room in the left corner (Figure 95), which Space described as “one very lonely sofa” (Sp, 9.78).

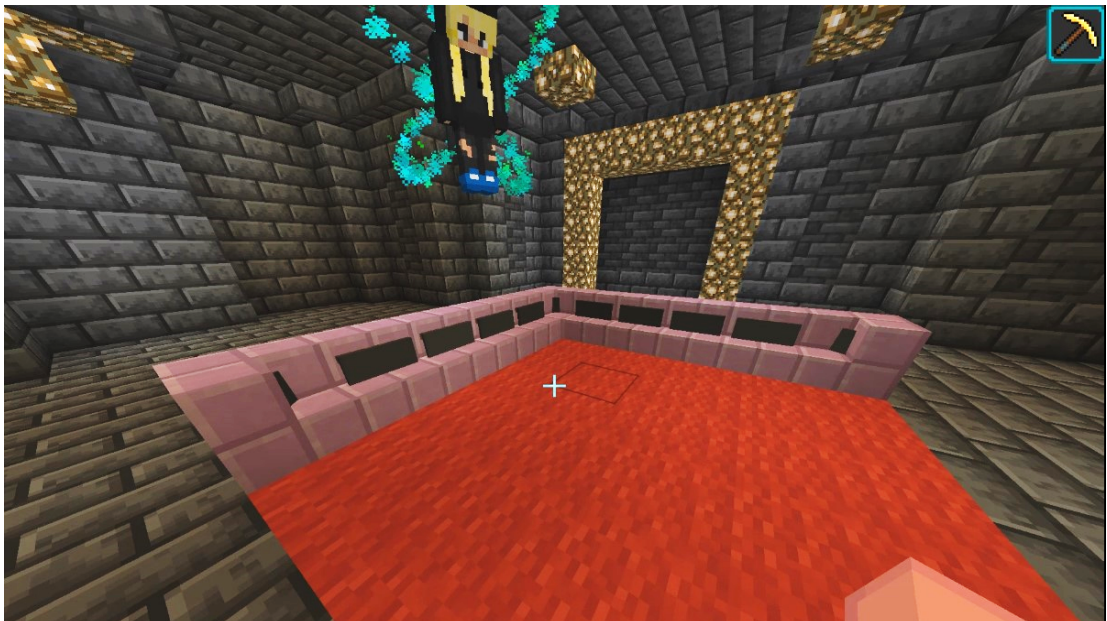


Figure 95. The Lonely sofa highlights the emotional dimension embedded within Space's castle

As the visit went on, Space nudged me to her Pride tower (Figure 96). Feeling a thrum of excitement, I was stunned. “This is spectacular!” I wrote in awe. While her bedroom's dry walls, she said, were unbearable, a soothing tapestry of colours embroidered the inside of the tower. It felt like entering a waterless rainbow held together through the sheer power of Space's emotions. Yellow, orange, red, purple, blue, and green wool blocks scaffolded towards the sky; We were flying into colourful clouds.



Figure 96. The softness and warmth of the wool blocks used in the Pride Tower contrast with the hardness and coolness of the stones used to build the castle

As I have related above, Space's world exemplifies how she navigates her inner duality within two different worlds, even if, at first glance, they seem to antagonise each other. The segmented organisation of her base, the disorderly tree, and the geometric layout of blocks are a few expressions of dualism, which the next section explores in greater detail.

5.5.3. Space's Themes

Scrutinising Space's data brought to the fore three salient themes, such as *Reconciling Two Ways of Being (Autism and ADHD)*, *Moving Between the Virtual and Physical Worlds*, and *Becoming is a Lifelong Journey*. These three perspectives authentically characterise how she intuitively juggles the constant oppositions in her daily life and converts them into motivational devices which encourage her to become a better version of herself. Space's themes and subthemes are illustrated at the end of this section (Figure 98).

5.5.3.1. Reconciling Two Ways of Being (Autism and ADHD)

Space was first diagnosed with ADHD (2019). The autism diagnosis came about three years later (2022) (Sp, 38.104). That said, the autistic label seemed to have only confirmed an inner knowledge, for Space was aware of her autism, saying, “I was only diagnosed at 12 so all my time has been known to be autistic” (Sp, 28.22). Although the diagnosis allowed Space to receive more support, it also reconciled the dissonance she felt between her self-awareness and the perception of others, explaining, “It was really hard before as I always was thinking that I had it but I wasn’t diagnosed with it” (Sp, 37.100).

Space shared that she feels her autism through her sensory sensitivities, more particularly, in her “brain” (Sp, 34.77) and “ears” (Sp, 35.78), explaining:

When the class is screaming and I’m hearing the teacher talking on top of the people coming and out and then people talking to me all at the same time (Sp, 35.84). I think mainly like some things irritate me much more than other things (Sp, 36.90). And it also depends on how much I’ve achieved in the day (Sp, 36.91).

Provided my research concerned with the autistic learning experience, she described hers at school, stating:

I find it’s really hard to study for exams and to be able to commit to doing things (Sp, 28.23). Such as doing my homework every day (Sp, 28.24). I find it hard to keep on top of things that I’m not interested in (Sp, 28.25).

Space is also ADHD (attention deficit hyperactivity disorder), the inattentive type, she clarified. She described the challenge associated with this neurodivergence as “mainly just focusing on thing” (Sp, 37.98). Even though she cannot always distinguish her experience of autism from one of adhd, she gave me tangible examples to help me understand:

My autism mainly affects my social ability (Sp, 15.132). So, in small groups and with my friends I'll be fine, but when I go to crowded places or concerts, I often become overwhelmed and need to wear my headphones (Sp, 16.134). It's also quite hard to find and keep friends (Sp, 29.27). My adhd side basically isn't there when I take my medication but I'm extremely unsettled and unable to concentrate when I'm not on it (Sp, 16.136). I speed up my talking so much that sometimes I can't even remember what I was saying (Sp, 39.118).

To express how she felt her duality of diagnosis Space often resorted to drawing as illustrated in the picture captured from her own YouTube channel (Figure 97). Contemplating the two aspects of herself, Space shared an interesting perspective, saying, "I find autism has the stereotype of bad behaviour and ADHD has the stereotype of craziness" (Sp, 38.110). Moreover, the general formulation of the above statement could indicate Space's intention to distance herself from the painful lived experience. Nevertheless, she went further to explain how being autistic and ADHD affected her learning, adding:

It's really hard to do study after school hours after being at school all day (Sp, 16.138). It's hard to focus on study and when I have exams that's really hard (Sp, 16.141). It's even harder when teachers don't understand autism and what stimming is (Sp, 29.26). For example for school I always am getting overwhelmed from things (Sp, 35.79). But not at home (Sp, 35.80).



Figure 97. Space's self-portrait foregrounds her dual diagnosis of autism and ADHD

Since Space built her base in Peaceful mode, she did not need food; still, she built a few farming areas, one of which undercrossed the path of the exploding tree (Figure 93). The straight lines of crops contrasted with the wildness of the tree. She explained, “I hate not having things in line” (Sp, 8.67), suggesting how Space reconciled the two opposing forces in her physical world.

5.5.3.2. Moving Between the Virtual and Physical Worlds

My sessions with Space highlighted a spatial fluidity. She moved between the virtual and the physical worlds with ease and purpose. Space’s buildings had barely any doors but plenty of windows as if to ensure that wherever she stood she never lost sight of the other world. Each dimension often offered a soothing area offsetting the struggles presented in the other. In other words, Space seemed to intentionally use the virtual and physical worlds to counterbalance each other.

The underground museum (Figure 88), where I first landed, appeared to act as a liminal zone between Space’s physical and virtual worlds, where she could dust out the remnants of her physical life before stepping into her unpolluted digital home. It was the beginning and the end, the starting and exiting door into the virtual as much as the physical world. The vertical and multi-layered organisation of the Heads rooms alluded to a hierarchical order when Space showed me a specific Head, saying, “The unknown head up here is my rarest head, I think” (Sp, 3.16). The deeper we went, the more valuable the Heads became. The more concealed they were, the more the place conveyed a sense of secrecy where collectables, tokens of both virtual and physical achievements, guarded her memories.

Like most players in Autcraft, Space gathered a great collection of Heads. However, she scarcely fought for them, saying, “I bought most” (Sp, 2.11). Buying Heads may reflect a strategy to avoid the sensory challenges of fighting mobs. Likewise, she did not create the posters on display. Whilst designing posters is not sensorily taxing, it requires investing time. Space circumvented the time constraint, saying,

“I bought them” (Sp, 3.20). Buying items often takes place on the Autcraft website, which requires stepping outside the game environment.

During the Pride Tower visit (Figure 96), I wondered if the tower had any particular meaning since it reflected a more centralised build than her base’s fragmented arrangement. Space answered, “Idk, I like how all tall they are, they make me feel good about my buildings” (Sp, 11.90), which contrasted with the fear of tall buildings she described when discussing her sensory sensitivities:

Nothing with sight (Sp. 33.65). Other than tall buildings (Sp, 33.66). They scare me (Sp, 33.67). Not so much in my city but the capital city of my state is the biggest city in Australia, but it’s full of 100+ story buildings (Sp, 33.69). I’m not scared of heights but for the building I am (Sp, 34.72).

Sometimes, players looked for tutorials on YouTube to select and plan their designs, suggesting that their building projects started in the physical world. Other times, their builds mirrored their spontaneous creativity, indicating that they started in the virtual world. Not all Space’s constructions required planning. When I asked her if she had planned her collection rooms, given the sophistication of the design, Space said, “Nope, just off my brain” (Sp, 3.18), further demonstrating that the complexity of structure was not an indication of pre-thinking. On the other hand, the castle’s construction was thought out and organised, as Space shared, “I started by planning all the towers out” (Sp, 9.76). That said, planning can occur at any point and in both worlds. Considering Space’s exploding tree (Figure 92), she already planned the next phase of the build, saying, “I’m planning on building a tree that explodes and is on fire high up into the sky” (Sp, 6.43).

Space built part of her base following ideas from other players and helpers in Autcraft. By involving other players who were themselves in their physical world, Space could merge both dimensions. The exploding tree exemplified this exchange;

Space shared, “I got the idea from one of the sr helpers” (Sp, 6.51). A senior helper also inspired the pride tower: “FunMummy³⁷ gave me the idea” (Sp, 10.83).

Additionally, Minecraft seemed to act as a point of connection between the game’s virtual dimension and the physical dimension through the engagement of Space’s family, as she shared, “My brother showed me it [Minecraft] and I thought it was cool (Sp, 41.138).

Space showed her true self through her Avatar’s appearance; in that sense, it also characterised the intentional movement between the two worlds. Discussing her choice of skin and how she wanted to be perceived by the other players, Space explained:

Well, it’s how I met people (Sp, 45.165). A nice person (Sp, 45.167). I like being kind (Sp, 45.169).

Minecraft became a social catalyst as it offered a subject of interest to Space that resonated with others, describing it as the most significant benefit of playing the game, she explained:

I didn’t have friends (Sp, 43.153). I didn’t know how to make friends really until high school (Sp, 43.155). I just kinda matured and met the people who are just like me (Sp, 44.160). Well, when I used to hate my 2 best friends [in the physical world] we both now are all best friends (Sp, 45.173). Like it gives thing to me to talk about (Sp, 46.175).

Exploring the meaning of Autcraft, that is, the server rather than the game, Space underscored how Autcraft nurtured another synergy between the virtual and physical spaces, saying:

37 FunMummy authorised me to use her name.

It gives me a safe space to be myself (Sp, 46.182). Well, I know that everyone else is like me in some way (Sp, 47.184). It's important to me because I have so many friends on here [Autcraft] (Sp, 47.186). It's something happy I can think about (Sp, 48.196). The calm rooms are really good for stressful moments at school (Sp, 49.208).

Minecraft offers gamers a great deal of customisation. However, this requires evaluating the options and making choices. In this regard, Space's approach was simple, "I use just the basic game so I can just press a button to start the game" (Sp, 51.221). She did not follow a specific strategy. Instead, her choices seemed to be based on her current needs, which at times conflicted with the Autcraft's rules:

I just do what I want to do like rn I'm building something but in 10 min time I could be mining (Sp, 52.227). It's great to be able to do what I want (Sp, 52.229). But sometimes, it's not so great as I can do bad things without knowing. That's why rules exist (Sp, 52.231). Sometimes it [the rules] is annoying (Sp, 53.239).

However, on one occasion, the border between the virtual and physical worlds disappeared and both dimensions simultaneously occupied the same space. Addressing the difficulty of respecting rules that annoyed her the most because they went against her sense of freedom, such as 'the mad rule' (in Autcraft) and 'the pet count' (in school), Space blurred the line, saying:

The no getting mad rule and the pet count (Sp, 54.246). Because sometimes you can't control getting mad (Sp, 54.248). Well, you can't bring pets to school [pet count] (Sp, 55.252).

At other times, the virtual and physical dimensions alternated between foreground and background, as Space said, "Can you give me 1 sec? I need to put my dog away" (Sp, 53.235). Although, in some cases, it might reveal a personal strategy to satisfy the need to step away from an overwhelming situation, Space was collected

and assertive during the session. Hence, I believe she truly needed to take care of her dog. Regardless, this anecdotal evidence further exemplifies how both dimensions can seamlessly intertwine. Metaphorically, Space's bridge house (Figure 91) seemed to bring to the fore the latent duality of her experience as she toggled between living in a physical world where, normativity obliges, she ought to wear a "restricting" school uniform and a virtual world where, creativity commends, clothes were skin, sound could be turned off, and touching the ground was unnecessary. Sharing her struggles with sensory sensitivities, she explained:

I don't like loud noises (Sp, 12.103). And a lot of textures (Sp, 12.104). I don't like tight things (Sp, 12.105). Mainly my school clothes or dresses, the material is always not soft on my skin, and it's restricting (Sp, 13.108). I mainly wear my sport uniform as its softer but at least once a week I'll wear the shorts and shirt (Sp, 13.111). It also is hard to not get a sore neck with the blazer in winter (Sp, 13.113).

Autcraft features music that plays intermittently, but Space said, "I don't have the sound on" (Sp, 14.116), adding, "I often have a YouTube video playing in the background so I can focus on Minecraft" (Sp, 14.118). Another instance of Space using the physical world to avoid overwhelm in the virtual one occurred during a well-being checkpoint in which I ensured Space was not distressed by the session, she replied, "I'm fine (Sp, 22.191). I put the good doctor on in the background" (Sp, 22.192).

Conversely, for the second session, I offered Space to choose between two formats; either she invited me to her base, or we stayed on our respective bases while exchanging via the private channel. She said: "Alright I'm just going to do the farm job and talk to you in chat" (Sp, 27.15), which indicated she leaned on her virtual space to mitigate the impact of our interaction. As Space described the challenges she faces every day in school, she also demonstrated how Autcraft could inconspicuously integrate the physical world to act as stress management device, thus emphasizing the bi-directionality of the movement between the two dimensions:

School can be a nightmare (Sp, 15.127). It's really hard school (Sp, 29.29). There are so many more people crowding into one place, on top of having a big class and a disruptive one too (Sp, 29.31). It makes getting stuff done really hard (Sp, 29.32). But when I'm home and listening to music I can get so much done (Sp, 29.33). I often use Autcraft to calm down (Sp, 15.129). Autcraft is a calm environment at this time when I mainly get home from school (Sp, 16.140).

Inquiring more specifically about how nightmarish her experience was, Space underscored two significant aspects: the sensory difficulties associated with her autism and ADHD on the one hand and the inadequacy of the teaching on the other, as she explained:

Well, there's so many people running around like crazy and screaming on top of the bell ringing (Sp, 17.146). They [teachers] also give you no homework and then you get dumped with heaps when you come to high school (Sp, 19.160). It's crazy, they also don't prepare you for exams (Sp, 19.165). And also, not looking at people in the eyes (Sp, 17.148). Full body listening is a big thing in my school (Sp, 18.154).

When I heard the term *full body listening*, I presumed an approach in which teachers learned to decipher their autistic students' body language. Regrettably, my assumption was wrong, and Space clarified:

Eyes looking at the teacher, legs crossed, hand on your lap, back straight, being quiet (Sp, 18.156).

Whereas Space described how technology and access to Minecraft were part of the learning support offered, the indubitable dichotomy between the school's notion of *full body listening* and the state's accommodations available to autistic high school students was incoherent. In this context, the term *accommodation* suggested a problem-solving model which implied a problem be identified rather than accommodating

a learning difference in order to prevent the problem from occurring in the first place. Space explained:

I'm lucky enough to get a modified exam to make the word count smaller (Sp, 20.169). We were aiming for laptop provisions as it makes it much easier for autistic people (Sp, 20.171). I type much easier than I do write (Sp, 20.175). Autistic students in my state are likely to get theirs (Sp, 20.172). I personally use a laptop for school as I can then play Minecraft (Sp, 21.179).

5.5.3.3. Becoming is a Lifelong Journey

The pervasiveness of being '*unfinished*' in "Over here is my unfinished exploding tree" (Sp, 5.41). It isn't quite finished yet" (Sp, 6.45), "Over here is the town hall (Sp, 7.58). It's empty at the moment as there's still moving stuff in" (Sp, 7.59), "So, this is my castle, it is the first thing I ever built (Sp, 9.72). It's not finished yet" (Sp, 9.76), could have been attributed to the 'open' nature of Minecraft if it had not highlighted a parallel with Space's individual journey. Together, they revealed a persistent movement forward without ever reaching a final completion stage akin to self-actualisation. Moreover, Space changed her name thrice (3 variations) throughout my research, signalling her continual evolution.

Amidst the incompleteness, Space injected the past into the future as if to impregnate time with the possibility of going back and seeding the unknown into the known. For example, the towers were significant to Space because, as she said, "My first build was a tower" (Sp, 10.87), suggesting that being the first structure ever built was as important, if not more, than the tower itself. This movement between past and present was similarly epitomised in the Heads room, where each piece reminded Space of what she had achieved thus far while motivating her to go forward. She explained:

Well, there things I'm proud of and I often log off down here so when I login I'm reminded of all the cool things on the server (Sp, 3.24).

In our last session, Space told me she liked the series ‘The Good Doctor’ in which Murphy, who is autistic, becomes an excellent surgeon, and let me in on her lifelong dream, sharing, “I want to be an architect (Sp, 30.37). I’ve always loved designing things” (Sp, 30.40). Paradoxically, she also shared that the sight of soaring skyscrapers sent shivers down her spine. Although Space said, “I’m not scared of heights but for the building I am” (Sp, 34.72), nonetheless, the city behemoths that mesmerise the world seemed to hold her captive within their grasp, unable to escape the overwhelming dread that these grand edifices trigger. Nevertheless, I sensed that Space understood that beyond these giants’ sheer magnitude and scale lies the art of balancing beauty, functionality, and human emotions. A perception that infused all her buildings, thus demonstrating that architecture could also act as a therapeutic device, helping her cope as much on the ground as high in the sky.

Learning is often non-linear and frightening. The tree exploding from its roots towards the sky like a caged animal straining to burst out and free itself from all earthy restraints in a cry for freedom (Figure 92) seemed to symbolise how Space experienced the transition to high school:

They [teachers] also give you no homework and then you get dumped with heaps when you come to high school (Sp, 19.160). It’s crazy, they also don’t prepare you for exams (Sp, 19.165).

The tree was disorderly, disparate, and desolate. However, like Space, it stood alive, firm, and determined. Its untamed and unpredictable allure highlighted a non-chalant symmetry that exuded a sense of direction similar to Space’s drive to achieve. When discussing her Pride tower, Space explained, “And I’ve always loved rainbows (Sp, 11.88). I like rain and like seeing rainbows when it’s raining (Sp, 11.92). It makes me feel happy (Sp, 12.97).” The rainbow crossing the sky reminisces the journey of the self from an individual drop of water to a collective rain, transforming the lonely grey drop into a warm stretch of colours when shining together through the light.

In her journey to becoming, Space considered Minecraft as a partner she leaned on to grow, which eventually became a testament to her resilience, saying:

My Minecraft experience has always been my goto things (Sp, 40.122). It gives me so much to do in so much time (Sp, 40.124). Well, the years of effort I've put into the game (Sp, 41.133). I played when I had no friends, and my friend was Minecraft (Sp, 41.134). It's like it was the thing I always looked forwards to doing (Sp, 42.144). I was on it all the time (Sp, 42.145).

When I inquired about her friendship with the game, Space clarified, saying, "It wasn't really a friendship it was more something that I loved doing" (Sp, 43.151).

Space plays other games (e.g., *Stardew Valley* (Barone, 2016), *Astroneer* (System Era Softworks, 2019)). Targeting some of her difficulties, they seem to help her elaborate strategies to deal with the challenges of the physical world, hence bringing to the fore Space's duality between her needs to face her struggles and her will to reach her goals. For example, *Astroneer* is a space sandbox building game where players are astronauts building on a planet unlike Earth. Likewise, Space follows YouTubers (e.g., Parrot (2020), ClownPierce (2020)) demonstrating the skills she wants to develop. ClownPierce, for instance, showcases gameplay videos on a Minecraft server where all players have superpowers but him. Still, he can influence the world despite being powerless. Alternatively, *Autcraft*, a constant element in Space's life, seems to extend its positive impact to her embodied physical world by offering a counterbalance, as she said:

It makes change easier (Sp, 48.200). It's something that doesn't change (Sp, 49.202).

5.5.4. Summary

During our sessions, Space was perpetually in movement or totally immobile. This back-and-forth motion between two opposing ends sipped through the various layers of her experience. Her dual diagnosis of autism and ADHD, which Space per-

ceived differently, associating her sensory sensitivities to her autism and her lack of focus with her ADHD, translated into a duality between two ways of being. The juxtaposition of the physical and virtual worlds further illuminated how Space seamlessly navigated to and from while using one world to ease the other. In like manner, time was fluid, one foot anchored in the past, the other flying ahead; Space mined her base with memorabilia, tokens of her past achievements and omens for future ones. Aware of her struggles, Space seemed to play video games geared towards her difficulties, thus demonstrating that rather than avoiding sticky situations, she practices overcoming them.



Figure 98. Space's themes and subthemes

5.6. Patterns of meaning across cases

5.6.1. Introduction

A second layer of understanding emerged from comparing the analysis of each participant's experiential statements. It brought to the fore themes that transpired across the four cases and made explicit the fluidity of movements taking place between the particular of each individual experience and the whole of the participants' experiences of playing Minecraft in Autcraft. While these themes overlapped in many instances, they did not always correspond to the exact wording of each participant. Hence, the transversal themes presented below reflect conceptual dimensions shared by more than one participant rather than all. Thus, each superordinate theme corresponds to a broader umbrella which encapsulates the connections, divergences, and convergences between the participants' narratives, furthermore, emphasising how nuanced experiences are, no matter how similar they appear to be.

The second-order analysis highlighted three superordinate themes and nine subthemes: 1) *Self*, which comprises a) *perception of self*, b) *symbolism of self*, and c) *others and self*; 2) *Communication*, which includes a) *body communication*, b) *objectified communication*, and c) *metaphoric communication*; 3) *Space*, which consists of a) *movements in space*, b) *experience of space*, and c) *organisation of space*. At the end of this section, a diagram illustrating the superordinate themes and their associated subthemes is included (Figure 116).

5.6.2. Self

This theme reflects how the participants perceived themselves through the lens of the diagnosis they received and the avatar they wore, but also across time, reflecting on their past self, being in the present, yet thinking about their future. It presents how they leaned on the freedom and agency Minecraft affords within the responsibility and accountability framework of Autcraft to develop a symbolic emotional narrative to project their inner self onto their game spaces. Finally, it illustrates how the impact of

playing in Autcraft extends beyond the confines of the player's individual experience to penetrate the family and social spheres.

5.6.2.1. Perception of Self: Internal => Internal

All the participants shared how they perceived themselves. However, how they expressed their perception varied in shape and intensity. The theme of *Perception of Self* includes three subthemes, namely: 1) *Being autistic, having autism, and autism and ADHD*, 2) *Sameness and uniqueness of self*, and 3) *Self in time: past, present, and future*.

5.6.2.1.1. Being autistic, having autism, and autism and ADHD

Dipper, Dave, Alex, and Space viewed themselves through the eyes of their diagnoses. Nonetheless, the comparison between all the participants' transcripts shed light on the nuances that emerged from their accounts. Overall, Dipper, together with Dave and Space, had a positive outlook on their being autistic. Dipper saw themselves through their ownership (e.g., 'my') of autism and ADHD and Space oscillated between expressing and accommodating her diagnoses, which she engaged with not as labels, but as part of her way of being and navigating the world. Dave's perception of self was indissociable from their autism, saying, "I'm pure tism" (Figure 99). By contrast, Alex considered his autism as an impairment and the main reason why he was bullied.

I think that is my autism (Di, 31.16). My autism mainly affects my social ability (Sp, 15.132). My ADHD side basically isn't there when I take my medication (Sp, 16.136). I was only diagnosed at 12 so all my time has been known to be autistic (Sp, 28.22). My impairment is definitely 1 reason why, the bullying I get faced (...) (Al, 32.33).

Although Dipper and Space saw their autism and ADHD as part of who they are, they also explained their diagnosis in terms of challenges.

When I get distracted and really hyper, I always think it is the ADHD and when I don't really want to do that much or there is too much going on I think that is my autism (Di, 31.16). My ADHD side (...) I'm extremely unsettled and unable to concentrate when I'm not on it [medication] (Sp, 16.136).

Interestingly, Space, who considered herself and other students as *being autistic*, considered Dr Murphy from the show 'The Good Doctor' as *having autism*. While the protagonist inspires her, she does not lose sight of his difficulties.

Autistic students in my state are likely to get theirs [laptop] (Sp, 20.172). It's really cool he has autism and he's able to fulfil his lifelong dream of being a doctor, but he struggles (Sp, 30.35).

While Dipper also acknowledged that being autistic includes advantages, Dave was the only participant who viewed their autism strictly as an asset.

To me it [being autistic] means finding things a bit harder than other people but being able to do specific things better and taking a while to understand things sometimes but being good at it when I understand (Di, 30.07). Kinda sight is the strongest just smell is the only thing that not a lot of people experience so that why I like it with autism more and hearing is strong too just as much as smell just smell is more useful to me. (Da, 56.31).

Emphasising their autistic body, Dave felt their autism in their sensory sensitivities. On the other hand, Dipper and Space, who both were diagnosed ADHD prior to autistic, felt their autism in the brain.

I feel it [autism] in my brain and head (Di, 30.11). Brain [autism] (Sp, 34.77).

Among the four participants, only Alex demonstrated a separateness between himself and his diagnosis, stating, "I have autism (though it's like light autism, it's not severe)" (Al, 13.121). Alex further differentiated himself in the sensory aspect of

autism as illustrated in this commentary: “I don’t have any sensory sensitivities” (Al, 26.60). Paradoxically, he often used sensory language.

It’s just a furnace inside but don’t touch it (Al, 8.60). It really touches my soul (Al, 22.28). Social media just didn’t feel right (Al, 35.62). Especially, no entering my place or touching my stuff without asking (Al, 46.155). Writing and expressing my thoughts without anyone in sight seems to help (Al, 33.44).

Moreover, Dipper and Space seemed to be able to distinguish their autism from their ADHD, connecting autism with a general sense of overwhelm and ADHD with forgetfulness, distractibility, or lack of focus.

When I get distracted and really hyper, I always think it is the ADHD and when I don’t really want to do that much or there is too much going on I think that is my autism (Di, 31.16). I think mainly like some things irritate me much more than other things [autism] (Sp, 36.90). With my ADHD it’s mainly just focusing on thing (Sp, 37.98).

In this dual diagnosis context, the reconciliation of both conditions is not always linear. To demonstrate how the two could be antagonistically expressed, Space proposed a pejorative characterisation of each condition in terms of how they appear to non-autistic people, saying, “I find autism has the stereotype of bad behaviour and ADHD has the stereotype of craziness (Sp, 38.110). Drawing from her own experience, Dipper illustrated how both aspects of their self could, at times, compete with each other, coercing Dipper into stillness as if they had one foot on the gas pedal and the other on the break, saying, “Sometimes they kind of overlap and I can’t decide what I want to do (Di, 31.18).

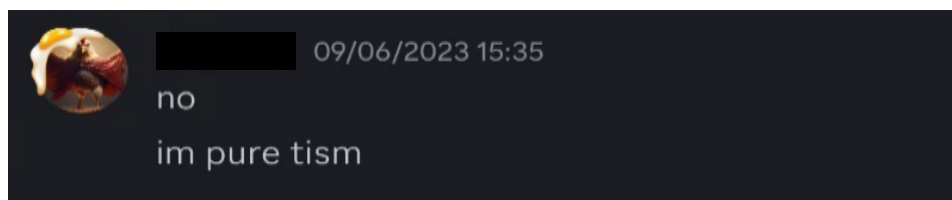


Figure 99. Dave's comment on their autism

5.6.2.1.2. Sameness and uniqueness of self

Dipper and Space's dual diagnoses of autism and ADHD appeared to offer a flexible sense of self that held both sameness and uniqueness. While certain traits or routines remained consistent, their ways of describing and enacting selfhood shifted across contexts. They seemed to draw on both diagnoses not as fixed labels, but as adaptable frameworks through which they could explore and articulate different aspects of who they were. On the other hand, Dave shared a certain playfulness with the idea of sameness, whereas Alex emphasised the salience of the sense of uniqueness he recognised in himself and the members of this base.

It would be very funny. Because then what I would do is I'd re-join [as if another person]. And they'll realise that I'm the same person (Da, 33.264). I'm a very unique person to begin with (Al, 13.118). I'm an "only child" (Al, 14.125). Well physically I'm a normal child, but mentally I'm different (Al, 34.48).

Space and Dipper exemplified sameness in terms of being true to oneself or maintaining consistency around them.

The black and white [cat] I have it in all my worlds, so I thought I needed to get it (Di, 2.13). It's a way [MC is calming] that I can be myself without being worried about being disturbed (Sp, 17.144)

5.6.2.1.3. *Self in time: past, present, and future self*

All the participants easily navigated their personal timelines. They recollected instances of their past, which they contrasted with their present. They all envisioned future physical selves, which they projected in the present through their avatars. Furthermore, in the game, the notion of time was brought to the fore through the constant back-and-forth motions of the participants sharing their stories. For example, Dave, Alex, and Space referred primarily to their present selves when describing how they hoped other gamers perceived them — not just through their avatars' appearance but also through their in-game actions. More than a skin, the avatar became a way of embodying their authentic selves: a visual and behavioural expression of how they saw themselves and wished to be seen. Thus, being recognised for their values in the present seemed to assuage the pain of past judgements while giving them a grasp on the future.

I want them to think seriousness since it is a king but also like a creator since the chicken makes the egg that's what I think people might think, but it can be whatever people want (Da, 62.76). [I am] a person that loves to help people too (Al, 45.145). A nice person (Sp, 45.167). I like being kind (Sp, 45.169).

Space seemed to use Minecraft as a personal milestone — a way of marking a clear division between life *before* (past) and *since* (present) she began playing the game. The formation of friendships was part of this “since” period, as illustrated by her reflection: “I played when I had no friends, and my friend was Minecraft” (Sp, 41.134). Conversely, Alex recalled a memory rooted in the past, saying, “Hahaha, 7-year-old me coming home after school playing Minecraft till the sunset-good times :D” (Al, 39.92). On the other hand, Dipper contrasted past and present to illustrate a positive evolution in the present, saying “In school I wouldn't answer any questions in case I said something wrong, now I answer more questions still not a lot but more than I used to” (Di, 38.69). Space used a comparable formulation when she said, “Well, I just kinda matured and met the people who are just like me [in high school]” (Sp, 44.160).

In another instance, Dipper leaned on the past to highlight an aspect of the present that could have a future consequence, stating, “I wanted to be a vet when I was little but I didn’t want to see animals getting hurt” (Di, 24.46), “I want to have an animal hotel when I grow up” (Di, 23.43), “So that [being a scientist] is better” (Di, 24.46). Similarly, they used the present tense to emphasise an existing change, anticipating it would linger in the future, even if it were a consequence of the past, stating, “If my friend is with her other friend that I don’t know before I would not have said anything, but now I will” (Di, 38.69).

All the participants easily discussed their future. They had a clear vision of what they wanted to do and knew who they wanted their future self to be.

After school I would like to do more science (Di, 24.41). I want to have an animal hotel when I grow up (Di, 23.43). So, I would have to learn more about animals and things like that (Di, 24.44). I’d like something in electronics like computer electronics with soldering or just a general electrician since they also do that too sometimes (Da, 76.4). My goal is to maybe do a job math related but I also want to be a rights activist (Al, 23.39). I want to be an architect (Sp, 30.37).

5.6.2.2. Symbolism of Self: Internal => External

All the participants demonstrated how they used a variety of game elements to craft a symbolic story, which conveyed the meaning of their selves to others. However, given that each participant was different, their symbolic representations were equally distinctive. The theme of Symbolism of Self is organised around two sub-themes: 1) *Freedom, agency, responsibility, and accountability* and 2) *Emotional symbolism through the game*.

5.6.2.2.1. Freedom, agency, responsibility, and accountability

The boundary between freedom and agency on the one hand and responsibility and accountability on the other was not always clear. Participants seemed to associate

agency with freedom and responsibility with the rules in Autcraft. That said, the notion of accountability was salient and transpired in the play sessions with all the participants.

Dipper's sense of agency and desire for autonomy appeared to shape how they engaged with the game, as illustrated in the following comment: "If I'm bored, I would just explore the resource world and just collect stuff if I thought I would need it" (Di, 16.142). Their sense of agency and responsibility extended to the animals (NPCs) they had gathered on their base. As Dipper explained, "I need to set them free soon" (Di, 14.124), and "Even though they will just despawn I still like saving them and setting them free" (Di, 15.126).

As Emperor of their base, Dave radiated confidence, consistently embodying a blend of agency, leadership, and responsibility — both in relation to the Empire as a symbolic structure, and to the players who were part of it: fellow members, workers, and citizens. While Dave occasionally used language that might suggest hierarchical power — such as "*they work for me*" — their overall framing of the Empire revealed less about personal ego and more about a business-oriented model of leadership. They spoke in terms of land acquisition, agricultural self-sufficiency, distributed governance, and long-term infrastructural planning — concepts far more reflective of organisational management than self-importance. This became particularly evident in their descriptions of roles, autonomy, and communication systems within the Empire:

Well, the Empire's more, we takeover part of land and put farms and we, I don't force people, but I get a high amount of people working for me (Da, 16.128). We don't feed people. We have food but we don't feed people because the people that we do have um provide their own foods to themselves. They have the option to use mine, but they don't (Da, 18.146). Well, this isn't going to be it. Since I'm going to be here for five years this will be massive, like massive, massive. There will be like villages as big as this. Well pretty much this entire area, in different places are on the server. All claimed by the free and then I'll have people running those places for me. And then in those places people live

there. And then they all report to me saying what's happening and everything. And then they would go to the meeting room in my castle, and we'd talk about it all (Da, 37.296).

Through this lens, Dave's language, while authoritative, reflects a vision of strategic leadership that resonates with business practices such as delegation, autonomy, long-term planning, and the creation of systems to support community-scale collaboration. The Empire was not simply a personal domain, but a carefully coordinated enterprise.

Being an advocate, Alex showed a general sense of duty towards other victims of bullying. After being welcomed into the Autcraft community, he was compelled to pay it forward. Demonstrating a combination of responsibility and agency, he shared:

I believe that everyone shall have basic rights, and I've been creating a website on my personal life and trying to spread info on these corruptions (Al, 22.31). I don't do this because I'm forced to. I do this because I want to. And it's the right thing to do. Because the truth is what people need (Al, 23.39).

Similarly to the other participants, Alex seemed to value his freedom, saying, "Personally I like to get things myself, I'm more independent" (Al, 25.55).

The term 'Do what I want to do' was a recurrent topic, which substantiates the significance of this dimension, as illustrated in the following comment from Space: "I just do what I want to do like rn [right now] I'm building something but in 10 min time I could be mining" (Sp, 52.227). However, Space was the only participant who acknowledged that with freedom and agency comes accountability, stating, "It's great to be able to do what I want" (Sp, 52.229). "But sometimes it's not so great as I can do bad things without knowing. That's why rules exist" (Sp, 53.231).

5.6.2.2.2. *Emotional symbolism through the game*

Many game elements, while fixed in codes, offered a great deal of flexibility in how they could be used and for what purpose. This fluidity also accounts for the unavoidable overlay with aspects of previous themes such as freedom, agency, responsibility, accountability, and ‘self in time’.

The presence of cats was a common occurrence, even if their significance varied. Space, who had a few cats spread in different rooms, noted “Well, I like my cats and all” (Sp, 54.250). Dipper created a world where they built not only structures but also relationships with a wide range of NPC animals. As they expressed themselves through their interest in and love for animals, their base appeared to function as a kind of liminal space — one that blurred the boundaries of time, allowing past aspirations (e.g., Dipper wanted to become a vet) to coexist with imagined futures (e.g., Dipper plans to open a hotel for animals). In this space, what might otherwise seem impossible in real life became part of the everyday fabric of play.

I just found it [fish] in the sea near my house. I was going to feed it to my cat, but it kept following me, so now it is my pet (Di, 5.37). I have my mooshroom and 3 dogs and 2 cats and axolotls lots (Di, 2.8). In here is a place where I make big announcements to my pets sometimes if I am bored (Di, 9.78). I like making rooms for my pets it gives me something to focus on (Di, 11.92).

The only exception was Alex, who, referring to the primary function animals served in the game, commented, “I just get food from animals” (Al, 23.40).

Animals were not the only NPCs facilitating emotional symbolism. Both Dave and Dipper personified and humanised their NPCs in ways that reflected emotional connection. For example, Dave named a zombie NPC in their castle after their real-life dog, David — a choice that subtly suggested affection and familiarity. By assigning the zombie their dog’s name, Dave appeared to transfer some of the emotional mean-

ing associated with their pet onto the character, transforming an otherwise threatening figure into something trusted and known.

And then here's David, David's fine. He likes it in there (Da, 5.39). I like the mustache and hat I put on the allay (Di, 4.34). This is my snowgolem but I don't know what to call it so it is nameless for now (Di, 13.110).

Other than NPCs, regular objects were also endowed with emotions. Space ascribed emotion to the sofa in her castle, as illustrated in this commentary: "I have my 1 very lonely sofa and rug over here" (Sp, 9.78). Emotional symbols also represented events that triggered emotions in the physical world. Space and Alex often relied on emotional symbols to bridge their physical and virtual worlds by reproducing the event in their virtual world.

And I've always loved rainbows (Sp, 11.88). I like rain and like seeing rainbows when it's raining (Sp, 11.92). It [rainbow] makes me feel good (Sp, 11.96). Xxxx is my fav number (Al, 40.101).

The symbols of the saviour and creator were particularly salient in Dave's and Alex's experiences. The symbols seemed to give them the opportunity to act as they perceived themselves as if Dave were Emperor (saviour) and advocate (creator).

Um I'm going to try to kill the phantom [to same researcher] give me a second (Da, 29.238). You [researcher] could jump, or you could go down the stairs. You might take damage, but I can heal you (Da, 11.88). I believe in helping people which is why I created this [hotel], and you don't have to pay anything to stay here, although any donations are greatly appreciated ofc :D (Al, 9.71). I aim for helping others not because I force myself to, I just do it because that is a part of me (Al, 22.24).

5.6.2.3. *Others and self: External => Internal*

In addition to their perception and symbolism of self, the participants also demonstrated how others, whether family, friends, or others, influenced their relationships with themselves. They explained how playing Minecraft in multiplayer mode in Autcraft allowed them to form friendships with kindred spirits, which in turn influenced the quality of their social relationships in their physical world. Alternatively, it gave them the skills and confidence to connect with others and create new friendships outside the game. Ergo, the social impact of playing on the Autcraft server was unequivocal. This layer presented a substantial homogeneity between the participants' comments. The theme of *Others and self* includes three sub-themes: 1) *Family*, 2) *Friendships*, and 3) *Impact of others' understanding of the diagnosis*.

5.6.2.3.1. *Family*

All the participants mentioned their families during our sessions. However, the way the topic surfaced varied in depth and emotional expression. Dipper seemed to have a close relationship with their parents. Playing video games together was a family activity. Space and Dipper learned the game by playing with their brothers. Interestingly, none of the participants discussed having or playing with a sister. Space and Dave also mentioned their discussions with their mothers, whereas Alex seemed more distant, emphasising the difference between him and his family.

My older brothers played the game a lot so I would watch them, and they would teach me how to play so I kind of grew up playing the game (Di, 33.29). When I first joined my brother had played a bit before, so he had already built tin bit of the base, so it was easy to start (Di, 1.6). Even my mum and dad like Minecraft (Di, 33.31). My mum likes Minecraft dungeons (Di, 34.36). My mum thought of the name of my mooshroom (Di, 2.10). My brother showed me it and I thought it was cool (Sp, 41.138). I played with my brother (Sp, 44.156). I told my mum about it, and she was fine with it so I don't think I will pull out as I personally really think your research is interesting (Sp, 27.12). The game helped and I checked with my mam, and she said the way I'm running the

business part of things is better than she learned in school and I'm not going to even take business studies (Da, 63.81). But my family members do not have autism (Al, 14.122). it can sometimes be hard, but they help me (Al, 14.124).

5.6.2.3.2. *Friendships*

The participants reported that making friends online had helped them improve existing friendships or develop new ones outside the game. The game seemed to have acted as a social facilitator by providing the participants with a subject of conversation that also interested peers in the physical world.

If my friend [at school] is with her other friend that I don't know before I would not have said anything but now I will (Di, 38.69). I have headphones music and my friend³⁸ that I've been friends with since forever really, so it's [bus ride to school] ok (Da, 76.2). Well, when I used to hate my 2 best friends [at school] we both now are all best friends³⁹ (Sp, 45.173). It also helped me make more friends online and better irl, like I said I was less shy and more fearless (Al, 42.115). And I made some irl friends (Al, 44.135).

Similarly, Autcraft, as a virtual youth centre, served as a social mediator, facilitating interactions between its members.

My friend gave me an allay egg, so I wanted to make a home for it then just forgot about this place (Di, 9.74). It's also quite hard to find and keep friends (Sp, 29.27). I played when I had no friends, and my friend was Minecraft (Sp, 41.134). It's [Autcraft] important to me because I have so many friends on here (Sp, 47.186). Everyone is my friend. It's like we're a whole big friend group (Al, 6.42). It [Autcraft] made me really appreciate life and the friends I have (Al, 43.130). My friend tends to be the more detailed builds (Da, 7.53).

38 Dave also plays Minecraft regularly with his friend.

39 They became best friends after discovering they all had a common interest for Minecraft.

5.6.2.3.3. *Impact of others' understanding of the autism diagnosis*

All the participants brought the topic of others understanding their autism diagnosis to the forefront. Through diverse situations, they demonstrated how others' understanding of their autism influenced their interactions with them (participants).

Dave explained that once he was diagnosed autistic, their relationships with other people, especially in school [UK], improved, saying, "Other people knowing what to do and how to change everything that they were doing wrong like sometimes they used to do it on purpose because it was funny to then" (Da, 58.40). Space recognised that receiving a diagnosis enabled students to have access to specific accommodations, sharing that "Autistic students in my state are likely to get theirs [laptop]" (Sp, 20.172). Still, she denounced the dissonance between this accommodation and the enforced practice of *body listening* (Sp, 18.154), asserting, "It's even harder when teachers don't understand autism and what stimming is" (Sp, 29.26). Even though all the participants described the Autcraft server as their happy place, Dipper and Alex's commentaries were the most significant.

[Playing on Autcraft is] Being with people like me (Di, 37.60). It made me hopeful and restore my faith in society (Al, 42.120). It helped me know that there are still my, and that we care for each other (Al, 42.119).

5.6.3. **Communication**

This theme demonstrates how the game's affordances facilitated a multimodality of communication that was synchronously and asynchronously inclusive. It illustrates how the participants used their bodies through their avatars to communicate with other players or to express emotions they felt in their physical world (*Communication through the body*). It also presents how the participants repurposed elements of the games to communicate in their absence (*Communication through objects*). Lastly, it reflects how the participants leaned on specific elements to symbolically communicate depth and meaning through their bases (*Communication through metaphors*).

5.6.3.1. *Communication through the body*

Autcraft offers various modes of communication, such as public and private chats on the server or chat and audio groups on Discord⁴⁰. Members were accustomed to typing in the chat to converse with everybody else on the server. However, at times, it turned out to be inadequate or insufficient, hence why the participants relied principally on their avatars. The theme of *Body communication* encapsulates three sub-themes: 1) *Deictic gestures*, 2) *Full body gestures*, and 3) *Emotional body expressions*.

5.6.3.1.1. *Deictic Gestures*

This subtheme describes how the participants used avatars' gestures to point at or draw attention to an object, using their eyes, head, or hand in combination with specific movements.

Circling with one body part: head or arm rather than pointing

Playing together in Minecraft involves using avatars not only to navigate the world but also to communicate non-verbally, helping players understand what others are pointing to, describing, or asking. Most participants moved their avatars in circular motions around specific areas to draw my attention, effectively signalling “*Look here.*” Others relied on more subtle forms of expression: for instance, Dipper rotated only their avatar's head to indicate where they wanted me to look, while Dave used hand movements to point out specific objects or spaces.

Here are my axolotls (Head, Di, 4.28). This is my head room (Head, Di, 5.40). In here is a place where I make big announcements to my pets sometimes if I am bored (Head, Di, 9.28). And the reason that there's the little rocks here that go up and down is because it's a shooting area. So, they stand in here in this little booth and then they shoot at the target (Head, Da, 35.284). The room over

40 Only with specific memberships.

there across the little bridge thing, there's nothing in there right now because I just emptied it (Hand, Da, 3.21).

Moving their head back and forth between me and the object to be looked at

When the communication concerned a specific object, avatars swung their heads back and forth between me and the object of attention in a semicircle motion or an arc. The movement was always initiated from me to the object. Dipper, Space and Dave frequently resorted to this type of partial body communication.

This is my snowgolem, but I don't know what to call it, so it is nameless for now (Head moving from the snowgolem to me, Di, 13.110). So, this is like the bedroom but obviously like a lot of stuff is decorative, like decorations (Head moving from Dave to me, Da, 5.37). The unknown head up here is my rarest head, I think (Head moving from me to the wall, Sp, 3.16).

5.6.3.1.2. Full body gestures

All the participants often used their bodies to communicate with me or to refocus my attention on them. When they referred to something less specific, like a general area, they flew around the place as if tracing its contours. Therefore, they either moved in a circle, a straight line, or a non-linear fashion.

Showing an area: circling or following the shape => Horizontal movement

Although everything in Minecraft is made of square blocks, Dave, Alex, and Space often moved in a circular motion, which contrasted with Dipper's predominant back-and-forth movements described above.

It's like there's a little, there's a little, if you look over the little over here you can see like a village (Circling over the terrace, Da, 7.55). This is one of the players room (Circling around the entrance of the room, Al, 9.77). This area

here took about 3 hours (Circling on the spot to point at the close area, Sp, 2.15).

Circling was not the only body gesture the participants relied on to point at an area; Space also traced the shape of the element she wanted me to see. For example, she flew in a straight line going back and forth over the bridge house and flew above the exploded tree, following its shape as if drawing its contours.

Over here, I have my bridge house (Sp, 4.33). Over here is my unfinished exploding tree (Sp, 5.41).

In addition, circling movements seemed to convey emotions, like synonyms in language, as Space demonstrated when excited about showing me her castle. She spun all the way, saying, “Let’s go to my castle now” (Sp, 9.71).

Jumping and crouching => Vertical movement

Minecraft is a 3D environment; therefore, avatars also move vertically. This orientation seemed to express different meanings. Jumping was often meant to draw my attention, which Alex demonstrated when trying to get my attention to go up the ladder in his hotel (Figure 100). Crouching, on the other hand, was how players greeted each other in Autcraft, as Dipper illustrated when they welcomed me into their base (Figure 101).



Figure 100. Alex jumping to direct my attention to the ladder



Figure 101. Dipper crouching to say hi

Facing an object when talking about it

However, body motions were not always necessary. When participants did not need to distinguish what they were showing me, they usually faced it as illustrated in these examples: Dipper was already in the room when they said (Figure 102): “This

is my head room” (Di, 5.40) and Dave was looking at the water block they were referring to when telling me (Figure 103): “That’s the wrong one. That one pushes you up. This one pulls you down” (Da, 12.102); and Alex turned to face the banners when explaining: “Those banners are from other players, as anyone is free to decorate. i do this because there is uniqueness” (Al, 4.25).



Figure 102. Dipper inside the new Head room



Figure 103. Dave looking at the water block they were referring to

Facing me when sharing information that did not require pointing at

Interestingly, all participants oriented their avatars to face me when speaking or listening — a gesture that, in the context of the game, simulated eye contact (avatar to avatar), even though the avatars' eyes themselves do not move. To look at someone “in the eyes” in Minecraft, one must turn their entire body toward the other player, which many participants did with varying degrees of consistency. Dave made a point to face me every time we spoke; when I told him I was surprised by how frequently he did so, he explained: “Oh yeah, the reason we do it is mostly because if you're on-call or you're talking to someone you usually look at their face or in their direction in real life. So, people tend to look at their virtual body instead” (Da, 28.218). When Dipper remembered I had asked about their snowgolem's name in a previous session, they turned to face me and said, “Also I named the snowgolem frosty the snowman” (Di, 42.98). Similarly, because there was nothing of interest in the rooms upstairs, Dave simply remained still in front of me while saying, “There is more [rooms] upstairs” (Da, 5.35). In contrast, Alex only seemed to face me if his avatar happened to be already oriented toward mine before speaking or listening, as illustrated in following comment: “Tis is one of the player's houses that I built” (Al, 7.56) showed in Figure 104. Notably, when Dave, Space and Dipper turned to me to speak or listen to me, their movements always seemed smooth and natural.



Figure 104. Alex looking at me when showing his member's house

Absence of body gestures

The participants did not always use their bodies to communicate, and the absence of body gestures appeared to be another type of communication. However, when the participants did not use body gestures but only language (text written in the chat), I did not always understand them, which interrupted the flow of our dialogue. Therefore, reconnecting the flow of our conversation meant that the participants reverted to body gestures.

Before entering the fox room, for example, Dipper said to me in the chat: “Wait here” (Di, 22.31) and vanished. Not grasping the explicit meaning of the word ‘wait’ and not knowing where I had to go, I asked: “Where are you?”. Similarly, when Dave led me to the water ‘step’ to go down to the farm, saying, “Follow me” (Da, 12.98), they also disappeared. From where I was standing, I could not see the water between the steps. It was only upon reaching the staircase that I realised there was a water block on each side. Since Dave was on the left, I jumped on the right. Again, I failed to capture their exact meaning. On the other hand, when I asked Alex what the prominent structure on his base was, he answered with an analogy, saying, “Think of it like a hotel” (Al, 9.69). Although he answered without turning to face me and had to stop walking to type his answer, his lack of body gestures did not impact our dialogue or my understanding.

Dissonance between body gestures and speech (text)

Some interactions were also characterised by a dissonance between the participant’s speech (text) and their avatar’s body gestures. This dissonance was most significant with Alex. That said, it did not impact my understanding of him since the environment provided sufficient context. For example, when Alex wanted to show his Head collection, he said, “These are all my head collections” (Al, 3.19). However, I was not next to him; I was still in the lobby. Then, when I reached that section, Alex had already run to another room without telling me. After a few seconds, he came back but turned to face the wall while talking to me (Figure 105).



Figure 105. Alex facing the wall while talking to me

5.6.3.1.3. Emotional body expressions

The shapes of the avatars in Minecraft are blocky and pixelated. Therefore, their limited customisation cannot allow for facial expressions. Nonetheless, Dipper and Space were able to express their emotions through the posture of their avatars. When Dipper explained what ‘despawn’ meant in this commentary: “Even though they will just despawn I still like saving them and setting them free” (Di, 15.126), their avatar looked down, dropping their shoulders and remained still for a moment, eyes fixed on the fish in the mini pool below (Figure 43). On the other hand, emotions could be easily hidden, as Space demonstrated by hiding behind the fountain (Figure 106) or on the mezzanine in the city hall (Figure 107) when needing time to answer or regroup.

Moreover, through their avatars, Dipper and Space clearly displayed a movement between two opposite emotions, such as sadness and joy. In our first session, Dipper explained what happened to her black cat, saying, “I accidentally hit my black one and killed it and I was very sad” (Di, 2.16); their avatar stopped moving, shoulders hunched down, then as they pursued, saying, “so I got another one that looks like it” (Di, 2.16), they started jumping up and down. Similarly, Space’s shoulders dropped as she looked down at her sofa in the castle, saying, “I have my 1 very lonely sofa and rug over here” (Sp, 9.78) before bouncing back at the idea of showing me her Pride

tower. Alternatively, in Autcraft, all members freely and spontaneously expressed their feelings through emoticons in the chat.



Figure 106. Space hiding behind the fountain



Figure 107. Space hiding on top of the mezzanine

5.6.3.2. *Communication through objects*

Minecraft allows players to repurpose artefacts such as wood signs, wool blocks, books, and even lines of code to use them in a different way than what they were designed for initially. All the participants used various objects to communicate with others or with themselves. While they did not always use the same object or for the same purpose, they always chose the material most appropriate for their needs, and in that respect, they were all similar.

Using wood signs to communicate was a common occurrence. However, what is relevant here is the reasons why some of them used wood signs and to what end.

Dave's Empire counted many members who physically lived in a different time zone, hence they relied on wood signs to interact, to talk to each other about the construction they were working on (Figure 65), as Dave explained: "Um so the signs that are here are for, because me and the builder, the main builder tend to not talk to each other in like, in game because we play at different times" (Da, 29.222). Dave also used these wood signs to offer feedback on members' constructions (Figure 66). Aligning several wood signs on a wall also acted as a communication board for members. Alex filled the walls of his hotel's lobby with inspirational quotes (Figure 81) and shared his own lived experience of bullying (Figure 82) while using individual wood signs to mark boundaries and delineate his personal space (Figure 83).

Dipper, on the other hand, used wood signs to name the various rooms they built, which was consistent with their intention to create a safe home, where everything was known because everything had a name (Figure 32) or was remembered, as illustrated by the cat's tomb (Figure 42).

Wool blocks were another popular material used as a communication device, even if more abstractly. These blocks were available in different colours and frequently unorderedly placed together. However, when one colour was consistently used in a particular arrangement, the implicit meaning became explicit. Space, for instance, used blue wool blocks on the floor of her castle to shape an arrow to provide a sense of

direction and a path to follow (Figure 108). She also used the colour combination of the Pride Tower to decorate the front path to the tower in an arrow shape (Figure 109).

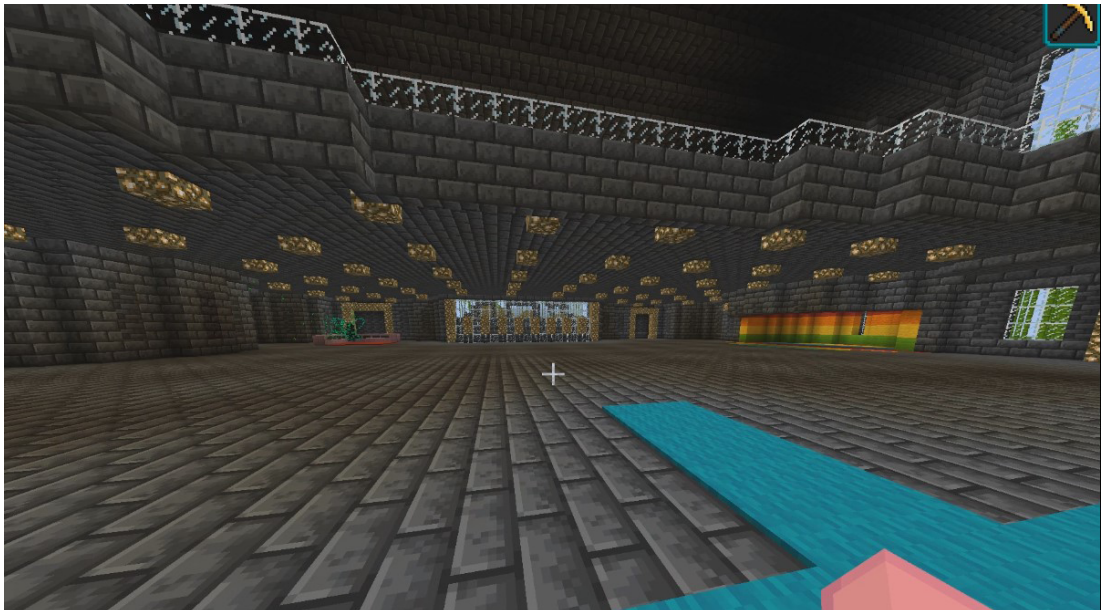


Figure 108. Arrow made of wool in the lobby of Space's castle



Figure 109. Entrance to Space's Pride Tower

Banners, which require a few other resources to create, were often customised to showcase affiliation to guilds. Dave exemplified this by creating a banner with the Empire's effigy, which they carried above their head (Figure 48) and adorned the entrance of the castle (Figure 49) and the walls of the tavern (Figure 59). Alternatively, Space, Dipper, and Alex used tailored banners as memorabilia.

5.6.3.3. *Communication through metaphors*

Participants conveyed life on their bases through the use of NPCs, which they strategically placed to evoke a sense of public place, business busyness, and movement, such as the librarian and readers in Dave's library (Figure 110) or the workers in Space's farm (Figure 111).



Figure 110. NPCs in Dave's library



Figure 111. NPCs in Space's farm

Besides the resources in Minecraft, the avatar itself could also become a communication device. For example, regardless of their personal inclination, all the participants wore skin with multilayers of colours during the Pride month. Pinkish skin and flowery dust were equally used, irrespective of the player's gender. As Autcraft facilitated gender expression, players had the opportunity to select the pronoun(s) to be associated with their Minecraft name and to change it whenever they wanted simply by typing a line of code. Dipper's pronouns were they/them/their from the get-go. However, Dave had chosen the pronouns All/Any, and when I asked which pronouns I should use in this thesis, they replied: "All/Any/she/her/they/them/he/his", further emphasising the notion of All/Any while giving me a choice.

Wearing glowing purple skin indicated that the participant played in Survival mode and was protected. Dave's and Alex's bases were nested in Survival; hence, they usually kept their protective skin wherever they were going, including our first session. Dipper's base was in Peaceful mode, where protection was not required. They also played with other members in the Darkness, where they had to fight mobs of all kinds. Thus, I knew by the skin they wore where they had been or where they were planning on going after our session. Since Alex was passionate about mathematics, his regular skin was white with black numbers (Figure 74).

5.6.4. Space

While the theme of Space transpired early on during the data analysis, it turned out to be the most challenging theme to conceptualise. Reflecting non-linear multilayered relationships that are constantly in movement, its fluidity, even if easy to perceive, was more complex to organise linearly than the two other themes, Self and Communication. This transversal theme highlights three subthemes. The first subtheme, *Movement in space*, describes the ways participants moved between their physical surroundings and the virtual worlds they explored and how they found their way through digital spaces alone. The second subtheme, *Experience of space*, considers what it was like for participants to inhabit these virtual environments and how they made sense of them through their experiences. The third subtheme, Configuration of space, highlights the

affective dimension that the participants developed and then nurtured with the game environment.

5.6.4.1. *Movements in space*

This subtheme characterises how the physical and virtual worlds overlapped to influence each other. It also reflects how the participants were able to partially transition from being players to being avatars and vice versa when both realms competed for their attention. Therefore, this subtheme was organised to highlight movements within 1) *the virtual-physical and physical-virtual space overlaps* and 2) *the virtual-virtual space overlaps*.

5.6.4.1.1. *The virtual-physical and physical-virtual space overlaps*

Virtual-physical space overlaps can either strengthen or destabilise players' relationships. In many instances, it translated movements associated with the participants' deliberate actions. The following extracts from Dave and Dipper bring to the fore how the participants used their avatars to teach me specific commands while sitting at their desks miles away from me. These examples underline how they used their game environments to influence my actions in my physical space and modify my avatar's movements, which affected our shared virtual world while improving our play experience. Overlaps can also be imposed by the system as exemplified in Alex's commentary showing how the instability of our common virtual space carried over triggering tensions in each other's physical world and disturbing our game session.

You can sit if you want by right clicking the chair (Da, 53.7). Press q it might be that but if not go into your inventory and click on it and throw it at the side (Di, 20.7). Hey sorry chat seems to be having a delay (Al, 28.3).

Moreover, virtual-physical overlaps may have ripple effects in either dimension. For example, at the beginning of our first session, Dave interrupted our virtual conversation saying, "Give me a second (Da, 9.71). Uh so when I, before I left to go ask him [to be quiet]. Um what did you say?" (Da, 9.74) demonstrating how the over-

lapping virtual world impacted not only Dave's but, to some extent, their brother's physical world. Then, a moment later, while explaining a section of the castle, Dave exclaimed, "If you hear my brother, that's because I asked him to be quiet and he did not listen (Da, 14.118)", clearly annoyed by their brother's noise (which I could not hear), thus showing how, in turn, the physical world invaded the virtual world we shared. Similarly, Space illustrated how both realms were intertwined and influenced each other through a bidirectionality of movements when saying, "Can you give me 1 sec? I need to put my dog away (Sp, 53.235)."

On the other hand, the overlapping virtual space also appeared to positively impact the participants' experiences in the physical world, as Dipper and Space relate in the following extracts:

At first, I just liked the game but now when I get upset or angry I play Minecraft to calm down it helps be relax (Di, 35.44). Well, the calm rooms are really good for stressful moments at school (Sp, 49.208).

Movements characterising how the physical world overlaid the virtual one were nuanced and slow-paced, expressing disruptive, neutral, or supportive effects. Most of the disruptive overlaps were caused by technical interferences (e.g., weak internet connection). David anticipated these breakage points by warning me of potential delays, saying, "When we go to this room next, you may get a large lag spike depending on how good your computer is (Da, 22.180)." Other physical overlaps were intentional as Alex demonstrated by creating his own interruption, commenting, "It's a bit laggy (Al, 2.14). Feel free to answer below, my parents need me for a few minutes (Al, 39.97). Looks like I afked for too long lol" (Al, 39.99). That being said, while in session with me all the participants accepted these hiccups as part of the online playing experience.

Other overlays occurred without having a specific effect on either space. These neutral movements were bound to the system design. For instance, participants had to step out of the game to buy Heads on the Autcraft website. While both platforms

are situated online, moving from the server to the website required players' interventions (physical world), as Dipper and Space illustrated by saying, "You can buy more [Home] on the Autcraft website (Di, 27.73)" and "Nope lol I bought most [Head] (Sp, 2.11)."

Overlaps from the physical realm also acted as supportive devices for the participants, underscoring a similar bidirectionality of movements. At times, the physical world seemed to offer the participants the distraction needed to prevent or diffuse a potentially overwhelming reaction of the avatar in the game. Space explained, "I put the good doctor on in the background (Sp, 22.192). In some instances, the physical environment also facilitated a collaboration between the participants and their avatars, as exemplified in Space's and Dipper's comments.

I always sketch my base ideas (Sp, 31.43). Nope, just off my brain [idea for a built without planning] (Sp, 3.18). The one that I am going in most I plan for because I want them to look nice (Di, 8.65).

5.6.4.1.2. The virtual-virtual space overlaps

Contrarily to the overlaps between both spaces described above, movements within the virtual world were rapid and often instantaneous. Virtual-virtual overlaps occurred through the avatar solely within the game's environment or the intermediary of the player in their physical world. In the former, the participants navigated the different game's layers via laminal gates called portals. In the latter, players typed specific commands in the chat to move their avatars highlighting how these layers interweaved to create vertical and horizontal depth in their virtual worlds through 'base to base' (from one part of the base to another) or 'room to room' (inside the same building) movements. In both cases, these movements were part of the gameplay as Dipper and Alex illustrate below.

It was fun to make and get the things [resource world] for the roof (Di, 7.59). I like doing parkour [minigame on the server] so that is why I have this (Di, 8.68). I was helping another player (Al, 11.95).

The participants also used game's elements to incorporate these movements between spaces in their storylines. Dipper moved the fox around their base using a lead, Dave used water to build an elevator, Alex designed an automated ladder allowing avatars to effortlessly climb the many levels of his hotel and Space enjoyed flying to travel around.

I bring my cats to them sometimes and my dogs to say hi unless they would hurt each other (Di, 10.81). I have to get something first [teleportation] (Di, 11.93). So, you're going to have to get out of this little water thing down here. When I get off because there's multiple layers and some players kind of get—struggle with it sometimes (Da, 11-12.94). I use the /fly command though (Sp, 7.54).

Moreover, the notion of movement was sometimes metaphoric. Dave set up a guest bedroom in one of the castle's hallways, saying, "So this is like the bedroom but obviously like a lot of stuff is decorative [sic], like decorations (Da, 5.37)." While a bedroom may be perceived as a place to stay and rest implying an absence of movement, a hallway, on the other hand, represents a space of transit between two rooms suggesting constant movements. The transformation of the hallway into a bedroom seemed to convey the temporary nature of being a guest avatar in their virtual world. Interestingly, virtual space overlaps also co-occurred, hence facilitating co-movements with other avatars. For our third session, participants decided whether we would converse without leaving each other's base or if I was to go to theirs. Space underlies the simultaneity of movements in two different areas within the same virtual space, stating, "Alright, I'm just going to do the farm job [on her base] and talk to you in chat (Sp, 27.15). Alternatively, Dipper exemplifies how one virtual space overlapped another when inviting me on their base, saying, "Do you want to come here? Or you can tp me as you want (Di, 42.96).

5.6.4.2. Experience of space

In the context of this research, the participants' experience of space needs to be understood in terms of how they manipulated their game space through their actions, how time and space were intertwined in their worlds, and how they fashioned their game environment to meet their needs.

5.6.4.2.1. Two dimensions: Extensible (outside) and Depth (inside)

The experience of the virtual space in Autcraft appeared to be two-dimensional; it was extensible (outside) and had depth (inside). All the participants were able to alter one dimension or both through playing the game. While Dipper's and Space's experience of their game space mainly encompassed the extensible dimension, Alex's and Dave's experiences, on the other hand, reflected a strong affinity with depth.

I made this tube for my fish because his original room was very small (Di, 4, 32). This is my head room, I had to make another one I didn't have enough room (Di, 5.40). Think of it like a hotel (Al, 9.69). There's still more inside (Da, 11.92). And then there's the vault (Da, 18.148).

In some instances, both dimensions were experienced simultaneously but on different planes so that one dimension was action-dependent and, in turn, indirectly impacted the other. Dipper and Space best demonstrated this double effect. Dipper explained how creating new rooms (extensible) direct their attention (depth), saying, "I like making rooms for my pets it gives me something to focus on" (Di, 11.92). Likewise, Space shared how the many activities offered through Autcraft (extensible) without time limitation allowed her to play the game without being bored (depth) stating, "It [AC] gives me so much to do in so much time" (Sp, 40.124).

5.6.4.2.2. Chronology, hierarchy, and purpose in space

Most of the participants referred to the notion of time when showing their bases. However, they did not always relate to time in the same way. While both Dipper and

Space presented their constructions in chronological order, the underlying meanings differed. For Dipper, time appeared to carry emotional weight, woven into experiences of care and future hopes — as shown in statements like: “I release them after a while, but these ones got hurt when I found them” (Di, 14.119) and “I want to have an animal hotel when I grow up” (Di, 24.43). In contrast, Space used her constructions to mark tangible progress over time, saying, “I don’t know, it kind of just makes me remember how the base used to be and how much progress I’ve made” (Sp, 8.69).

Both participants also expressed a sense of prioritisation in how they allocated their time — investing more planning and effort into builds they found meaningful or aesthetically important. Dipper conveyed this when they said, “The one that I’m going in most I plan for because I want them to look nice” (Di, 8.65), suggesting that certain spaces warranted greater attention. Similarly, when Space was especially invested in a building idea, such as the Pride Tower, she noted, “I always sketch my base ideas” (Sp, 31.43).

Conversely, Dave’s and Alex’s references to chronology were mainly expressed through the purpose of their base. As these extracts exemplify:

Do you want to know the main goal of the Empire? I get, well we or technically me, as rich as I possibly can in the game, richest player on the server. And that will take about four or five years I um that dedicated I will breeze through it. And then I plan to get all my wealth, and I plan to write a book (Da, 32.256). I believe in helping people which is why I created this [the base], and you don’t have to pay anything to stay here [the hotel] (Al, 9.71).

5.6.4.2.3. Space-needs interaction

Some of the participants showed how change and consistency represented two sides of the same coin. Dipper and Space elegantly illustrated this paradox, saying:

Since restart happened at the start of the month the worlds are different (Di, 26.61). I think the build worlds stay the same (Di, 26.66). Yes, it [AC] makes change easier (Sp, 48.200). It's [AC] something that doesn't change (Sp, 49.202).

The sense of autonomy that Minecraft affords players was a recurring theme throughout the sessions. Having the ability to interact with the game world on their own terms appeared to foster creativity, increase enjoyment, and deepen engagement — as illustrated by participants' reflections below:

It [MC] means a place to build and do whatever you want, and you can be very creative (Di, 32.26). I can make it how I want and like it in the craft (Da, 61.64). I just do what I want to do like rn [right now] I'm building something but in 10 min time I could be mining (Sp, 52.227). It means creativity, entertainment, and doing whatever I felt like. It's an endless game of endless opportunities. Unlike most other games, where there is an "end" or a certain path you must follow, for Minecraft. You don't (Al, 37.77).

That said, the feeling of safety was most significant for Dipper, Space and Alex, as they shared:

To me it [MC] means a safe place (Di, 36.57). It gives me a safe space to be myself (Sp, 46.182). Autcraft means everything to me, as it's the only safe place I can join without being bullied (Al, 15.122).

5.6.4.3. Configuration of space

In addition to the subthemes of *Movement* and *Experience* presented above, the comparison between cases revealed an unexpected yet striking element. The layout of the participants' base reflected two different configurations (Table 11).

Table 11 - Participants' bases configuration

| | |
|---------------|---|
| Dipper | Complex and fragmented base (external). |
| Space | Complex and fragmented base (external). |
| Dave | Complex and fragmented building (internal). |
| Alex | Basic and fragmented building (internal). |

Dipper's and Space's base presented a similar layout, which consisted of a disparate collection of buildings spread over their lands. Both of their worlds were vertically and horizontally fragmented (Figure 112 and Figure 113).

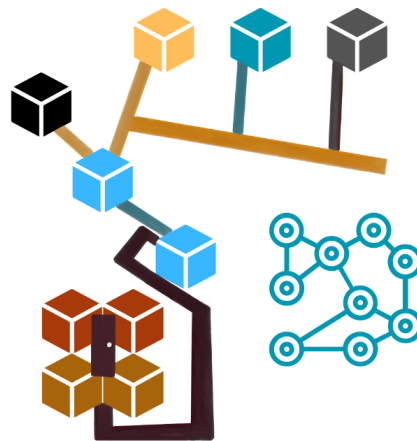


Figure 112. Schema of Dipper's base

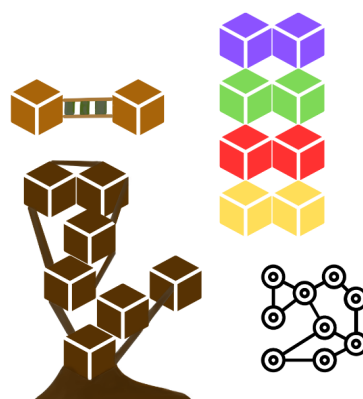


Figure 113. Schema of Space's base

However, Dipper's space reflected an intricate composite of cubic structures (Figure 24) that were interconnected through a series of narrow paths akin to the minigame Parkour (Figure 36). Space's base, on the other hand, consisted of a series of disconnected buildings of various shapes (Figure 91, Figure 92, and Figure 94) without any passageways between them. In the same way, both participants used blocks of different colours (Figure 96) and textures (Figure 28), which offered a nuanced contrast with the terrain (dirt, grass, and rocks) of their bases.

Dave's (Figure 114) and Alex's base (Figure 115) stood in stark contrast with Dipper's and Space's. Their worlds consisted of a unique building extending vertically rather than a multitude of structures spread laterally.

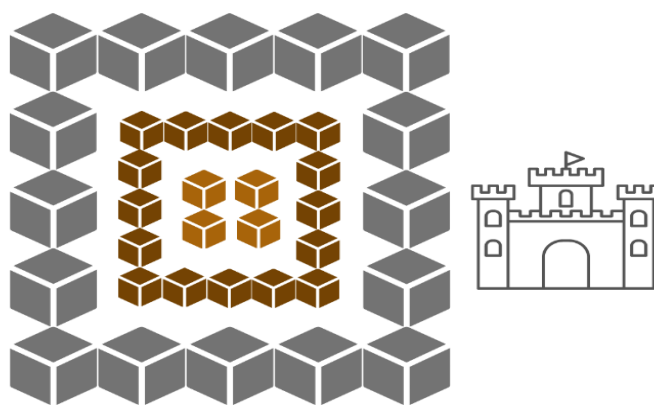


Figure 114. Schema of Dave's base

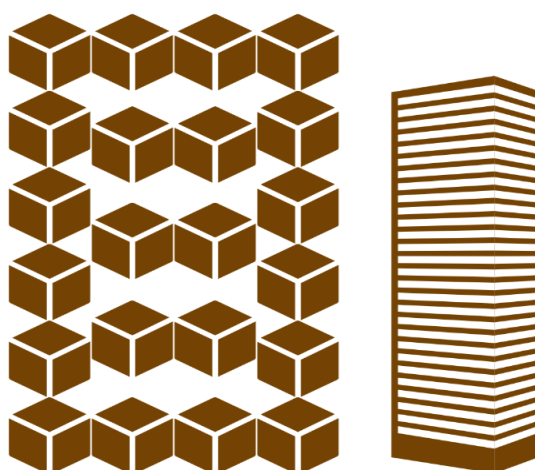


Figure 115. Schema of Alex's base

Hence, the fragmentation occurred inside their buildings as opposed to Dipper's and Space's external segmentation. Both participants mainly used one type of block to create their buildings. Dave used cobblestones to build their castle (Figure 49), and Alex's hotel was primarily made of wood (Figure 78). Although Dave's Empire included a village with diverse structures, these were built by their members. Dave had created three main landmarks, which were not all located in the same environment (Figure 59 and Figure 70). Unlike Alex, whose hotel was kept bare, the interior of Dave's castle, library, and tavern exhibited a great deal of complexity and sophistication.

5.7. Summary and Diagram

This chapter illustrated the most salient elements that have transpired from the particularity of each participant's themes. It highlighted the role Minecraft played in Dipper's ability to mitigate the sensory challenges they face in their daily life and how they projected themselves in a future constructed around their passion. It also underscored how significant the sense of belonging was for Dipper, which they crystallised in their gameplay by naming all their NPC animals and by using their base as an animal shelter, in other words, a home. The findings also revealed how Dave's engagement with the game reflected a dynamic interplay of self-efficacy, self-determination, and goal-setting. Their confidence in their technical abilities and leadership (self-efficacy) was evident in the way they navigated challenges and implemented complex systems. At the same time, their autonomous drive to build and lead—grounded in personal interest and intrinsic motivation (self-determination)—led them to create a community organised around the concept of an Empire (goal-setting).

However, this vision did not emerge by chance; it was supported by clear objectives and long-term planning, reflecting a deliberate and sustained approach to achievement within the game. Alex also showed how he made use of different features and tools in Minecraft to stay connected with members of his base, even when communication was not always easy. For him, the Autcraft community offered more than opportunities for friendship; it provided a sense of acceptance — a place where he felt understood and valued. Being part of this environment helped him to rebuild

his confidence and sense of identity and gave him the foundation to speak about his experiences of bullying. Space, on the other hand, emphasised how she reconciled her dual diagnoses of autism and ADHD both in her physical world and digitally through Autcraft. Her experience highlighted the fluidity and interconnection between physical and virtual spaces. She also demonstrated how her base in Autcraft served as a practice area where she could safely confront and work through her challenges.

Furthermore, the analysis of the participants' experiences revealed three shared themes. When considered collectively, these themes not only illustrated commonalities across accounts but also offered a deeper understanding of each participant's individual experience (Figure 116). The theme of *Self* highlighted how the participants saw themselves through their diagnosis, through their differences and through time. It showed how they used the game to craft a symbolic story about themselves and how playing in Autcraft allowed them to form friendships in the game but also in their physical worlds. The second theme, *Communication*, illustrated how the participants used their bodies through their avatars to communicate and express emotions. Finally, the theme of *Space*, underlined the participants' fluidity of movement between their virtual and physical spaces. It showed how their game spaces were extensible (surface) and had depth (underground), thus offering them limitless possibilities. It also suggested how the layout of the participants' base could reflect either their autism diagnosis or their autism and ADHD diagnoses.

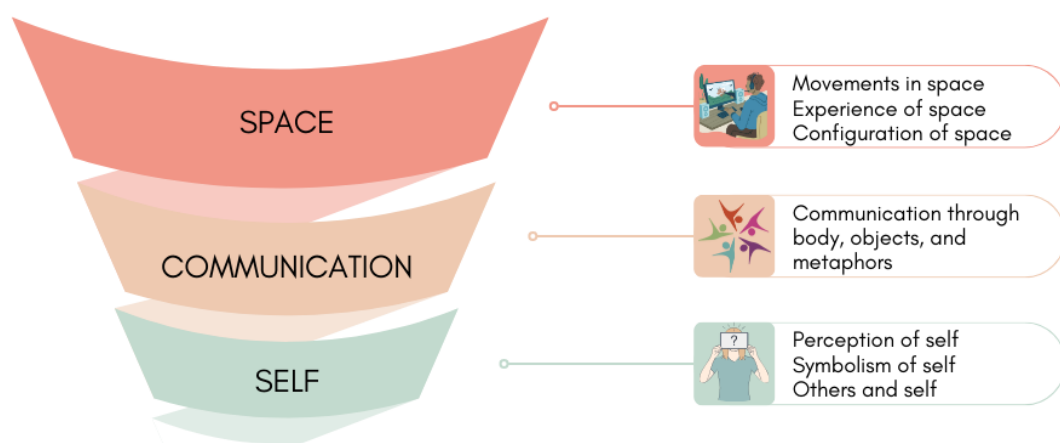


Figure 116. Patterns of meaning across cases

6. DISCUSSION

6.1. Introduction

This research sought to understand how autistic teenagers learn to play Minecraft in Autcraft, a multiplayer Minecraft server that many autistic gamers enjoy. An interpretative phenomenological analysis illuminated the participants' lived (learning) experiences.

In this chapter, I bring together the themes and insights from this study. Then, I elaborate upon these core constructs as a means to provide a comprehensive answer to the main research question posed in this thesis: "How do autistic teenagers learn to play Minecraft in Autcraft?" leaning on the following guiding questions:

1. How do autistic teenagers perceive themselves, and how does this self-perception influence their learning experience differently when playing in Autcraft?
2. What does the learning experience of playing Minecraft within Autcraft mean to autistic teenagers?
3. What strategies do autistic teenagers develop to learn and progress in the game in Autcraft's multiplayer setting?

While the study successfully addressed the main research question, it also revealed an unexpected insight. Analysis of the data highlighted marked differences between the participants diagnosed with autism and ADHD and those with autism alone in terms of how they organised their bases, for what purpose, and the learning approach they chose.

Furthermore, this chapter presents the findings as a basis for further interpretation and, in that sense, it does not reflect a fixed endpoint. On the contrary, it aims

to encourage opening up ways of thinking about the autistic learning experience in a broader sense across any context.

Below, I start with a summary of the findings. Then, I interpret the results in relation to the existing literature laid out in [Chapter 3](#), which I contextualised within the theoretical and philosophical frameworks described in [Chapter 2](#) with the guidance of the phenomenological paradigm presented in [Chapter 4](#). What follows, then, is organised into discrete sections, each focusing upon a particular aspect of the autistic learning experience as lived by the participants.

6.2. Synthetising the findings within a phenomenological framework

The findings brought to the fore the fundamental and multilayered tension that lingers between the normative expectations of the neurotypical world and the inescapable marginalisation neurodivergent young people experience because of them. Interpretative Phenomenological Analysis (IPA) was chosen as the most suitable methodology precisely because of its capacity to illuminate such individual experiences while simultaneously recognising the collective patterns that emerge across cases. While IPA centres on the lived experience of each individual, it also acknowledges the relational and contextual nature of experience—where shared patterns and themes across participants can deepen the understanding of each personal narrative, and each narrative, in turn, enriches the collective insight (Smith et al., 2009). This interpretive movement between the part (individual case) and the whole (cross-case insights) made it possible to give voice to each participant in their uniqueness while also drawing power from the collective resonance of their experiences.

As I showed in the previous chapter, using Interpretative Phenomenological Analysis helped to uncover the richness within each participant's story. While at a surface level their experiences appeared similar, looking more closely revealed a range of subtle, sometimes unexpected, differences. Dipper showed how being autistic demanded they remove themselves from the sensory overwhelming physical world to

be able to embrace their true autistic self in the virtual world while having one foot in the present and the other in the future. Dave demonstrated how drawing on their personality and skills enabled them to lead and empower an entire community, where learning was inseparable from innovation and implied a constant process of change. Although Alex had gone through a traumatic experience of bullying, he showed that being accepted without conditions played a crucial role in helping him rebuild his sense of self. It also gave him the space to develop his own way of communicating and to offer support to other players who might have been dealing with similar challenges. Lastly, Space's account fully encapsulated the duality of her being, highlighting how becoming herself is a lifelong learning journey through which she learns to reconcile her autism and ADHD that, at times, pull her in opposite directions, all the while existing in the virtual world as much as in the physical one.

By combining the findings from the individual cases with the cross-case analysis, this chapter illustrates how autistic teenagers playing Minecraft in Autcraft have a well-rounded perception of their autistic selves. In turn, this self-awareness facilitates how they regulate their emotions while allowing them to experience a sense of belonging reinforced by their personal abilities.

6.3. How do autistic teenagers perceive themselves, and how does this self-perception influence their learning experience in Minecraft?

In this section, I lean on Henri Bergson's view of the fundamental self as being experienced or *enduring* to address the first guiding question: "How do autistic teenagers perceive themselves, and how does this self-perception influence their learning experience in Minecraft?". Then, using insights from the participants' narratives and relevant literature, I explore how a sense of self shaped by autistic identity emerges through experience and reflection before examining how this identity is enacted and further developed in the virtual space of the game.

Bergson identifies two selves, the fundamental and spatial selves. For him, the fundamental self exists in duration through the succession of an individual's life events; it is experienced. Therefore, the self is ambiguous. It cannot be fully defined or fixed under a label because it is, by nature, constantly changing. The self is always changing because it endures. Hence, he argues that rather than having multiple constructed selves, the fundamental self represents a multiplicity of selves enduring over one's lifetime. Bergson's idea of duration implies that the true self can only be accessed from within. However, expressing it as it is 'becoming' is unfeasible since it is an experiential process. The same applies to self-perception because the very act of bringing attention to the 'self' stops the process. On the other hand, analysing the idea of the self solidifies this process into parts that the intellect understands, organises, manipulates, and labels. In doing so, the self becomes spatialised, like a picture taken at one point in time. In that sense, for self-perception to occur, it could be said that an external stimulus is needed to interrupt the flow of the living experience and enable reflection.

In line with Bergson's (1911/2003) thesis that "for a conscious being, to exist is to change, to change is to mature, to mature is to go on creating oneself endlessly" (p. 7), the quest to understand the self could be viewed from the standpoint of the philosophy of *Bildung* as von Humboldt (1794/2012) did more than two centuries ago – that is, as an existential journey through experience that all individuals undertake to fulfil their nature and become who they already are. If that is so, then whether the individual is autistic or not is significant, for both constantly experience the world but differently. That said, grasping the notion of self—defining what it is or fully understanding what it means—is a vast and complex endeavour, far beyond the scope of this thesis. While certain aspects of the self are addressed here, they are explored in relation to the specific context of autistic learning within Autcraft rather than as part of a comprehensive psychological and philosophical inquiry.

6.3.1. Autistic adolescents have a clear perception of their selves

All the participants in this study demonstrated self-awareness. Their experiences also underlined how their autism is inextricably embedded in their sense of self

through personifying their future self (Dipper), building a community based on shared values (Dave), rebuilding oneself after trauma (Alex), or reconciling the autistic and ADHD ways of being (Space). The findings showed that from this awareness of self emerges a sense of identity intertwined with self-efficacy and self-evaluation, as is evident from Dave's account in [Chapter 5.3. Leading with skills](#). The participants realistically and authentically appraised the strengths and shortcomings associated with their autism. They actively used the game environment as a space to pause, reflect, and make sense of their lived experiences. For some, this meant constructing areas within their base that served as personal landmarks—reminders of past accomplishments that reinforced their sense of pride and progression. Others used the game's safety and predictability to process difficult experiences, such as bullying, and to develop emotional coping strategies in a supportive virtual setting.

In some cases, participants also built spaces within the game that reflected their future hopes and intentions. These constructions were not merely decorative; they seemed to be connected to the ways participants were beginning to understand themselves, linking their present experiences with the possibilities they were starting to imagine, shaping their build from how they saw themselves evolve and change over time. In these instances, Minecraft took on a role beyond entertainment, becoming part of a process of self-reflection and personal growth that unfolded through their engagement with the virtual world. The results suggested that a clear self-perception facilitates a shared but still individual autistic identity. In Bergson's terms, the research process itself acted as an external stimulus—interrupting the flow of lived experience and enabling participants to step outside of that duration in order to reflect. By narrating their experiences across different points in time, they were able to spatialise aspects of the self, creating the distance necessary for self-reflection and insight. They demonstrated that their selves were not broken, substantiating Constant et al.'s (2020) conclusions. Instead, they showed how their self-perception evolved, changed, and endured. However, in this respect, the data does not fully align with Constant et al.'s (2020) notion of different constructions of self as separate cultural niches. That said, differences in study design may explain part of this discrepancy, as Constant et al.'s research explored a broad sociocultural context.

In contrast, the present study focused on the lived, individualised experiences of autistic teenagers within a specific virtual community. Moreover, the findings do not support Forber-Pratt et al.'s (2017) claim that autistic people may develop a sense of self around a common 'disability identity'. This is not only because none of the participants used the term 'disability' but also because the way they spoke about their autism reflected a markedly different perspective—one aligned with Autcraft's underlying philosophy of autism as a human difference rather than a deficit.

6.3.2. The diagnosis facilitates the becoming of the autistic self, the self with autism, and the autistic and ADHD selves

Becoming the autistic self also implies self-awareness, which, according to Bergson, occurs when the experience of living is made still (spatialised) through interruptions. In that sense, the diagnosis could be viewed as a disruption, which might enable autistic individuals to reconcile the fundamental self they experience with the spatial self the outside world interprets. The findings showed that all the participants interpreted their sense of self through the framework of their diagnosis, reflecting Crane et al.'s (2021) observation that diagnosis can play a formative role in shaping autistic identity. That said, the autism diagnosis does not standardise the 'autistic self', for all the participants conveyed their 'self' quite differently. The following commentary from Dipper: "It is different because before I just knew I had ADHD, so I was just thinking it was that but now I know it is autism (Di, 30.13) and I know it isn't just me being weird," (Di, 31.14) illustrates how the diagnosis contributes to a better self-understanding from which can emerge the meaning of the autistic experience. It is as if the diagnosis gave them the right to feel, be, and act in ways they had always experienced—an effect akin to Tan's (2018) notion of *redemption* (p. 164), in which receiving a diagnosis reframes autism, not as a deficiency but as a meaningful difference. While Hodge et al. (2019) shed light on the detrimental impact the lack of insights from non-autistic people has on autistic self-perception, Dave demonstrated that the diagnosis could also mediate social interactions with non-autistic people who might be more receptive to the autistic way of being because of it.

Even though the diagnosis can foster greater understanding, it may also highlight a perceived divide between the person and their autism. Alex's use of the phrase "I have autism" illustrates this and is consistent with Bury et al.'s (2020) observation that some individuals seek to maintain continuity with a pre-diagnosis self by framing autism as separate. It may be helpful to consider the paradox of the diagnosis in parallel with the debate surrounding the language to be used in the autism field, that is – whether identity-first language or person-first language is preferable. The data highlighted that most participants consistently used identity-first language when referring to themselves, such as "I'm autistic," rather than person-first formulations like "I have autism." Hence, the findings tend to confirm the results from Kenny et al. (2016) in the UK, Geelhand et al. (2023) in the French-speaking community, and Taboas et al. (2023) in the US, who have reported the autistic community's preference for identity-first language. Moreover, the same studies established that person-first language had more licences among professionals. However, their findings also demonstrated that some autistic people may favour person-first language, as reflected in Alex's choice. Alex considered his autism as the cause for his communication "impairment" (A1, 32.33), which, in turn, he viewed as the reason for being bullied, therefore contextualising his preference for a separation between himself and his autism.

Examining the language issue from a different angle, Bury et al. (2020) investigated how offensive the Australian autistic community considered some autism terms. They reported that the word 'autistic' was also perceived as disparaging since it is sometimes used as an insult. Consequently, it could be argued that their participants, like Alex, preferred the person-first language to avoid the potential stigmatisation associated with the autistic identity. I wrote this thesis in agreement with the Autcraft community's position, which accepts autism as an identity. Nonetheless, I value Vivanti's (2020) argument for respecting human beings first and foremost, which is to ask the person which language is relevant to them personally. This study further adds support to Robison's (2019) proposition that since autism was first described within a medical context where person-first language is predominant, it still bears the marks of an affliction to be cured, as Alex demonstrated above. Research has shown that autism also includes strengths, as Dave illustrated when proudly discussing his olfactive

aptitude, which might be, perhaps, as Robison (2019) underlined, better conveyed through an identity-first language. Regardless of the language used, participants still expressed a range of emotional responses to their diagnosis—from feelings of relief and validation (e.g., Dipper, Dave, Space) to a more conflicted view in which some attributed their challenges to autism, seeing it as something separate from themselves (e.g., Alex). This supports Powell and Acker's (2016) observation that diagnosis can carry both positive and negative emotional weight and echoes Lewis' (2016) call to monitor for signs of depression in newly diagnosed individuals.

The understanding that the diagnosis conveys is particularly relevant when the self negotiates a composite of conditions. The findings showed that participants with both autism and ADHD were able to distinguish between the two, either through different embodied sensations—such as experiencing autism in their brains in a way that was meaningfully distinct from their experience of ADHD—or by recognising divergent behavioural patterns, such as feeling overwhelmed (autism) versus distractible or forgetful (ADHD). This phenomenological distinction resonates with Merleau-Ponty's (1945/2013) concept of the *lived body*, in which experience is not merely processed cognitively but is enacted through the body as a medium of perception, meaning-making, and selfhood. The way participants positioned and made sense of their diagnostic identities within their lived experiences highlights the important role that dual diagnosis played in shaping how they came to understand and express their sense of self. This duality also means that, at times, these two antagonistic forces need to be reconciled, which Space illustrated in her self-portrait caricaturing her face through the juxtaposition of two different halves (Figure 97) and Dipper exemplified by wearing an avatar with eyes of different colours (Figure 18). On the other hand, when these forces overlap, both diagnoses seem to merge, which Dipper emphasised by saying, “I just freeze” (DI, 31.20), which may help explain why they need more time to answer their teacher's questions. The data also suggested that autism and ADHD trigger distinct and blended experiences, strengthening the argument that the dual diagnosis inevitably shapes a different perception of self, which gives support to Zahavi's (2010) multiplicity of ‘type of self’.

6.3.3. The autistic self in the virtual world

Bergson's (1896/2002) use of the metaphor of the 'image' is enlightening when explored within the context of online video games. He proposes that everything in the world is an image, conceptualising perception as the "aggregate of images (...) referred to the eventual action of one particular image, my body" (p. 22). He does not distinguish the images that we see in the world around us from those we see in our minds. However, he asserts that we are not detached spectators. For him, all these images concern us because we are actors. We are engaged in the world through our actions. According to Bergson, the body is also an image, even if it is a particular one, since we are embodied. In doing so, he steps away from the dichotomy between mental images on the one hand and external reality on the other. This interpretation is valid when considering the physical and virtual bodies of gamers both acting in the world. Considering the autistic self both outside and inside the game as images raises the possibility that the game affords two fundamental selves, one physical, the other digital, while also allowing for a similar interplay between the player's lived fundamental self and their spatial self in the game.

Just as the disruption caused by the diagnosis was shown to facilitate the becoming of the participants' autistic selves in the physical world, the findings indicated that the avatar, which may represent a different type of interruption, plays a significant role in the development of the autistic self. The results of this study demonstrated a strong relationship between the participants and their avatars, hence lending credence to Burleigh et al.'s (2018) player-avatar bidirectional bond and further refuting Stone's (1996) notion of separate disembodied identities, which claims that digital selves can exist independently of the physical body and are detached from embodied lived experience. The data also substantiated Ratan and Dawson's (2016) proposition that gamers extend themselves into their virtual worlds, which the participants illustrated in diverse and personal ways. Dipper used their avatar to explore aspects of their imagined future, such as building a shelter for animals—an expression of their aspiration to become a scientist and run a hotel for animals. Dave mirrored real-life social learning by intentionally turning his avatar to face others during conversations

in the game, demonstrating an embodied awareness of communication. Through her avatar, Space confronted a personal fear of tall buildings by constructing a towering castle—transforming a source of anxiety into one of creative empowerment. Alex’s avatar conveyed his love for mathematics and offered him a pathway to healing that had felt out of reach in his physical world.

By the same token, the fact that the participants decided to play Minecraft on a server dedicated to autistic players is a significant element illustrating that self-perception may orient the learning experience in Minecraft. The evidence further suggested that the participants’ clear understanding of their individual ways of being helped them develop a positive gaming identity that led them to choose games that aligned with their strengths and met their needs, as Ringland (2019b) previously reported. The findings, therefore, lend support to Anderson and Johnson’s (2021) investigation about video game streamers using their disabilities to forge a gaming identity, which is not to say that the participants built their identities around their disabilities as Forber-Pratt et al. (2017) posited.

6.4. What does the experience of learning to play Minecraft mean to autistic teenagers?

In this segment, I focus on the second guiding question: “What does the experience of learning to play Minecraft in Autcraft mean to autistic teenagers?” I discuss the participants’ learning experiences in the game against the backdrop of other autistic students’ learning experiences in school, as documented in the literature review presented in [Chapter 3. Experiences of Autistic Young People](#). In view with the argument that von Humboldt did not advocate for a Bildung education divorced from vocational training but only as its predecessor, and in that sense, agreeing with the thesis that he considered education as a means to self-realisation enabling individuals to choose their own path (Alves, 2019), that is – their vocations, allowed me to draw a parallel with the participants’ learning experiences in Autcraft.

The findings laid out below suggest that, rather than being consecutive stages, general and vocational forms of education coexist, intermingle, and reinforce one another within Autcraft. This dynamic reflects what Tyson (2016) refers to as *expansive* (general) and *exclusive* (specialist) pedagogies—where broad, exploratory learning fosters personal development alongside more targeted, specialised skill-building, which, in this context, I refer to as *Autcraft Pedagogy*. Autcraft gives players the opportunity to move freely without needing to follow a set path or fixed objectives. As they spend time in the game, they tend to pick up skills and strategies in ways that emerge naturally from their own activities. Rather than offering a rigid learning framework, the game supports playful exploration. In this sense, it creates conditions that encourage self-direction and help players develop strategies for managing and regulating their own engagement over time. Participants are encouraged to follow their interests, set their own goals, and determine the most meaningful paths through which to learn—thereby cultivating both autonomy and agency in the virtual space.

6.4.1. The participants discussed the inadequacy of the formal education setting to meet their needs

Although public awareness of autism has grown over the past fifty years, the findings from this study indicated that many educational settings continue to view autism through a deficit-focused perspective. Participants described how their schools often misunderstood their individual needs, highlighting the persistent gap between diagnostic categories and the realities of inclusive practice. Bergson's proposition of two selves helped me understand the dissonance between the participants' experiences and their schools' perceptions. Bergson posits that we perceive others either through an empathic immersion in their experiences to capture their worlds from their point of view or through observations segmenting what we perceive to analyse and label each part, and then reconstruct a whole perception informed by our own standpoint (e.g., professional experience, knowledge, personal history). Space's commentary about her school's "body listening" (Sp, 18.154) practice in New Zealand denotes the stark dichotomy between how non-autistic people may understand autism, thus echoing Hodge et al.'s (2019) findings on the perception of autism among UK educators, and

how autistic people experience it. Thus, the findings give currency to Cunningham's (2020) study about autistic pupils who denounced their teachers' limited understanding of autism. However, they diverge from the results of Sagers et al. (2011), whose participants reported more positive experiences, highlighting supportive teacher relationships and individualised accommodations within an inclusive school environment.

Nevertheless, if grasping a person's fundamental self is the preferable alternative to truly understanding them, then it is out of reach. In *Time and Free Will*, Bergson (1910/2012) illustrates the conundrum through the example of Paul trying to understand Peter (pp. 184-189). He goes on to explain that Paul will never be able to fully understand Peter beyond what he knows of his life and character because Paul cannot access the intensity of being that Peter feels. Paul does not know what it means to be Peter since "The intensity of (...) a deep-seated feeling is nothing else than the feeling itself" (p. 185). In other words, analysing, categorising, and labelling Peter's experience as he sees it will never give Paul access to the feeling firsthand. In other words, for Paul to understand Peter truly, he would need to impersonate Peter, live his life, and feel what he feels. However, if it were possible, there would only be one person, and in that sense, understanding others would be obsolete.

Merleau-Ponty (1945/2013) develops a similar proposition, saying that "there is no one who sees at the center of this mass of sensation and memories" (p. 23). For him, experience is perspective. Therefore, when lived experience is reduced to an abstract intellectualisation, we lose sight of that which we actually perceive. In other words, we focus on the experience as an object that we only consider from one perspective (e.g., considering that a house is only its façade). Following Merleau-Ponty's analogy of the house, it is fair to say that not seeing the sides of a house does not automatically mean that there are no sides. In that sense, accepting the particularities inherent to autistic students means recognising they exist without seeing them. The findings demonstrated that the teacher's openness influences the participants' learning experiences, as illustrated in Dave's comment on how the diagnosis helped their teachers understand them better, which completely changed their learning experience for the better.

6.4.2. The magic of Autcraft unfolds the openness of Minecraft

One way to understand the distinction between Minecraft and Autcraft is to imagine Minecraft as the classroom and Autcraft as the school that grows around it. Thinking about the environments in this way makes it easier to see the different roles each one plays, both separately and together. However, it is important to recognise that Minecraft remains an open-world setting, one that does not provide direct guidance, enforce a linear path, or lead players toward any predetermined outcome. The findings brought to the fore how Autcraft epitomises the principles of inclusion, particularly in the way its ethos aligns with the Salamanca agreement (UNESCO, 1994). Like the Statement's call for schools to accommodate all learners within a common learning environment, Autcraft provides a shared virtual space where autistic players can participate fully, be recognised for their strengths, and receive community-based support—without being marginalised or segregated from others. It gives breadth to Post et al.'s (2017) proposition that the participants' freedom to use their personality and skills to play Minecraft with others fosters their well-being. In line with von Humboldt's view that *Bildung* had to facilitate emancipation (Winkler, 2012) to ensure the interplay between the learner's self-formation and autonomy, it is precisely the interplay between the absence of guidelines from the game and the regulated structure of the server that enabled the participants to learn, hence exemplifying Zimmer-Gembeck and Collins' (2003) definition of independence in relation to autonomy as self-governed and self-regulated behaviours reflecting personal decision.

Schools have regulations, and Autcraft is no different. All players must abide by a set of rules when playing on the server. The rules are clear and explicit, and helpers and administrators constantly monitor their applications. As breaking the rules at school may lead to expulsion, breaking them in Autcraft may lead to the player being banned from the server. However, unlike in school, banning is a rare occurrence in Autcraft. Players respect the rules because they love playing on the server, not because they fear the consequences. Despite Autcraft's strict rules, the participants perceived the server as a place where they feel free to do anything they fancy. Autcraft does not celebrate players' obedience to the rules. On the contrary, it nurtures players' freedom,

autonomy, agency, and sense of responsibility and rewards them for the kindness and support they show each other. The findings highlighted that Autcraft's rules were defined on the basis of collective respect, understanding and acceptance of difference, thus contrasting with how school rules often interpret autistic students' autonomy, as reported by Sjödin (2015) and Hodge et al. (2019). In the image of Bildung, Autcraft empowers its members to think for themselves, reflect and make appropriate decisions in terms of what they need to learn to build the base they want.

The notions of freedom and responsibility in Autcraft also highlighted distinctive interpretations between participants with both diagnoses, autism and ADHD, and those with autism alone. Participants with the dual diagnosis perceived their freedom through the lens of what the game afforded them, that is – to be creatively free to build anything they wanted and at their own pace, as illustrated in Space commentary: “It gives me so much to do in so much time” (Sp, 40.124), thus validating Jennings's (2016) definition of autonomy as *freedom from* constraints (p. 12). They did not challenge the rules in Autcraft. Instead, they approved of them because they made sense to them. On the other hand, the participants with only an autism diagnosis seemed to associate their freedom with the responsibility they had towards their members. Endorsing the role of leader of their bases, the participants' sense of responsibility was predominant, so much so that they deliberately put their members' freedom before their own, which Dave exemplified by saying, “My freedom is less [important],” (Da, 67.110). Paradoxically, these participants also demonstrated agency when they planned on breaking the rules (e.g., Dave accepted that achieving their goal was worth being banned) or openly disagreed with them (e.g., Alex was discontent with the limitation of topics he could discuss and looked for other channels to share his opinion), hence exemplifying they were able to make an informed choice (Terzi, 2010).

All interactions in Autcraft take place on equal footing. Since admins and helpers have their roles added next to their names, they are easily identifiable. Nonetheless, staff are also players and members are always eager to play with them. The analysis of the data showed that by levelling with the members, Autcraft staff created a safe space where players easily discuss many issues, knowing they would be understood,

hence highlighting a different impact than Tomlinson et al. (2022) documented in mainstream schools. Peer interactions are based on a shared passion for Minecraft. As the members build a world together brick by brick, they also weave positive emotions between each block, which resonates with Acker et al.'s (2018) sense of belonging through affiliation. Echoing Bildung, Autcraft exposes autistic players to a world in which they experience differences positively and where they can ground themselves in an environment that fits them (Ulvik et al., 2021).

6.4.3. Playing Minecraft in Autcraft is a self-directed learning experience

If everything in the world is an image, as Bergson (1896/2002) posits, then how do we focus on some images and not others? According to him, we notice what matters to the body—what can be used, acted upon, or responds to our needs—and we filter out what has no immediate relevance or purpose for us. In this way, perception is organised by utility: we attend to what we can act on, which closely resembles Heidegger's notion of the 'ready-at-hand'. In other words, everything around us is arrayed according to the utility that they have for us, which inevitably leads to practical actions. Bergson says: "Conscious perception signifies choice, and consciousness mainly consists in this practical discernment" (p. 49). We choose what the object will mean to us.

In this light, having the choice of how to learn takes centre stage. Since the participants demonstrated a clear sense of self-perception and discernment, it stands to reason that they were equally able to identify their own learning strategies. The findings showed that allowing autistic players to choose their learning approach has a positive impact on their learning experience. For example, Alex explained that despite his communication and writing difficulties, he was a fast typer, and Space indicated that she "type[s] much easier than I do write (Sp, 20.175). Having the choice may also help develop flexibility and adaptation to change, as Space exemplified by saying, "I just do what I want to do like rn [right now] I'm building something but in 10 min time I could be mining" (Sp, 52.227).

On the other hand, as Tomlinson et al. (2022) and Sproston et al. (2017) reported, choice can also be a source of stress. While the analysis of the data confirmed their results, it also highlighted a distinction between low- and high-value choices. Dipper described that choosing the colour of the eggs they were making for Easter was easy and fast. Contrastingly, deciding which Autcraft membership they wanted to sign up for worried them. Hence, this suggests that the former was straightforward because it could be changed, and the latter carried more weight because it could not be reversed. Evidently, making choices implies uncertainty, which can be destabilising for anyone, yet Dipper demonstrated their capacity to appraise and then make choices.

The salience of terms such as '*I planned*' and '*I wanted*' underlined how the participants intentionally set goals and defined action plans to achieve them, as illustrated in how Dave organised the systematic and quasi-autonomous growth of their Empire 5 years ahead of time. The findings indicated that the participants intuitively leaned on Tough's (1979) three-phase model: 1) They decided to start playing Minecraft and then selected the Autcraft server, among many others; 2) They deliberately chose to plan their learning around what they needed to know at that moment to build what they wanted within the Autcraft structure (e.g., rules); and 3) All the participants used diverse and rich learning resources like YouTube video tutorials, famous YouTubers' gameplays, Wiki pages, and the Autcraft forum and community. In this respect, the findings also rejoin von Humboldt's belief that *Bildung* allowed students (players) the room to evaluate and reflect upon what they had learned, consider what they needed to learn next and make a choice.

The findings also demonstrated that, for the participants, the learning experience of building their bases in Autcraft means *creative freedom, learning while having fun, and being among people who share a lived experience of autism*. Rather than having a predetermined goal to achieve, Minecraft is designed on the premise that goals are unlimited and only determined by the players. Hence, it corroborates Peters' (1989) assertion that self-directed learning implies that the learner has control over the process and aligns with William James' (1899/2008) anecdote:

One friend, who does a prodigious quantity of work, has in fact confessed to me that, if he wants to get ideas on any subject, he sits down to work at something else, his best results coming through his mind-wanderings (p. 66).

Since progressing in Minecraft and adjusting to new releases requires constant learning, it could be said that the goal of the game is, in fact, to keep on learning to play. However, to continue playing and, therefore, learning, the participants had to be engaged, and for that, they needed to remain interested. In that sense, Autcraft seemed to nurture their attention by offering a wide range of activities with other players, hence compelling them to learn new game functionalities or build strategies, further substantiating the work of Sciutto et al. (2012). In a public lecture at Harvard, James (1899/2008) argued that “whoever treats of interest inevitably treats of attention, for to say that an object is interesting is only another way of saying that it excites attention” (p. 60), moreover emphasising Space’s experience of how complicated school work such as studying for exams or doing homework was because it did not interest her.

The principles of self-directed learning, namely, control, initiative, motivation, and self-efficacy, shined brightly everywhere in Minecraft. Autcraft further facilitates self-directed learning by allowing its members (learners) and content creators (YouTubers or other players) to interact and socialise. The results showed how the participants exemplified Knowles’ (1975) assumptions while playing in Autcraft. As discussed above, the participants demonstrated a sensible level of *self-concept* by understanding their autism, feeling dismissed when it was not recognised by others, and identifying what kind of help they needed and how to receive it—further lending support to Cunningham’s (2020) study with autistic pupils. Despite having *a great deal of experience* with Minecraft, the participants had to learn how to play the game within the affordances and limitations of Autcraft. In that context, they often helped others build structures, solve issues, or learn more complex functionalities, hence alternating between being learners themselves and a source of learning for others. All of them were proud of their achievements in the game, which underlined their *readiness to learn*.

6.4.3.1. Personal growth skills

From a pedagogical standpoint, Autcraft echoes John Dewey's progressive model by fostering personal growth and creating initiatives where players discover their abilities and develop their skills in the game, in turn paying it forward by helping other players, hence encouraging playing with a purpose (Sanderse, 2021). On the server, learning is oriented towards the players' needs to understand their lives outside the game, acquire new skills in the game, and solve problems associated with either of the two (Knowles, 1975). These three topics were commonly discussed in the public chat, in private with admins or helpers, on the forum, or addressed through specific events like Autism Awareness Day or Pride Month. Autcraft also emphasises intrinsic motivation. To help players build on their self-confidence, every Saturday, all members nominate a member for the Player of the Week Award, a live-streamed event on YouTube, thus publicly recognising and celebrating the achievements of the winner. Likewise, other events take place regularly, which aim to nurture players' self-esteem (e.g., kindness day), sense of belonging (e.g., birthday parties on Birthday Island), and sense of community (e.g., Launch of a new video game).

In step with von Humboldt, who believed that individuals may better achieve self-growth when they are in the midst of challenging situations that force them to rely on their inner qualities and when they have to interact with others sharing similar experiences (Seigel, 2005), learning in Autcraft is rooted in the players' personal history. For example, Alex was able to bond with others who faced bullying, which helped him develop a sense of responsibility for the members of his base and be confident enough to set clear boundaries. Dave used their engineering competencies to ingeniously develop activities weaving a sense of togetherness into the community fabric of their base through learning opportunities. Moreover, Space considered her Autcraft base as a space where she could freely develop strategies to cope with the struggles she faced in her physical world.

6.4.3.2. *Transfer of cognitive skills to the academic domain*

Although Minecraft contributes to the development of skills, it may also facilitate the transfer of cognitive skills to the academic domain. Dipper shared how playing Minecraft helped them develop skills in mathematics (e.g., calculating the number of blocks needed, using coordinates to locate resources), and Dave attributed having better grades in school, especially in English, to playing Minecraft in Autcraft. These examples are significant because they show that even though the transfer of competencies does not reflect a one-for-one parity, it nonetheless occurs. It may partially explain why Stewart et al. (2020) determined that transfer was modality-specific when their research on the use of action video games to develop speech hearing in noisy situations failed to yield a positive result. On the other hand, the participants' experiences were consistent with McKinley et al.'s (2011) findings on the transfer of skills across related domains.

6.4.3.3. *Transfer of physical skills*

Playing in Autcraft is also a physical exercise and most of the minigames on offer call for specific competencies. One of them, *Parkour*, as exemplified in Dipper's base, specifically demands dexterity and precision to jump from one block to the next in a crescendo of difficulty without falling. This skill helped Dipper avoid students in their school's hallways. Thus, the findings corroborated Finke et al.'s (2018) research linking the development of physical skills in video games with the improvement of motor skills outside of the game. Physically demanding activities in Minecraft require precise and rapid hand movements to move the mouse. It supports Franceschini et al.'s (2017) findings on how their dyslexic participants improved their reading ability with action video games. However, further investigation is needed to determine whether such improvement is due to exercising eye movements, which would add credence to Stewart et al.'s (2020) work or is caused by the movements of the hand. That said, the finding also highlighted that habits are formed through repetitions in Minecraft. For example, players must recall individual and series of buttons on the controller or keyboard to play, hence improving memory, as Finke et al. (2018) reported.

6.4.4. Self-Regulation is weaved in the Autcraft tapestry

As the review of the literature indicated in [Chapter 3](#), the theories of self-regulated learning (SRL) and self-directed learning (addressed in the previous section) share common features. They both reflect how individuals learn independently in formal and informal settings, respectively. In the remit of education, Zimmerman (1986) asserted that when a student values the learning activity, they select a strategy (action) and perform a task through sustained efforts, thus defining SRL as a learning and motivational process. This definition led to the behaviourist approach relying on rewards and punishments to compel students' self-regulated responses (Skinner, 1963). This study found a strong relationship between regulating emotions and self-regulated learning, which corroborates Boekaerts' (1995) mastery/growth and coping/well-being pathways. Learning to play Minecraft in Autcraft is a sensory and emotional experience. Autcraft is organised in a way that provides its members with many opportunities for self-regulation. These self-regulation strategies showcase how the player's physical body influences their emotional experience through their avatar and vice-versa. To illuminate the sensory-emotional synergy between the participants and their digital alter-egos and contextualise the findings on the backdrop of Boekaerts' (1995) premise that experiences stemming from regulating emotions are also situated learning experiences, I turn, once more, towards Henri Bergson and William James.

6.4.4.1. *Regulating sensory sensitivities*

Bergson (1896/2002) posits that perception varies with the processing of sensory sensitivities, which he calls *molecular movement*. For him, this molecular movement (even subtle) entices the body to ready itself to react to external stimuli, and in that sense, aligns with William James. Hence, if the function of sensory processing is to prime the body to respond to stimuli, and if perception varies with this process, then it could be said that perception is grounded in action (movement). Furthermore, Bergson argues that while perception changes based on the processing of sensory stimuli, they are not separated, for they constitute the whole experience.

All the participants but one shared experiencing many sensory sensitivities, which substantiates Acker et al.'s (2018) participants describing their sensory overwhelm caused by school noises and bodily smells, to name but a few. Moreover, the data seemed to agree with Quadt et al.'s (2021) proposition that there is a synergy between emotion and interoception. For example, participants reported that they could turn the volume off to reduce the sensory load, visit the calm rooms, or retreat to their own bases if they felt overwhelmed. One of the main attractions in Autcraft is the Deep Darkness, a daily community event in which all the players gather in one room to fight all sorts of mobs in the dark and win Heads. However, fighting can be sensory challenging, which is why Autcraft also offers players the possibility to buy⁴¹ Heads on the website. This finding draws attention to the importance of considering how accommodations are organised.

Contrary to schools, the diagnosis is irrelevant in Autcraft. The server is designed to include accommodations. Consequently, members who already feel marginalised at school do not feel discriminated against when they go to one of the calm rooms. Moreover, having a formal diagnosis is not required to be a member or to access the calm rooms. It may well be that Autcraft integrates aspects of Mahler et al.'s (2022) interoception-based intervention, which could be emulated in the classroom; however, specific investigation is needed.

6.4.4.2. Regulating emotions

All the participants commented on how playing Minecraft in Autcraft helped them regulate their emotions, hence substantiating Mazurek et al.'s (2015) results showing that playing video games reduces stress in adult autistic gamers and Finke et al.'s (2018) findings demonstrating that video games can be used to diffuse unpleasant situations. Further agreeing with the study above, the data also highlighted that playing Minecraft generates positive emotions associated with self-efficacy, which Space

41 Players accumulate credits through their good deeds and by performing little tasks on the server. In turn, these credits can be redeemed against items such as Heads.

illustrated, starting and ending all play sessions in her head room so she is reminded of how much she has achieved.

Reminiscing of Bergson, William James (1890/2000b) asserts that emotions cannot be objectified, divided into parts, classified or willed because they are experienced. He argues that emotions vary with bodily responses to stimuli, saying, “the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur is the emotion” (p. 449). James proposes that external stimuli trigger physical, somatic, and visceral changes (interoception), saying:

We feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful, as the case may be. Without the bodily states following on the perception, the latter would be purely cognitive in form, pale, colorless, destitute of emotional warmth (p. 450).

Admittedly, James’ theory seems counterintuitive at first glance. However, it starts to make sense when understood through the lens of Boekaerts’ (1988) dual pathway model. Let us consider Dipper’s experience of boredom as an exemplar. Dipper explained that they do not build when they are bored (fidgety), which supports James’ assertion. On the other hand, they also shared that when they are bored, the repetitive movements of mining resources distract them and soothe their ennui. It could be suggested, then, that one emotional state (boredom) might lead to action (mining), therefore refuting James’ theory. That being said, James (1890/2000b) also hypothesised that:

One mental state is not immediately induced by the other, the bodily manifestations must first be interposed between (p. 450).

Unpacking Dipper’s experience, it could be said that the action (perception) of building bored Dipper and that the action (perception) of mining distracted and relaxed them, which, in this case, supports James’ proposition. According to Boekaerts (1988), the learner’s (Dipper) evaluation of the task (building) determines which pathway to

follow. If their appraisal reveals a congruence between the task (building) and their needs, then a positive emotion (interest) emerges, and the mastery/growth pathway is initiated. However, if they perceive the task as threatening to their well-being (building), a negative emotion (boredom) arises, which triggers the coping/well-being pathway (mining). Her model, therefore, puts the onus on cognition, which James refuses. In other words, Dipper cognitively assessed the idea of building before comparing it (bodily changes) to their interest in the task at that moment. Considering the same scenario through Bergson's conceptualisation of the experiencing self (enduring) and the analysing self (spatial), it could be said that Dipper stepped out of the playing experience to decide what to do next (cognition) then imagined (experience) building a new room, which made them feel fidgety (bodily sensation), which is why they went mining resources instead (coping/well-being pathway). Bergson's movement between two selves (fundamental and spatial) seems to give breadth to Boekaerts' movement between two pathways (mastery/growth and coping/well-being).

However, an alternative interpretation is worth exploring. When Dipper explains that they go mining when they are bored, it implies that they are already playing in the game. The notion that players first evaluate what playing (building) involves is hardly conceivable. Therefore, it may be because Dipper was fidgeting and could not focus on any particular building task that they went on mining resources, which, in retrospect, they interpreted as boredom. In that case, Dipper's experience would lend support to James' perspective and align with Bergson's proposition, given that Dipper remains in the experience. Notwithstanding the initial cognitive feature, it would also be consistent with Boekaerts.

That said, the findings also showed instances where the cognitive element led the way. For example, Dipper's use of terms such as '*I planned*' and '*I wanted*' clearly denotes intention and goal setting. However, these objectives seemed easily overridden when interrupted (e.g., their friend giving them a new egg), enticing Dipper to lean back on a soothing routine, thus forgetting about their initial goal. Ergo, the findings suggest that cognition may bear on the choice of pathway less than initially thought.

Still, if we entertain the idea that this scenario is plausible, a fundamental question remains unanswered. How did mining become the distraction needed to compensate for the boredom of building? To address this question, I now turn my attention to the circumstances associated with self-regulation.

6.4.4.3. *Situated regulation*

Three of the participants shared negative school experiences. Dipper's mum indicated how school was "increasingly difficult due to the hum of crowds and varying noises" (Di, 43.1), Alex explained that his school "was full of bullies" (Al, 15.131), and Space stated that her "school can be a nightmare" (Sp, 15.127). These statements are in keeping with Boekaerts and Corno's (2005) argument that experiences of 'failure' progressively influence how learners feel about specific tasks, eventually making them perceive and interpret similar tasks as threats, which triggers the coping/well-being pathway.

The findings showed that how the environment is organised plays a key role in supporting self-regulation. While Boekaerts claimed that self-regulation is challenging to achieve in the classroom mainly because students usually expect teachers to provide them with the resources needed, keep them engaged, monitor their performance, and offer them relevant feedback, the data clearly showed how Autcraft successfully embedded these principles. It facilitates self-regulation by making resources easily accessible, creating initiatives that keep players engaged, playing with (and monitoring) players, and offering direct feedback. Rather than teaching players how to regulate in a certain way at a particular time, Autcraft created calm rooms and spam rooms where players could go at any time. These rooms are designed to meet players' soothing and seeking needs. In that respect, Autcraft fosters ongoing learning experiences that are intertwined with emotions, which agrees with Boekaerts and Niemivirta's (2000) findings. Therefore, this study did not replicate Aldridge and Rowntree's (2022) results, which showed that the learning environment did not influence their participants' self-regulation. Taking advantage of emerging technology, ChatGPT was added to Autcraft during this study. While accessible by all players, interactions were private

(as opposed to the public chat) but always under staff monitoring. Although no data was collected regarding the participants using the tool, other players shared on the forum how it helped them feel less lonely because they had found someone to talk to, just as Space considered Minecraft as a friend.

To be able to self-regulate, one also needs to feel safe. Dave shared that Autcraft was different, saying, “It’s a better environment than other servers, the bad words, the toxicity and greifing is almost non-existent here” (Da, 59.46.48), which resonates with Ro’s comment in Goodall’s (2018b) study, saying, ‘It’s not the building which matters, it’s the attitude and atmosphere inside it’ (p. 11). The data showed that feeling safe and being surrounded by people who understood them while playing Minecraft had a positive impact on the participants’ well-being in the game but also in their daily lives, substantiating Zain et al.’s (2021) findings showing how playing video games contributed to autistic young people’s well-being during COVID-19.

All the participants decorated their constructions with various artefacts created in Minecraft (e.g., banners, frames, inspirational quotes on wood signs), reminiscent of Tomlinson’s (2022) participant Bella saying: “artwork displayed on the walls around the school, it makes me feel really calm . . . it makes me really inspired . . . wanting to find out more about it’ (p. 330). The décor in each participant’s base was unique. Even though the material was the same, how artefacts were used differed in colour, function, and meaning, thus lending credence to Boekaerts’ (2011) assertion that a goal associated with a specific learning situation becomes part of a situational meaning structure, which may be unconsciously activated, triggering a generalised response without setting goals.

6.5. What strategies do autistic teenagers develop to learn and progress in the game within Autcraft?

This section addresses the third guiding question: “What strategies do autistic teenagers develop to learn and progress in the game within Autcraft?”. In what follows, I discuss the findings from three perspectives: 1) Learning through the game’s

affordances; 2) Learning through the communicating autistic body in movement; and 3) Learning through the autistic experience and configuration of space.

While the results of this study strongly support Taylor's (2017) claim that *Bildung* originates in the formation of the self through individual experience, they also agree with Wahlström (2010) who stated that this experience is only feasible because it occurs and is situated in the world. *Autcraft* is a virtual space where members learn to play together. In *Autcraft*, friendship is perceived through 'having a good attitude', 'being nice to others', and 'helping others', hence emphasising qualities such as *liking*, *trust*, and *respect*, which correspond almost verbatim with the description given by Finke et al.'s (2019) participants. The findings also substantiated previous work from Gunn and Delafield-Butt (2016) and O'Hagan and Hebron (2017), which showed that friendships evolve around a shared interest. However, in *Autcraft*, that shared interest deepens and becomes a source of learning among the members.

6.5.1. Learning through the game's affordances

The data highlighted how *Minecraft*'s structural and social affordances enabled autistic players to learn by doing and collaborating. In *Autcraft*, experimentation, peer support, and problem-solving emerge naturally, making learning an embedded and accessible part of play.

6.5.4.1. Learning by doing

Minecraft is a building game, which makes doing indissociable from learning. The analysis of the data highlighted the salience of the practical aspect underpinning the learning process, which Dave exemplified by offering me step-by-step demonstrations of the engineering process beyond some of their farming strategies. Trial and error was also a common learning practice. All the participants explained that they regularly spent hours on YouTube, looking for building inspiration and then trying those ideas out themselves. They highlighted that making mistakes taught them just as much, if not more, than when their builds worked perfectly the first time. This process relies primarily on repetition, supporting skill acquisition through feedback and adjust-

ment. It also aligns with Finke et al.'s (2018) study in which a participant named Noah explained that his spelling improved because he was frequently typing words while chatting with other players. Similarly, both examples illustrate that repeating actions in a context that's fun and personally meaningful can significantly enhance learning. That said, it is fair to assume that some of the participant's trials yielded errors, yet they kept on playing. In Autcraft, mistakes appeared to be framed as part of the learning process, not as threats—thus encouraging continued experimentation and growth, which contrasts with Boekaerts and Corno's (2005) claim that repeated failure often leads learners to interpret tasks as threats to their well-being. Therefore, further inquiry is needed to investigate how autistic players perceive 'failure' and what it means to them.

Learning by doing, however, is not limited to a solitary practice. On the contrary, the findings showed that learning by doing can be a family experience. Most of the participants were initiated into the game by family members. Dipper, for example, learned the game by watching their brother play, memorising his actions and building strategies until they could start playing on their own. Additionally, the data highlighted that gaming together as a family could create a positive atmosphere where shared interests and experiences could actively support the learning process while strengthening the family dynamic.

6.5.4.2. Learning by collaborating

In Autcraft, players are alternatively learners and teachers, which helps maintain the balance of power in all interactions. The study demonstrated that the participants had also learned by *doing (building) along with* other players, modelling the other player's actions one block at a time. The server fostered a culture of collaboration where players enrich each other's lives by sharing their knowledge and expertise. Helpers would very often use the public chat to encourage gamers to ask questions and seek others to help them with their constructions. Most of the participants pointed at sections of their bases that were inspired by or co-built with helpers (e.g., Space got the idea of her Pride tower after a helper visited her base). They also showed sections that they had built after asking for help in the chat despite their social difficulties,

which may indicate that learning in Autcraft facilitates ‘social risk-taking’ (Gallup et al., 2016; p. 226). Furthermore, the findings suggested that the open-ended nature of the game together with the safety of the Autcraft’s environment and the players’ own building goals may create a push and pull between freedom and focus, which in turn, keeps them engaged and facilitates learning over time. Thus, reflecting Boekaerts’ (2011) argument that learning tends to flourish when individuals’ personal goals are allowed to take root within an environment that encourages both their development and their well-being.

The data showed that learning to play the game did not always involve doing everything on their own or asking for help. It also included a more collaborative approach, such as delegating specific tasks—a skill particularly evident in Dave’s approach. While it is common for players to collaborate and support one another in Autcraft, purposeful delegation reflects a higher-level strategy linked to planning, leadership, and recognising others’ expertise. Dave exemplified this when they explained that, knowing building structures was not their strength, they intentionally assigned this aspect of their Empire to friends with greater building skills. This demonstrated not only self-awareness and goal clarity but also a form of business acumen as they coordinated contributions to achieve a shared outcome efficiently. All the participants were given a parcel of land upon starting on the server; some of them built a base, and others went on to create entire communities. These communities represented groups of players collaborating on a joint project. For example, twenty-two players decided to work together to create the shopping centre Panda Alley (Figure 11). Dave’s Empire was built with a crew of members, and Alex’s hotel had several guests who built furniture and decorated their rooms. These results suggested that social regulation (Harrison & Gesthuizen, 2019) through teamwork in Autcraft might be an enjoyable and effective learning approach, which gives support to Moster et al. (2022), who argued that collaborative projects in game-based environments can foster stronger peer relationships and engagement, especially when learners share a common interest. Their study also highlighted how working in teams allowed participants to develop practical skills—such as time management—while enjoying more positive and cooperative dynamics than those typically experienced in traditional school settings.

Collaborative projects were standard practice in Autcraft. They allowed members to develop their building skills on their terms while contributing to a project. In turn, the server grew with each member's base. Conversely, research in technology and autism using autism diagnostic criteria, like social impairment, to frame participatory design can be misleading. Frauenberger et al. (2013), for instance, suggested that difficulties with social interaction could make participation harder for autistic individuals. Cai et al. (2013) also reported that some of their participants had refused to collaborate.

In contrast, the present study adopted a deliberately neuroaffirmative and iterative methodology, actively shaped by the participants' suggestions and feedback. Rather than encountering the anticipated 'challenges', the process fostered ease, engagement, and mutual responsiveness, thereby shedding light on the importance of thoughtful design conceptualisation—particularly when working with neurodivergent participants—in line with Çorlu et al.'s (2017) argument that researchers may lack the necessary knowledge or experience, resulting in research instruments and designs that may be ill-suited to participants' needs. Additionally, none of the participants in this study withdrew, and all said they enjoyed the entire process (Annexe 20), which contrasts with Cai et al. (2013), who reported having participants refusing to collaborate.

6.5.2. Learning through the communicating autistic body in movement

This section explores the strategies autistic teenagers develop to learn and progress in Autcraft, focusing on the social interplay inherent to communicating with other gamers. Impairments in social interaction and communication are part of the diagnostic criteria for autism, as outlined in [Chapter 1. Introduction – What is Autism?](#) However, the findings also highlighted how the movements of participants' avatars often intertwined to form an emergent bodily language through which communication with others—and with oneself—could unfold. Playing Minecraft on a multiplayer server such as Autcraft offers autistic gamers the opportunity to develop a rich and safe communication system where physical proximity is not a prerequisite for meaningful connection. This aligns with Gallup et al. (2016), who documented how virtual

environments offer autistic players a safe context for “social risk-taking” and facilitate self-directed forms of communication.

Playing and learning together in Minecraft imply an ongoing exchange of information and skills. In Autcraft, communication between members takes place either through chat (text), avatars’ gestures, or a combination of both. Echoing Merleau-Ponty’s (1945/2013) postulate that “I understand the other person through my body, just as I perceive “things” through my body” (pp. 191-192), the data shed light on how the virtual world of the game facilitates the emergence of a communication modality rooted in both the physical body and its digital representation. While the participants conversed with me in the chat during the sessions, they all relied on their avatars’ bodily movements to convey meaning that extended beyond written language. Hence, highlighting what might be considered an *avatar body lexicon* that allowed participants to adapt their avatars’ movements to the context of the conversation, the objective of the interaction, and the players involved in the exchange. The participants were shown to use circle motions (e.g., heads, hands, or bodies) or back-and-forth head movements (e.g., between me and a block) to indicate which individual object required attention instead of using their arm to point at it—substituting physical pointing with embodied movement. Such embodied communication echoes the findings of Finke et al. (2018), who observed that autistic gamers express relational understanding and emotion through digital embodiment.

These movements emerged spontaneously and responsively. From a Bergsonian perspective, such gestures could be seen as expressions of the *true self*: actions that arise from the continuous flow of inner experience, or *duration*, and are, therefore, rich in meaning and emotional authenticity. For example, Dipper’s repeated head turns between their snowgolem and me (Di, 13.110), or Dave’s subtle body motions towards features of their base (Da, 3.21), were not just gestural shortcuts. Instead, they were shaped by being in a relationship with me. Thus, this suggests that the meaning of the gesture came from *interaction*, not from an internal script. This form of expression resonates with Bergson’s conception of the body as a dynamic centre of action rather than a passive conduit of representation. For Bergson (1907/1944), movement is

not reducible to spatial displacement but is integral to how experience is lived in the world—an indivisible flow that carries intention, perception, and affect. In this light, the avatar's movements become more than gestural cues; they are temporal, expressive acts through which the players *become* in relation to others. They do not simply point at the meaning; they enact it.

This result stands in contrast to Li et al.'s (2019) findings, establishing that non-autistic students' learning in online classrooms often depends on avatars performing explicit pointing gestures. In Autcraft, however, participants used their entire bodies to face or move towards objects of interest, even if this meant turning their backs to the interlocutor. When showing me their Head Room, Dipper did not point or elaborate but simply stood inside and stated, "This is my Head room" (Di, 5.40), trusting that physical presence and orientation were sufficient indications. This behaviour seems to show that meaning-making was shaped more by relationships than by following social norms. What mattered most was reaching a shared understanding rather than simply performing the right social signs. Thus, the findings support O'Hagan and Hebron's (2017) suggestion that autistic social dynamics often evolve around shared interests rather than non-autistic norms of interaction.

Considering communication beyond the confines of speech or writing shifts the focus to understanding meaning as it is embodied and enacted. Participants showed that even in the absence of speech—or when text was minimal—communication in Autcraft was expressed through shared action, joint attention, and collaborative movement. If communication is understood as action, then response, delay, or stillness also become communicative acts—an idea in harmony with Bergson's (1907/1944) notion of *duration (la durée)*, where meaning unfolds through qualitative, lived time rather than static representation.

The data thus emphasised the significance of movement as both process and presence. Participants' avatar movements indicated that communication was not confined to fixed gestures like pointing. Instead, meaning emerged through fluid, responsive motion—where sustained action, rhythm, and mutual attunement shaped a shared

expressive language. While pointing to an item required one movement forward, whether the participants used their whole bodies to trace a circle or an arc above a specific landmark or simply moved their heads back and forth between their interlocutor and the object, it always involved more than one motion. These movements continued until acknowledged by the other—indicating mutual recognition had been achieved. Movement, in this context, was not merely directional; it was dialogic. It opened the space for understanding to emerge. In that sense, understanding was not assumed but confirmed through action. As Space illustrated while flying above her exploding tree and tracing its chaotic outline, the avatar becomes a conduit for a personal and expressive trajectory—a “being thrown toward the object,” in Merleau-Ponty’s (1945/2013) terms, where intention and perception are inseparable from action:

The gesture of reaching one’s hand out toward an object contains a reference to this object, not as a representation, but as this highly determinate thing toward which we are thrown, next to which we are through anticipation, and which we haunt (p. 140).

Minecraft’s communication affordances seemed to also enable avatars to express affective states. Bodily movements seemed to also serve as immersive, intuitive expressions of the participant’s thoughts and emotions. Space’s circling flight over her exploding tree (Sp, 5.41) or her spinning motion while inviting me to her castle (Sp, 9.71) did more than indicate space—they communicated enthusiasm, pride, and embodied storytelling. These actions resonate with Bergson’s view of the body as a mediator between the self and the world, where communication arises before thought has crystallised into language, unfolding in the continuity of movement. Moreover, Dipper’s posture changed from stillness and drooped shoulders while discussing the death of their cat to animated jumping upon showing me their new one, thus communicating a visible shift between sadness and joy (Di, 2.16). Space similarly hid behind the fountain when she needed time to respond (Sp, Fig. 106), using spatial positioning as an emotional buffer. These bodily responses suggest how emotional regulation and expression might be safely explored through virtual embodiment. In that sense, the

findings resonate with Mahler et al. (2022), who demonstrated that interoception-informed emotional expression enhanced regulation and interaction in autistic learners.

Importantly, when bodily language was absent or interrupted—as when Dipper typed “Wait here,” (Di, 22.31) and disappeared—the lack of gesture left me momentarily disoriented, underlying the communicative power of the body even in a virtual space. These findings indicate that autistic participants in *Autcraft* not only adapted to but actively shaped an embodied communication system. Movement, gesture, stillness, and space became expressive tools through which participants made meaning collaboratively. In *Autcraft*, communication was not a deficit but a dynamic and evolving process of interaction—a living language in motion. It gives breadth to Trevisan et al.’s (2021) view that emotion and interoception are closely tied to how autistic students learn, reinforcing the idea that meaningful inclusion must account for different communication styles—not just academic participation.

Therefore, these findings bring support to Vest et al. (2020), who emphasise the significance of gestures in digital education and Wang et al.’s (2018) claim that integrating motioning avatars in online classes increases students’ attention. According to Quek et al. (2002), gestures and speech are complementary; they facilitate learning by improving information retention (working memory) and reducing cognitive load. Although Veinott et al. (1999) suggested decades ago that educational videos, including gestural information, could be used to contravene language barriers and improve communication, research remains scarce in the field of autism.

6.5.3. Learning through the autistic configuration of space

The third guiding question of this thesis—What strategies do autistic teenagers develop to learn and progress in the game within *Autcraft*?—finds a vibrant answer in how participants organised, inhabited, and moved through their bases. The configuration of space was not simply a backdrop for learning but an active and embodied part of it. Participants seemed to shape their game environments with intentionality and

meaning, revealing spatial arrangements as externalisations of their thought processes, identities, and emotional landscapes.

This observation draws directly from Merleau-Ponty's (1945/2013) concept of the lived body as a way of being in the world. In *Autcraft*, space was not neutral—it was felt and expressive. Each base seemed to reflect an extension of the participant's self. Each player's design decisions—where to place a structure, how to arrange rooms, what artefacts to include—reflected their inner states and emerging strategies for learning. It echoes Bergson's view that the organisation of space represents the interplay between the true self, fluid, intuitive and grounded in lived duration and the spatial self, shaped through compartmentalisation and habit. Such intentional design mirrors the autonomous strategies noted by Sciutto et al. (2012), who highlighted the importance of incorporating students' interests to promote engagement and ownership in learning. All the participants shared that they felt at home in *Autcraft*. They did not simply play in that space; they inhabited it, shaped it, and allowed it to shape them in return. Through their bases, they brought familiarity, care, and personal meaning into their virtual worlds. Learning, in this context, surfaced naturally through their everyday experiences, woven into each block, and made sense of their virtual surroundings.

Two main configurations were identified: lateral and vertical. Although Bergson does not explicitly discuss vertical or lateral arrangements in these terms, his ideas about duration, intuition, and spatialisation offer insight into how the true self and spatial self may influence the players' interaction with and structuring of their bases.

Dipper and Space built outwards, spreading their structures across their lands. The layout felt open and fluid. Each part appeared to connect to the next in a way that made sense within the broader theme of their bases. It was more than a collection of buildings — it came together as a whole, shaped by meaning and the relationships between the different elements. Dipper's base, for example, consisted of multiple cubic structures interconnected through narrow parkour-like paths (Figure 112). Similarly, Space's base comprised disjointed buildings of different shapes and sizes dispersed through her world but without passageways (Figure 113). Both participants used vari-

ous colours and textures to build their worlds, making each structure stand out differently while emphasising its underlying self-exploratory and affective dimensions as Dipper explained, “I like making rooms for my pets; it gives me something to focus on” (Di, 11.92). Dipper’s and Space’s lateral (external) organisation also conveyed a spontaneity of designs. Echoing Bergson’s concept of duration, their bases grew according to their personal goals, moods, or needs. Space’s elaborated and highly coloured Pride Tower (Figure 96) and lonely sofa (Figure 95) or Dipper’s reliance on building animal rooms to help them focus (Di, 11.92) highlighted how this type of layout allowed them to perceive the deeper connections and meanings between the blocks in their virtual spaces. Hence, their organisations of the space seemed less about rigid separation and more about fostering harmony, coherence and adaptability. These findings are consistent with Goodall’s (2020) and Tomlinson et al.’s (2022) arguments that flexible, student-led learning environments can enable autistic learners to develop autonomy and emotional regulation.

It is particularly evident in how participants layered their emotional and cognitive histories into their builds. Dipper and Space seemed to draw on their environments for emotional regulation. Dipper shared that Minecraft helped them calm down when upset (Di, 35.44) and Space highlighted the calming effect of her world after stressful school days (Sp, 49.208). These emotionally grounded strategies reflect what Bergson would describe as the intuitive alignment of the self with space, that is, an embodied, affective resonance with the environment that transcends rational planning. Similarly, Späth and Jongsma (2020) observed that allowing autistic individuals time and freedom to process their environments supports their autonomy and emotional well-being.

Space noted how her base captured the feeling of progress, saying, “How much progress I’ve made” (Sp, 8.69), and Dipper explained the emotional arc behind caring for hurt animals or dreaming of a future animal hotel (Di, 14.119; 24.43). Their configurations were not static maps but embodied timelines—spaces where memory lived in form, function, and feeling. Dipper’s and Space’s bases were not built all at once but through duration—through a layering of activity over time. The spatial arrangement, then, seemed to serve as a visual and functional memory of the self in motion. Bergson

(1911/2003) would describe this as *duration in space*, the unfolding of identity not as fixed architecture but as evolving continuity. Therefore, the findings are in keeping with Post et al. (2017), who stressed that autonomy and temporal ownership of one's actions contribute to a sense of agency and well-being in autistic individuals.

By contrast, Alex and Dave adopted a vertical orientation, constructing singular, towering structures. Dave's castle, library and tavern were sophisticated and internally compartmentalised into multiple levels containing various rooms. By demonstrating their expertise in complex game functionalities, such as the storage room logistics (e.g., "I have a mod that I downloaded that tells me everything I have and which chest it's in," Da. 23.182) or the industrialised farming (e.g., "This is my automatic cactus farm. It all goes into this chest," Da, 16.130), Dave presented an organisation based on prioritisation reflecting their focus on efficiency and external standards. They seemed drawn to organising their environment in ways that broke it down into fixed, measurable parts. This way of thinking reflects what Bergson described as spatialisation—an attempt to make sense of something fluid by forcing it into rigid categories. Their base was also a stratified and symbolically rich space, as the following comment demonstrates: "Do you want to know the main goal of the Empire? [...] I plan to get all my wealth, and I plan to write a book" (Da, 32.256). Hence, it revealed a desire for structured progression and mastery. Although more basic, Alex's hotel followed a similar logic of verticality and internal compartmentalisation, acting as a fixed hub of activity; it also reflected their need for control and external validation: "I believe in helping people, which is why I created this [the base], and you don't have to pay anything to stay here [hotel]" (A1, 9.71). The vertical organisation of their bases suggested control, clarity, and predictability. In that sense, their bases seemed to offer them a stabilising force. This approach to structured design is reminiscent of the compartmentalised expectations often assumed in traditional classrooms, as described by Sjödin (2015).

These findings may suggest that lateral and vertical forms of spatial organisation show distinct orientations toward learning, structure, and engagement. Considering Dipper's and Space's lateral organisations, these insights also suggest that pedagogical support could potentially enhance their learning by prioritising spontaneity,

creativity and self-direction over rigid sequencing. In this respect, the findings resonate with Terzi's (2010) view that genuine inclusion requires accommodating diverse forms of agency, including both structured and exploratory learning preferences.

Conversely, Dave's and Alex's vertical organisations seemed to be pre-planned and chronologically executed according to deadlines or linear sequences. Following this thought, in the classroom, vertical thinkers might prefer clearly ordered to-do lists and schedules that move in a step-by-step progression. Such need for structure parallels Robeyns' (2016) comment on how restricted autonomy in autistic learners can reflect a systemic undervaluing of their decision-making capabilities.

Interestingly, the open-ended and non-linear nature of Minecraft gives credence to Bergson's notion of duration. In the game, players were not required to follow a set of sequences. They modelled their virtual worlds after their ways of being according to what made sense to them. Hence, it also corresponds to the participatory research models of Makhaeva et al. (2016) and Benton et al. (2014), who advocate for learning environments that adapt to neurodivergent rhythms and interests. Thus, the participants engaged with their space not only as designers but as composers of environments that reflected their internal rhythms, cognitive preferences, and sensory needs.

6.6. Summary

The first guiding question this research sought to answer was, "How do autistic teenagers perceive themselves, and how does this self-perception influence how they learn to play Minecraft differently in Autcraft?" According to the philosophy of *Bildung* (von Humboldt, 1794/2012), two fundamental questions are at the core of what it is to be human: 'Who am I?' and 'What is my purpose?' These questions are viewed as *existential* when non-autistic people pose them. Conversely, they are seldom considered when it comes to autistic individuals. Nevertheless, it was precisely their awareness of being autistic that led the participants to seek out a Minecraft server designed for autistic players—highlighting how self-knowledge shaped their ability to find a space where they could fully be themselves. By the same token, two of the

four participants described how recognising the differences between their autism and ADHD helped them come to terms with the dissonance they experienced, allowing them to better reconcile the particularities of each condition.

The data highlighted that a game developed by a well-known autistic developer (Goldberg & Larsson, 2015) on a server created by an autistic dad (Duncan, 2013), by design, contains all the elements to foster a positive autistic self-perception. Furthermore, this study showed that when understanding and appreciating themselves and being recognised for who they are, autistic (and autistic with ADHD) teenagers are more able to embrace their strengths and shortcomings and are more inclined to take risks—drawing on their strengths to support others and confront challenges, as Alex demonstrated through his efforts to help players experiencing bullying, informed by his own past experiences. The second guiding question this study addressed was, “What does the experience of learning to play Minecraft in Autcraft mean to autistic teenagers?” Since the game has no predefined goals but instead provides an open framework for exploration, players are free to determine both what they want to achieve and how they wish to go about it. The ability to make choices and decisions in Minecraft seemed to give the participants a strong sense of agency. It helped them shape their emotional experiences and regulate their emotions within the game—often in ways that felt more accessible or effective than in physical environments. Unlike the physical world, where natural constraints can limit autonomy, Minecraft (in Autcraft) provided a space in which their actions had a visible impact, and their choices genuinely shaped their experience.

The last question explored in this research was, “What strategies do autistic teenagers develop to learn and progress in the game in Autcraft?” The findings underlined the three main types of learning strategies the participants developed through playing: 1) learning through the game’s affordances, 2) through embodied communication, and 3) through spatial configuration. Minecraft enabled hands-on, collaborative learning where mistakes were part of the process. Learning emerged through trial, repetition, and dialogue—with participants alternating between learner and mentor roles. The findings also demonstrated that social interaction was often non-verbal, tak-

ing the form of avatar movement, stillness, or gesture, thus creating a fluid and embodied language that supported regulation and connection. Lastly, this study brought to light how the participants expressed themselves through spatial design: some created lateral, flexible layouts tied to emotional regulation (e.g., Dipper and Space), while others favoured vertical, structured builds reflecting clarity and long-term planning (e.g., Dave and Alex). Together, these strategies revealed a diversity of learning modes shaped by personal values, preferences, and sensory needs.

To offer a clearer visual synthesis of these findings, a conceptual map of the three central themes identified across the four cases such as self, communication, and space— is illustrated in Figure 117. It shows how these dimensions were expressed differently depending on whether participants tended towards a vertical or lateral configuration. Highlighting key attributes linked to each style helped clarify the broader experiential patterns that emerged across the cases. Building on this concept, Figure 118 situates the four participants within that same vertical–lateral configuration based on their observed behaviours, spatial strategies, and interactions. It visually demonstrates how Dipper and Space tended towards lateral and exploratory approaches, while Dave and Alex oriented more vertically through structured and chronological designs. Informed by Bergson’s concepts of true and spatial selves, these diagrams help conceptualise the distinct learning orientations in Autcraft.

7. CONTRIBUTIONS OF THE THESIS

In this concluding chapter, I review the significance of the study in relation to the findings. I also reflect on the original contribution to knowledge this thesis makes and discuss the implications of the research's findings for improving how video games and educational programmes are designed to address the learning needs of autistic young people while ensuring their well-being and unconditional inclusion in the classroom, and more generally, in society. Next, I present the limitations inherent to the study before sharing how neurodivergent students and their teachers along with parents of neurodivergent young people may explore the study's insights further. Finally, I highlight what research ought to focus on to deepen our understanding of the various nuances intrinsic to the autistic lived experience.

7.1. Reviewing the significance of the study

This thesis aimed to gain a deeper understanding of how autistic teenagers learn by observing the strategies they develop and rely on to learn to play Minecraft on their own and with other gamers in Autcraft. Research has demonstrated that the number of autistic young people attending mainstream schools is on the rise (D'Agostino & Douglas, 2021). In line with the Salamanca agreement (UNESCO, 1994) stating that all "schools should recognise and respond to the diverse needs of their students" (pp. 1-50), the Scottish Government (2017) has been keen to facilitate the inclusion of autistic students in mainstream education by providing appropriate support. However, inclusion in the classroom has become analogous to intervention programmes (Education Scotland, 2019) and accommodation strategies (Babb et al., 2021). Moreover, research has noted that in developing programmes informed by the autism diagnostic criteria (American Psychiatric Association, 2013), the education system focuses on what autistic students are said to 'lack' and, therefore, perpetuates the deficit-oriented view of autism. Previous work has shown that this approach aims to 'train' autistic students to learn as non-autistic do rather than supporting the autistic way of learning (Goodall, 2018a). In this context, the fact that 60% of autistic students registered in

mainstream schools across the UK do not feel understood by their teachers (APPGA, 2017) and the ever-increasing levels of absenteeism (Moyses, 2021) give currency to the mental health crisis that is rampant among autistic young people.

Conversely, there is evidence that autistic people enjoy online technologies (Anderson & Johnson, 2021). On this basis, technology-based intervention models have been designed. That said, their efficacy has yielded inconsistent results (Fletcher-Watson et al., 2016). Despite increasing evidence that online video games can offer autistic young people a mediated space where they feel understood and included (Ringland, 2019b) and where they engage in self-directed learning without additional adult support (Finke et al., 2018), it remains important to avoid overgeneralising the field. Indeed, research into autism and technology continues to be primarily influenced by a pathological framing of autism. For instance, Carlier et al. (2020), in their review of 29 technology-supported interventions for autistic youth, reveal that the majority of these designs are underpinned by deficit-oriented assumptions and are developed without meaningful involvement from autistic individuals themselves. Consequently, such interventions may fail to reflect the sensory, cognitive, and experiential realities of their intended users.

Given the self-guided inclusion strategies demonstrated by the participants in this study—such as collaborative building, initiating help-seeking interactions, and creating projects aligned with their strengths—it becomes increasingly evident that more deliberate involvement of autistic individuals in the design of technology-based programmes may allow for a more strengths-based approach to inclusion. *Self-guided inclusion strategies*, in the context of this study, describe the ways in which autistic participants independently navigated and structured their engagement with others—choosing how, when, and with whom to interact—based on personal strengths, interests, and situational comfort. These were not externally imposed mechanisms but internally driven and responsive to the affordances of the Autcraft environment. Autcraft exemplifies this by embedding inclusion into its very architecture: from sensory regulation rooms to player-led communities and moderated emotionally safe communication spaces, the server invites participation on autistic terms. This study mirrored

those values methodologically by adopting a neuro-affirmative, autism-centred research design that prioritised participant agency, choice, and environmental familiarity. Participants were engaged in a space they valued, chose how they communicated, and were invited to shape the research process, including validation of their contributions. As this research demonstrated, when autistic individuals are directly involved in the design process, inclusion is not an external feature added afterwards; instead, it is intrinsically woven into the structure and function of the technology itself. However, scientists have indicated that research remains principally concerned with the impairments associated with autism, with only a marginal number examining autistic strengths (Burnham Riosa et al., 2017). Hence, a shift in autism education and technology towards research designs and methodologies grounded in autistic perspectives, as this study has done, may offer a more authentic, affirming and practical path forward.

This research investigated the lived experience of four autistic teenagers who learned to play Minecraft through the unique, community-oriented structure of Autcraft, which differs significantly from solo gameplay. The study started by addressing how autism is perceived against the backdrop of the medical and social models of disability and the neurodiversity movement. The study was rooted in the philosophy of *Bildung*'s principles, which guided the inquiry towards a deeper understanding of how autistic individuals' self-perception interacts with their relationships with the world, in turn influencing their perceptive agency in learning by doing. The theoretical landscape of self-directed and self-regulated learning informed the interplay between a bodily-oriented learning approach and emotional self-regulation strategies, which autistic players rely on to learn while playing. Based on previously documented experiences of autistic young people learning in formal and informal settings, the literature review provided insights into the learning context and the perspective of autistic learners in relation to the exploration of the participants' lived experiences of learning in Autcraft.

This thesis has demonstrated the significance of adopting a phenomenological approach in autism research, showing that direct engagement with the embodied lived experiences of autistic young people yields nuanced, first-person insights that are rare-

ly accessible through second-hand accounts. Rather than relying predominantly on secondary accounts from parents, educators, or professionals, this perspective invites a more grounded and authentic form of knowledge creation—one that can complement and deepen existing research paradigms by centring autistic voices in the construction of meaning. Ergo, this study will hopefully encourage other researchers in the autism field to consider collaborating with autistic people to design suitable programmes to meet their needs and support their well-being.

7.2. Contribution to knowledge

This thesis has made a contribution to knowledge by showing how autistic teenagers learn when it takes place in an enjoyable, safe, and structured environment. The study has illuminated the synergy between autism and autism with ADHD and the underlying learning mechanisms teenagers develop when playing the game. More specifically, this research has contributed an empirical understanding of how different the autistic self emerges when combined with ADHD, subsequently influencing how emotions are mitigated, needs are met, information is processed, and learning is facilitated. Understanding how this composite self-perception shapes the autistic learning experience may inform the development of future intervention programmes. These could strive to be genuinely learner-centred, prioritise agency, emerge through co-design with autistic individuals, and build upon their existing strengths and preferred ways of engaging.

This thesis has also underscored the value of using commercial multiplayer online video games that autistic young people like to play, as educational support. This might not only be more enjoyable but also less costly than developing ‘serious games’ that emulate the traditional classroom approach without engaging learners. This insight could help shape a novel approach to intervention programmes in schools, fostering inclusion through a shared interest in a game that could also be played at home, possibly integrating social interactions and learning opportunities beyond the classroom.

The methodology developed in this study makes a distinct contribution to knowledge in autism research by demonstrating how participatory, phenomenological inquiry can be meaningfully adapted to digital environments that autistic individuals already use and value.

The research process was designed based on the needs, preferences, and comfort of the participants to ensure that the conditions felt natural and familiar rather than imposed or clinical. From the choice of setting to the methods of communication and data collection, the study prioritised environments and processes that aligned with how autistic young people already engage, learn, and interact. Hence, this model may inform future methodological designs across diverse areas of autism research and provide unique and meaningful insights to parents, educators, game designers, and other professionals.

7.3. Limitations of the study

There were limitations associated with this study. Since the literature selection for the review was based on documented autistic young people's experiences, other research (not based on lived experiences) was filtered out. Some limitations were inherent to the methodology used, and others were consequences of the limited scope of the project. However, none undermined the overall findings put forth in this research. In terms of methodology, the limitations concern the recruitment of participants and specific aspects of the collected data.

Participants were recruited through a purposive approach where the data collection took place. Since Autcraft aligns with the neurodiversity movement, which views autism as a human variance rather than an impairment, participants were likely to share a similar sentiment. Since they were already playing in Autcraft, participants were likely also to have an appreciative view of the server. The recruitment criteria did not include specific sociodemographic factors like gender, location, or ethnicity, as these details were either already known or not essential to answering the research question. For instance, the advert clearly stated that only young people between the

ages of 12 and 15 could take part, so age was already established from the outset. While Autcraft supports gender fluidity—allowing users to display customised pronouns next to their usernames (e.g., Cici_Sparkle (She/Her))—the questionnaire did not require participants to disclose their gender. Although gender was not a targeted variable in the study’s design, the four participants self-identified across four different gender identities. Although it fell outside the scope of the research, this diversity may have played a role in shaping how participants engaged with the game world and made sense of their learning experiences. Participants’ countries of residence were automatically captured by Qualtrics, and distinguishing ethnicity bore no weight in the research question since the study was international. As the participants did not have identified learning difficulties, the findings may not be representative of autistic individuals with co-occurring learning disabilities and should, therefore, be interpreted with this limitation in mind. The size of the sample could be viewed as another limitation. However, it sits within the guidelines of Smith et al. (2009), who suggest a sample size between three and six participants (p. 51). Moreover, only one participant authorised their parent to participate; therefore, the lack of background data about the three other participants may have limited the interpretation of the results.

This study used a phenomenological approach; therefore, the findings are rooted in the specific experiences of the young people who took part and should not be assumed to represent the experiences of all autistic young people. Still, the insights gathered in this study may help identify possible directions for future research and practice, including how participatory, strengths-based methods might be adapted in other contexts. Furthermore, as addressed in the section 4.7. Methodological Reflections, my dual role as a neurodivergent mum and researcher is another limitation. Despite a daily rigorous reflective practice to bring to the fore my assumptions and personal experiences and a cyclical interpretation of the data, my dual role as both researcher and advocate for neurodivergent young people may have created a power imbalance and influenced the analysis, even if minimally.

In step with the neuro-affirmative approach underpinning this study, the findings were co-constructed between the data and my analysis. Therefore, the present research might be difficult to exactly replicate.

7.4. Recommendations for neurodivergent students and teachers

The study showed that the participants engaged in the learning experience when they could adjust the environment to meet their needs. Traditional education settings do not often afford such flexibility; however, providing neurodivergent students with more adaptable settings could help them understand which conditions support their learning and which make their participation difficult.

Many neurodivergent students experience sensory sensitivities that affect their learning. These sensitivities are responses from their nervous systems to environmental demands. Greater teacher understanding of the impact of sensory load may therefore support more positive responses in the classroom, including recognising the need to withdraw from an activity temporarily. In this context, stepping back should be understood as a legitimate regulatory strategy and students should be reassured that it is not a failure on their part.

In addition, the study highlighted that neurodivergent students may demonstrate knowledge and competence effectively through actions, such as making, organising, building, or experimenting. This approach could provide a more accurate representation of what has been learned than verbal explanation alone. Assessment formats that recognise and accommodate action-based demonstrations of learning could therefore offer a fairer account of neurodivergent students' competence while nurturing agency, autonomy and self-confidence.

7.5. Recommendations for parents of neurodivergent young people

The motivation for undertaking this research stemmed from personal experience. Over the years, teachers have often misinterpreted or failed to acknowledge my

son's capacity to learn because it did not align with their understanding of autism or their expectations. This study thereby proposes that parents view their autistic children's learning abilities beyond traditional academic rigidity.

Advocacy sits among the many responsibilities parents of autistic children face. In this regard, asking for access to alternative learning spaces could be included in requests for support interventions. As this study indicated, learning beyond the classroom, through digital environments or hybrid formats, should be facilitated, and parents should be allowed to request such arrangements.

Finally, the study highlights the importance of collaboration over correction. Parents frequently face pressure to direct, manage, or 'normalise' their child's behaviour to fit classrooms expectations. The findings suggest that a collaborative stance, one in which the young person is consulted and determines what supports or undermines their experience in school, may improve learning while fostering greater trust and autonomy. Listening, negotiating, and adjusting expectations over time may contribute to healthier family dynamics and overall well-being.

7.6. Recommendations for future research

Following the limitations, this study raised several questions which remain unanswered at present and warrant future research. These questions mainly concern the interplay between autism and ADHD and their implications. Further inquiries are needed to identify the cognitive, sensory, and emotional factors contributing to the differences and overlaps between autistic and ADHD traits and behaviours. Further investigation could also address how accommodations and educational support programmes might be improved to account for the dual diagnosis. Likewise, a greater understanding of the impact the combined diagnosis may have on family dynamics could inform more suitable support.

Given the predominance of negative experiences with only slight evidence of autistic students' positive experiences in school (e.g., teachers and educators), further

research should be undertaken to investigate if the difference could be attributed to the teachers and educators having a diagnosis of autism, ADHD, or both.

The findings indicated that combined elements such as interest in the game, flexibility of the server's structure, access to private spaces, calm rooms, group activities, and acceptance in a community facilitated the transfer of skills outside the game. The process underlying such transfer of competencies remains to be further investigated, as does its application in formal learning settings.

Although autism is characterised by a lack of social and communication skills, this study's findings provided insights into the use of gestural language facilitated by avatars. It may warrant additional study focusing on how avatar gestures could be used in intervention programmes aiming to support nonverbal autistic young people.

The study's participatory and strengths-based approach fostered trust, respected autistic participants' needs, and supported meaningful engagement throughout the research process. It suggests that research designs grounded in lived experience and responsive to participants' preferences may offer a solid alternative to the predominant deficit-oriented research framework—highlighting the value of a strength-based research pedagogy in the field of autism. Consequently, further research should be undertaken to investigate how neuro-affirmative methodologies can be adapted, scaled, and applied across diverse contexts within autism research.

This study's methodological approach—situated at the intersection of phenomenology, participatory design, and neuro-affirmative practice—offered not only a means of accessing autistic young people's lived experiences but also enacted a pedagogical stance grounded in mutual respect, trust, and learner-led engagement. It was grounded in dialogue—not simply as conversation, but as a deeper, mutual process of meaning-making between researcher and participant. Thus, it suggests that phenomenological research designs—when grounded in neurodivergent perspectives and enacted with ethical sensitivity—may produce not only situated knowledge but also alternative models of inclusive pedagogy. Future research could further examine how

such methodological frameworks might inform inclusive teaching practices, particularly in relation to learner agency, co-regulation, and the recognition of multiple modes of expression in both digital and physical classrooms.

Moreover, the study also highlighted the need for further research exploring how teacher training programmes informed by autistic lived experience might ensure educators are adequately equipped to support neurodivergent learners. Future research could also explore whether neurodivergent teachers' own lived experience may positively influence the learning experiences and sense of inclusion among neurodivergent students. These teachers may bring valuable perspectives that reshape classroom dynamics and offer a more reciprocal understanding of inclusion. Finally, with the increasing development of interactive technology, further research could examine how AI tools such as ChatGPT could be integrated into existing game-led support programmes as affective technology.

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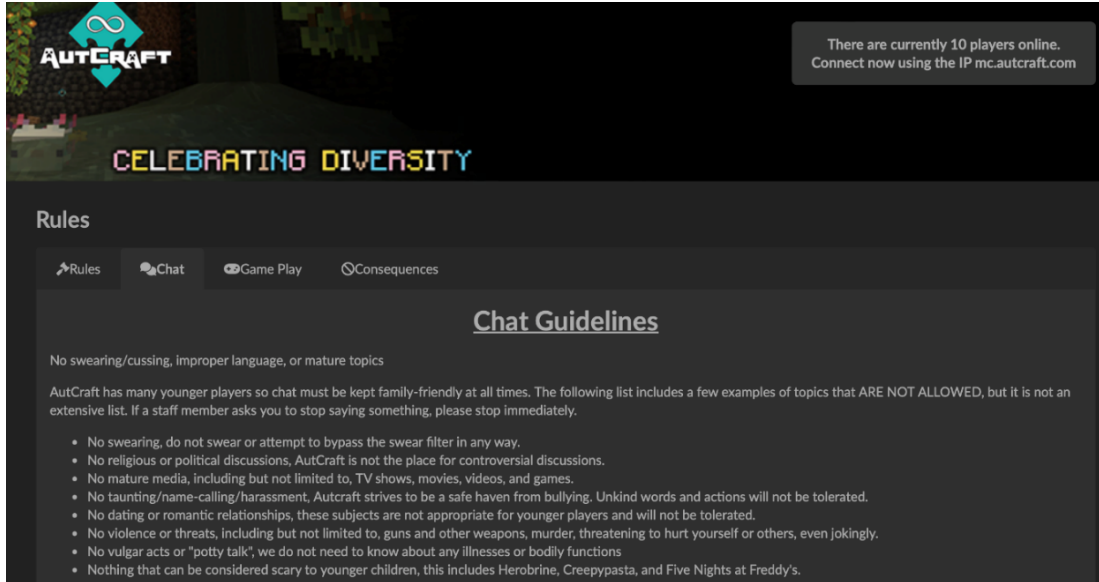
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ANNEXES

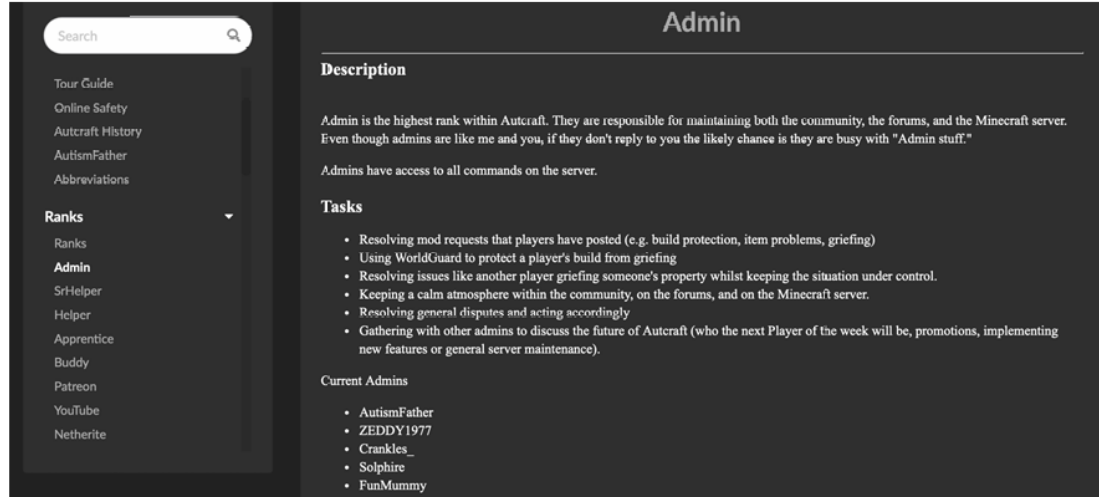
Annex 1. Autcraft rules accessible from the website



The screenshot shows the Autcraft website interface. At the top left is the Autcraft logo. In the top right, a notification box states: "There are currently 10 players online. Connect now using the IP mc.autcraft.com". Below the logo, the text "CELEBRATING DIVERSITY" is displayed in colorful letters. The main content area is titled "Rules" and has a sub-header "Chat Guidelines". Under "Chat Guidelines", there is a paragraph: "No swearing/cussing, improper language, or mature topics. AutCraft has many younger players so chat must be kept family-friendly at all times. The following list includes a few examples of topics that ARE NOT ALLOWED, but it is not an extensive list. If a staff member asks you to stop saying something, please stop immediately." This is followed by a bulleted list of prohibited topics:

- No swearing, do not swear or attempt to bypass the swear filter in any way.
- No religious or political discussions, AutCraft is not the place for controversial discussions.
- No mature media, including but not limited to, TV shows, movies, videos, and games.
- No taunting/name-calling/harassment, Autcraft strives to be a safe haven from bullying. Unkind words and actions will not be tolerated.
- No dating or romantic relationships, these subjects are not appropriate for younger players and will not be tolerated.
- No violence or threats, including but not limited to, guns and other weapons, murder, threatening to hurt yourself or others, even jokingly.
- No vulgar acts or "potty talk", we do not need to know about any illnesses or bodily functions
- Nothing that can be considered scary to younger children, this includes Herobrine, Creepypasta, and Five Nights at Freddy's.

Annex 2. Administrators and Helpers



The screenshot shows the "Admin" page on the Autcraft website. On the left is a navigation menu with a search bar and links to "Tour Guide", "Online Safety", "Autcraft History", "AutismFather", "Abbreviations", "Ranks", "Admin", "SrHelper", "Helper", "Apprentice", "Buddy", "Patreon", "YouTube", and "Netherite". The main content area is titled "Admin" and contains the following sections:

- Description**

Admin is the highest rank within Autcraft. They are responsible for maintaining both the community, the forums, and the Minecraft server. Even though admins are like me and you, if they don't reply to you the likely chance is they are busy with "Admin stuff."

Admins have access to all commands on the server.
- Tasks**
 - Resolving mod requests that players have posted (e.g. build protection, item problems, griefing)
 - Using WorldGuard to protect a player's build from griefing
 - Resolving issues like another player griefing someone's property whilst keeping the situation under control.
 - Keeping a calm atmosphere within the community, on the forums, and on the Minecraft server.
 - Resolving general disputes and acting accordingly
 - Gathering with other admins to discuss the future of Autcraft (who the next Player of the week will be, promotions, implementing new features or general server maintenance).
- Current Admins**
 - AutismFather
 - ZEDDY1977
 - Crankles
 - Solphire
 - FunMummy

Search

- Tour Guide
- Online Safety
- Autcraft History
- AutismFather
- Abbreviations

Ranks

- Ranks
- Admin
- SrHelper**
- Helper
- Apprentice
- Buddy
- Patreon
- YouTube
- Netherite

SrHelper

Description

SrHelpers are players that are 18 years old or older, who have proven themselves responsible, respectful, and patient enough to handle any situation on the server. SrHelpers are able to mute and jail players that misbehave but more importantly than that, they have proven that they will communicate with all players in a respectful and caring manner.

How to become a SrHelper

- SrHelpers must be 18 years of age or older. If the Admins think you are not ready for SrHelper you may get Helper Rank.
- Maturity. You need to be professional
- Responsibility. You need to be active on Autcraft and help others when asked
- Honesty. If you accidentally break a window, tell them that you did it.
- How you handle things. As SrHelper, players will come to you with their stories of depression or suicide or other difficult issues. You need to be able to help them and try not to get overwhelmed by it.

Current SrHelpers

- Adventurock
- Skylord_Gamertag
- Gryfon5000

Search

- Tour Guide
- Online Safety
- Autcraft History
- AutismFather
- Abbreviations

Ranks

- Ranks
- Admin
- SrHelper
- Helper**
- Apprentice
- Buddy
- Patreon
- YouTube
- Netherite

Helper

Description

Helper is an Autcraft rank available to players 13 or older. A player with Helper rank will have the word Helper in light red in front of their username. Helper can be earned if you encourage and help out as well as prove to be responsible.

Commands

Helper (and Apprentice) has access to /mute, /seen, /tp, /tpo, the ability to award players store credits for good behaviour (this award is known as CBA or Caught Being Awesome).

Current Helpers

- Purrrpley
- Sweetspice1295
- KeyaanTheAtomic
- _Mrs_D
- monsterman V5
- Dreanna_Banana
- Zilver2021
- EnderSquiddy
- CrumbleKJ
- freddiekafka
- intermscout
- OPstefR0P

Annex 3. Introduction Cici_Sparkle on the forum

1

Cici_Sparkle


Table

← → B I U Paragraph 12pt A

Hi, I'm Cici_Sparkle, I'm a PhD student and I'm researching how autistic teens learn to play Minecraft. I'm a noob. My son has been playing for years, so he's been teaching me a bit. I'm getting there slowly... so, I'm sorry if I look like I'm lost when I walk around, the truth is that I may very well be 😊. I've been following @AutismFather for years now and I am a fan.

I'm looking for 6 participants who don't mind showing their world to me. I will post an advert about my research project and how to contact me. I will spend time everyday on Autcraft and look forward to meeting you all!

Annex 4. Cici_Sparkle's profile in Autcraft

 **Cici_Sparkle** 3 months ago

Hi, I'd like to share a bit about me and why I'm here. I'm a PhD student at the University of Strathclyde in Scotland (UK) and I'm researching how autistic teens learn to play Minecraft. I'm a neurodivergent mom and my teenage son is autistic. I went back to University to research how I can help him best. So, here I am. I knew about Autcraft through my son and I asked AutismFather if I could conduct my research here, and he said yes. Everything I do and share has been approved by AutismFather.

Annex 5. Project presentation webpage (password protected)

Protected: Research Project – Autcraft

Thanks for your interest in this project.



My name is Cici_Sparkle, I am a PhD student at the University of Strathclyde (Glasgow, Scotland) and also a mom. I am a neurodivergent (ADHD) researcher mom and my autistic son is my inspiration. When my son was diagnosed I went back to University to study as much as I could about autism, not only to better know him as a person, but also, to understand how he learns best.

This is how the adventure started.

The purpose of this research is to explore how autistic teenagers learn to play Minecraft. It may shed lights on the various strategies autistic gamers rely on intuitively to learn and progress in the game, while illustrating how to best use these key elements in other settings.

Instead of explaining what the project is all about in a long text, I thought a small video intro would be less boring. I've tried to present the information clearly and logically (at least according to my brain).

If you prefer reading check this [document](#) where I share all the details.

If you have any questions just let me know at [christine.marmoy.2019\[at\]uni.strath.ac.uk](mailto:christine.marmoy.2019@uni.strath.ac.uk).

Or if it's easier, you can contact me via **/mail send** in Autcraft or **email** on the Autcraft website and we'll take it from there.

This research was granted *ethical approval from the Ethics Committee at the University of Strathclyde*.

In Scotland, parental consent is not required for participants aged 12+, however, *I really, really encourage you to talk to your parents about it*.

Show them this page, so they know and understand what the research is about and let them know why you are interested in participating.

GAMERS NEEDED!

Hi, I'm Christine Marmoy, I'm a neurodivergent PhD student looking for 6 gamers to participate in my research.

About? I'm investigating how autistic teenagers (12-15) learn to play and progress in Minecraft.

How? Would you be interested in sharing your world with me, showing me what you created and how you did it?

I DO THEREFORE I LEARN

Where? Autcraft **When?** 23/01/2023 to 28/02/2023
Just 3 sessions of 45 mins - Participation is voluntary

INTERESTED

Email: christine.marmoy.2019@uni.strath.ac.uk

Advert posted in Autcraft (forum)

1. Watch this short video; it will give you a bit of background information:

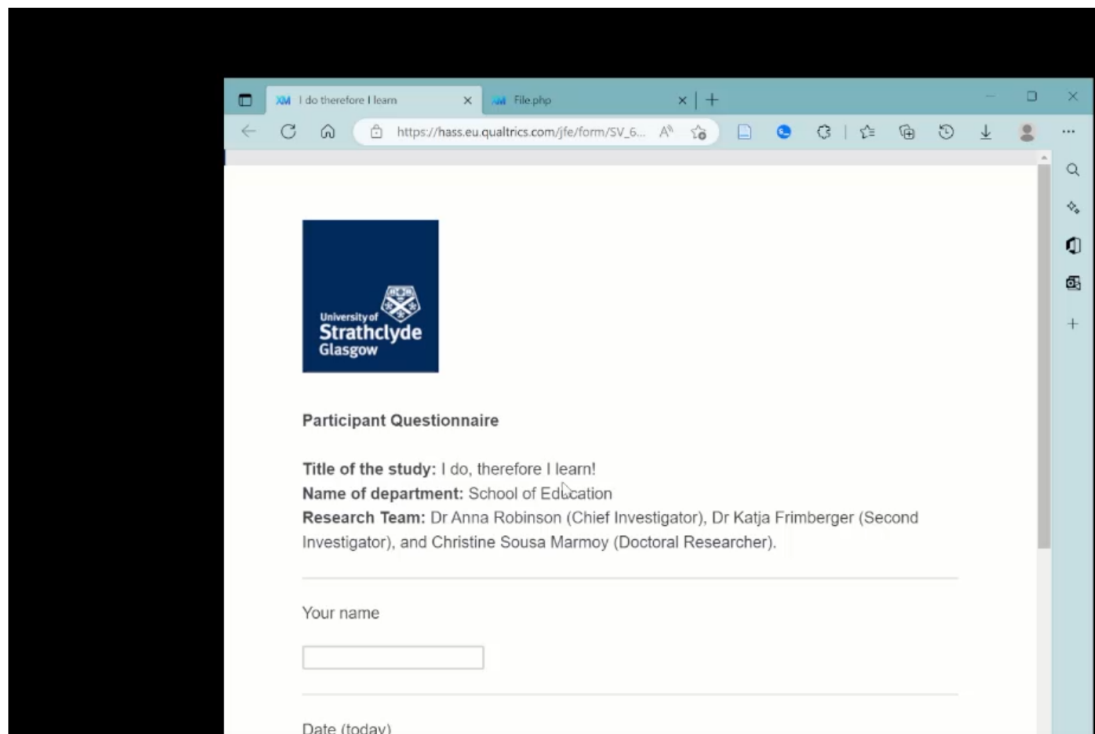


2. Click on the link below, it will take you to a little questionnaire to fill out:

https://hass.eu.qualtrics.com/jfe/form/SV_6mtLsXqXpr8NzE

In this questionnaire, there is a link called "Participant Information Sheet". When you'll click on it a pdf document will open. In this document, I give you a lot more information about the project. I grant you, it's long and it might be a bit tiring. So, maybe you could save it on your computer and go through it little by little?

If you are unsure about how to fill out the questionnaire, here is the walkthrough video:



Next:

Once I receive your filled out questionnaire (automatic), I'll get in touch with you to set up a time to meet in Autcraft.

Thanks again.

Christine

Annex 6. Participant Informed Consent Form and Questionnaire



Participant Informed Consent Form

Title of the study: I [do](#), therefore I learn!

Name of department: School of Education

Research Team: Dr Anna Robinson (Chief Investigator), Dr Katja Frimberger (Second Investigator), and Christine Sousa Marmoy (Doctoral Researcher).

- I confirm that I have read and understood the Participant Information Sheet which presents the above project, and the researcher has answered all my questions to my satisfaction.
- I understand that my participation is voluntary and that I am free to withdraw from the project at any time until data analysis begins.
- I understand that the researcher will make sure that I know when the date limit is to opt out from the project (I will receive an email reminder one-week prior the date limit).
- I understand that if I choose to withdraw from the project, I do not need to give a reason and will not face any consequences. If I decide to opt out all my data will be deleted in the 24 hours following my request.
- I understand that once the data has been anonymised (i.e., that the data cannot be used to identify me personally) and the analysis has started, it cannot be withdrawn. This will take place one month after the last observation/play session.
- I understand that any information recorded in the investigation will remain confidential and no information that identifies me or people I may mention will be made publicly available or shared with any third-party.
- I understand that all the play sessions recordings will be deleted once the research is completed and the researcher has submitted her thesis.
- I understand that I will receive the findings based on my data in the form of a short video.
- I understand that I will validate the draft analysis of my data.
- I consent to being a participant in the project.
- I consent to being audio and video recorded as part of the project.
- I consent to the anonymised data from the questionnaire and the transcripts of the observation/play sessions to be archived in the UK Data Service.
- I authorise the researcher Christine Sousa Marmoy to share the analysis of my play experience with my parent. Yes No

| | |
|--------------|----------|
| (PRINT NAME) | Date: |
| Agree | Disagree |



Participant Background Questionnaire

Title of the study: I do, therefore I learn!

Name of department: School of Education

Research Team: Dr Anna Robinson (Chief Investigator), Dr Katja Frimberger (Second Investigator), and Christine Sousa Marmoy (Doctoral Researcher).

- What games do you usually play? (ex.: Roblox, Sims)
- What do you like about Minecraft? (ex.: What I like about Minecraft is that I can build anything I want)
- How long have you been playing Minecraft? (ex.: I have been playing Minecraft for 2 years)
- What device do you play on? (ex.: I play from my computer)
- What is your favourite Minecraft mode? Why? (ex.: I prefer creative mode because...)
- How did you learn to play Minecraft? (ex.: My brother showed me how to play?)
- Which YouTuber(s) do you follow? (ex.: I really like (name) and sometimes I also watch (name))
- Do you have a YouTube channel? If so, what is it?
- What are you passionate about? (ex.: I am passionate about dolphin)

Note: Remember participating in this research is voluntary and you will be able to opt out at any time until the analysis of your data.

| | |
|--------------|--------|
| (PRINT NAME) | (Date) |
| | Submit |

Annex 7. Participant Information Sheet



Participant Information Sheet (PIS)

Title of the study: I do, therefore I learn!

Name of department: School of Education

Research Team: Dr Anna Robinson (Chief Investigator), Dr Katja Frimberger (Second Investigator), and Christine Sousa Marmoy (Doctoral Researcher).

Who am I?





My name is Christine Sousa Marmoy, I am a PhD student at the University of Strathclyde (Glasgow, Scotland), a researcher, and also a mom. I am neurodivergent (ADHD) and my 13 years old autistic son (in the picture with me) is my inspiration. I went back to University to study as much as I could about autism not only to better know my son as a person, but also, to better understand the mechanisms he relies on to learn, so he reaches his full potential. Naturally this quest led me to this study.

What is this study about?

This study is part of my doctoral research and is titled 'I do, therefore I learn'. As part of my PhD I need to organise a project around a topic I believe is important and that has not yet been investigated the way I will. The question I hope to answer through this research is "How do autistic teenagers learn to play Minecraft?"

This project will take place in AutCraft and has two parts:

-  1. Gathering background information about you (from you and your **parent**) through a short questionnaire.
-  2. Exploring how you learn to play Minecraft, so I understand how you experience the game. I will do this with you as my guide, I will observe you playing, and at other times, I will play with you.



Times Higher Education University of the Year 2012 & 2019
Times Higher Education Widening Participation Initiative of the Year 2019
The University of Strathclyde is rated a QS 5-star institution

The University of Strathclyde is a charitable body, registered in Scotland, number SC015263



Annex 8. Parent Questionnaire



Parent/Legal Guardian Background Questionnaire

Title of the study: I do, therefore I learn!

Name of department: School of Education

Research Team: Dr Anna Robinson (Chief Investigator), Dr Katja Frimberger (Second Investigator), and Christine Sousa Marmoy (Doctoral Researcher).

- You are the parent/legal guardian of [insert participant's name]
- Participant's date of birth
- What country does the participant live in?
- What school year is the participant in?
- Does the participant experience sensory sensitivities? What are they?
- How do these sensory sensitivities impact the participant's daily life?
- How do these sensory sensitivities impact the way the participant plays video games?
- Are there any other insights you would like to share that would help me get to know and understand the participant better?
- How can the researcher reach you [insert email or Discord's #]

| | |
|--------------|--------|
| (PRINT NAME) | (Date) |
| | Submit |

Annex 9. Data Management Plan

Data Management Plan



| | | | |
|------------------------|---------------------------|----------------|---------------------------------|
| Project Name: | I do, therefore I learn! | Funder: | Self-funded |
| Project Description: | PhD research project | | |
| Student: | Christine Sousa Marmoy | Supervisor: | Anna Robinson, Katja Frimberger |
| Institution: | University of Strathclyde | Dept / School: | School of Education |
| Date of First Version: | 09/07/2021 | | |
| Date of Updates: | 16/02/2022 | | |

This template is based on DCC. (2013). Checklist for a Data Management Plan. V.4.0. Edinburgh: Digital Curation Centre. Available online: <http://www.dcc.ac.uk/resources/data-management-plans>.

For assistance contact the Research Data Management and Sharing team:
researchdatapoint@strath.ac.uk 0141 548 4581.

1. Data Collection

What data will you collect or create?

Use the table below to list all research data that you will collect or generate as part of this project. Examples have been included to help you get started.

| Data type | Original format | Preservation format* | Estimated volume | IPR Owner | Active storage location | Completed storage location |
|-------------------------------|-----------------|----------------------|------------------|-----------|-------------------------|----------------------------|
| Online Field Notes | .docx | ..PDF | <10MB | UofS | StrathCloud (OneDrive) | UK Data Service |
| Ethic Documents | .docx | .PDF | <10MB | UofS | StrathCloud (OneDrive) | UK Data Service |
| Explanatory Documents | .docx | .PDF | ~100MB | UofS | StrathCloud (OneDrive) | UK Data Service |
| Play session Video Recordings | .mp4 | Original | ~5GB | UofS | StrathCloud (OneDrive) | Deleted |
| Play session transcripts | .docx | .PDF | ~100MB | UofS | StrathCloud (OneDrive) | UK Data Service |
| Paper notebook | Paper | Original | | UofS | Locked cabinet | Locked cabinet |
| Screenshots | .JPEG | JPEG | ~100MB | UofS | StrathCloud (OneDrive) | UK Data Service |
| Key for code names | .docx | .docx | | UofS | StrathCloud (OneDrive) | Deleted |

*Preservation formats should be easy to access without the need for specific proprietary software.

How will the data be collected or created?

- How will you collect or generate data?
- How will you structure and name your folders and files?
- How will you handle versioning?
- What quality assurance processes will you adopt?

<http://www.strath.ac.uk/ps/strategyandpolicy/recordsmanagement/> - file naming and versioning advice.

Data Collection

Annex 10. Participants' experiential themes

Table of Dipper's Experiential Themes

| Label | Page/Line | Quotes |
|---|-----------|--|
| Theme 1: Unfeeling the World | | |
| Facing daily sensory challenges in the physical world | 43.1 | School is increasingly difficult due to the hum of crowds and varying noises. [Dipper] gets overwhelmed and becomes mute and panicky. [They] only wear certain clothes and struggle with layers and choosing weather appropriate clothing. |
| | 43.2 | I used to take the bus to school, and it would be very loud, lots of people pushing up against me. Not enough space. So, my mum takes me now. |
| Autcraft offers a sensory regulated world | 4.30 | I like it here because I can make rooms under my base and be above the ground. |
| | 5.43 | Yeah, in the darkness and madness. |
| Need for alternative communication | 32.22 | In the physical world they can be very quiet but online they can talk to more people than they usually do sometimes because sometimes it is hard to talk to people in the physical world and on places like Autcraft they are with people like them. |
| | 32.23 | So, some people find it's easier to talk. |
| Avatar's body offers virtual agility | 8.68 | I like doing parkour so that is why I have this [vertical structure]. |
| Theme 2: Being true to oneself | | |
| Ambivalence of choice: easy vs hard | 39.78 | Some choices I find really hard and take ages deciding but others I decide quickly but sometimes don't know if it is a good choice. |
| | 39.80 | I was making an egg for easter, and I had to decide if I should use purple and orange blocks or orange and cyan blocks, I picked purple so that was easy. |

Table of Dave's Experiential Themes

| Label | Page/Line | Quotes |
|-------------------------------------|-----------|--|
| Theme 1: Leading with skills | | |
| Engineering and industrialisation | 16.130 | This is my [cobblestone] generator. So if I break it another one go, takes its place. |
| | 16.132 | Infinite. |
| | 18.144 | And then this one does [lava]. But it doesn't do it automatically. So you put the lava up top up here and then lava drips down, so it's pretty much infinite lava. |
| | 22.182 | Um this is my super smelter. So it connects a bunch of smelters, or furnaces. And all you do is put what you want to smelt in here, and you put the, flick the fuel in this one. And you flick both of these. And it will smelt ten times faster than anything else. |
| | 23.182 | Um if you're wondering why the other chests over here aren't labelled, they actually do have items in them. But I have a mod that I downloaded that tells me everything I have and which chest it's in. |
| | 23.184 | Tell me an item or a block and I – I probably have it. Name – name a random block and I'll |
| | 23.186 | instantly find what chest it's in. |
| | 23.187 | Uh Quartz. |
| | 24.190 | Here we go it's over here. |
| | 24.192 | Right here. |
| | 24.194 | The mod glows up the chest, like it puts like a border around it that changes colours to the one that I surge up. |
| | 24.196 | Out of the catalogue. So, the mod, it tells me everything I have in – in what quantities I have it. And I can search any item I want that I own. |

Table of Alex's Experiential Themes

| Label | Page/Line | Quotes |
|--|-----------|---|
| Theme 1: Communicating differently | | |
| Writing for others vs writing for self | 31.24 | Since I have socializing issues (not severe), I have trouble communicating with people, and that's why I struggle learning subjects in school (a lot is communicating and words) unless it's math. |
| | 32.36 | Sometimes when I'm writing an essay for English, I sometimes write very unclearly, (or I don't write it at all). |
| | 32.37 | But I have it in my heart, it's just sometimes it's hard for me to say it. |
| | 33.40 | Sometimes I write a journal (alone). |
| | 33.41 | It's where I can clear my brain without other people, it's not that my parents are judgemental or mean in any sort of way, writing and expressing my thoughts without anyone in sight seems to help. |
| Theme 2: Facing bullying | | |
| Impact of bullying on communication | 15.136 | The world is not a safe or nice place. And getting faced with bullies is not a new thing for me. |
| | 33.38 | Sometimes when my parents tell me how I got bullied, it's not because I'm afraid to say it, it's just saying it isn't very clear or I don't say it at all. But it's in my heart. |
| Conflict between rules and freedom of expression (perception of abstract bullying) | 48.166 | Well AC has some rules so there's some experiences that I want to say and share and talk about certain topics, but to respect the rules there's some things I can't say, but outside of AC I say what I think. Now don't view me as a bully after this. |
| | 48.167 | I just want to express myself like talk about things outside of ac. |
| Theme 3: Rebuilding himself | | |
| Safe environment erases notion of abstract bullying and facilitates reconstruction of self | 15.131 | I rate Autcraft a solid 10/10. Autcraft means everything to me, as it's the only safe place I can join without being bullied. |

Table of Space's Experiential Themes

| Label | Page/Line | Quotes |
|---|-----------|--|
| Theme 1: Reconciling two ways of being (Autism and ADHD) | | |
| Perception of her autism | 8.67 | I hate not having things in line. |
| | 28.22 | I was only diagnosed at 12 so all my time has been known to be autistic. |
| | 28.23 | I find it's really hard to study for exams and to be able to commit to doing things. |
| | 28.24 | Such as doing my homework every day. |
| | 28.25 | I find it hard to keep on top of things that I'm not interested in. |
| | 34.77 | Brain |
| | 35.78 | Ears |
| | 35.84 | When the class is screaming and I'm hearing the teacher talking on top of the people coming and out and then people talking to me all at the same time. |
| | 36.90 | I think mainly like some things irritate me much more than other things. |
| | 36.91 | And it also depends on how much I've achieved in the day. |
| | 37.100 | It was really hard before as I always was thinking that I had it but I wasn't diagnosed with it. |
| Perception of her ADHD | 37.98 | With my ADHD it's mainly just focusing on thing. |
| Diagnosis ADHD and autism | 38.104 | ADHD I was diagnosed with in 2019 and autism I was diagnosed in 2022 in April. |
| Distinguishing ADHD from autism | 15.132 | My autism mainly affects my social ability. |
| | 16.134 | So, in small groups and with my friends I'll be fine, but when I go to crowded places or concerts, I often become overwhelmed and need to wear my headphones |

Annex 11. Emerging themes organised by colour

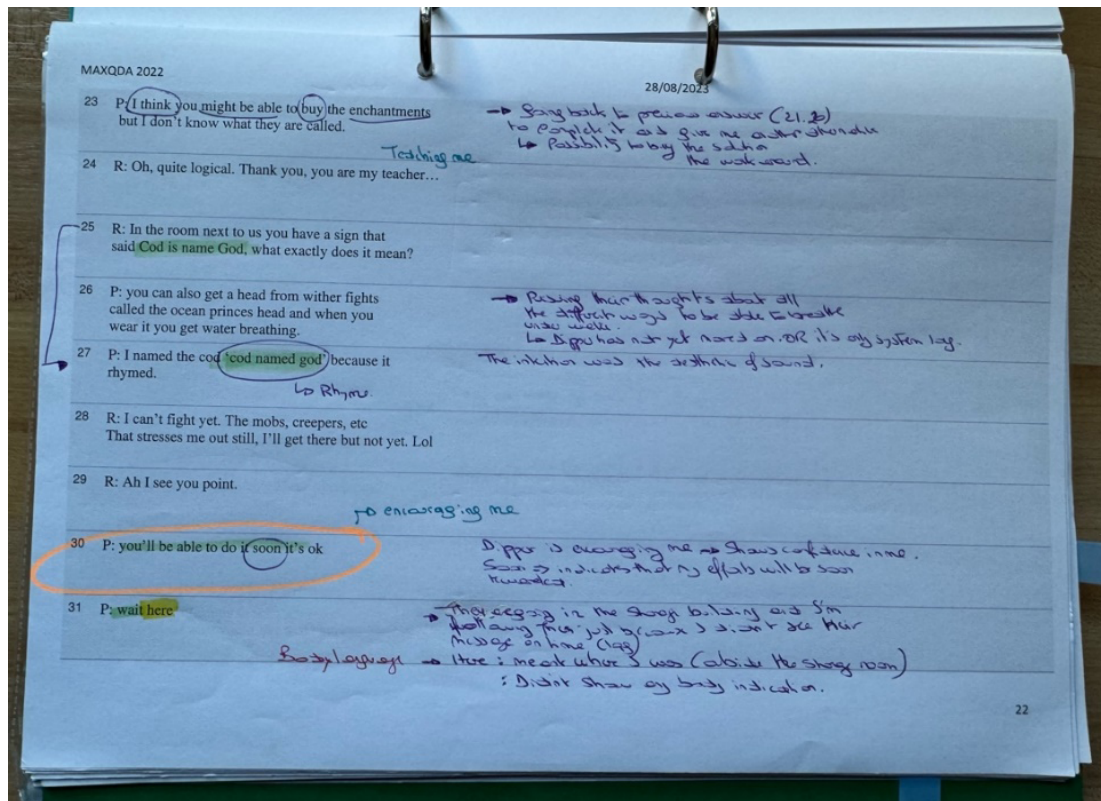
| Participant | Experiential Statements |
|--|---|
| Dipper | Facing daily sensory challenges in the physical world |
| | Autcraft offers a sensory regulated world |
| | Need for alternative communication |
| | Avatar's body offers virtual agility |
| | Ambivalence of choice: easy vs hard |
| | Ambivalence of choice: freedom vs responsibility |
| | Avatar is a representation of the self (personality, interests, emotions) |
| | Base is an external expression of their inner self |
| | Understanding of their Autism and ADHD |
| | Starting with and going back to the familiar |
| | Space organisation – Sensory regulation |
| | Space organisation – Creating a home, a community |
| | Safe, free, and familiar space |
| | Using the space to learn by doing |
| | |
| | |
| | Dave |
| Demonstrating business acumen: etiquette, selling food, store at Panda alley | |
| Automation of farming | |
| The space outside the castle | |
| A community for the Empire | |
| Landmarks of a community | |
| Organising life in a community | |
| Members developed a communication system | |
| Learning by Doing | |
| Teaching by Doing and demonstration | |
| Critical thinking: evaluating information, trial and error | |
| Progression in learning the game | |
| Making knowledge easily accessible | |
| Impact of playing in Autcraft | |

| | |
|-------|--|
| Alex | Writing for others vs writing for self |
| | Impact of bullying on communication |
| | Conflict between rules and freedom of expression (perception of abstract bullying) |
| | Safe environment erases notion of abstract bullying and facilitates reconstruction of self |
| | Impact of healthy relationships on healing the self |
| | Healed self and confidence in his own skills |
| | Intentionally setting up boundaries – protecting self |
| | |
| Space | Perception of her autism |
| | Perception of her ADHD |
| | Diagnosis ADHD and autism |
| | Distinguishing ADHD from autism |
| | Secret, sacred, rare |
| Space | Perception of her autism |
| | Perception of her ADHD |
| | Diagnosis ADHD and autism |
| | Distinguishing ADHD from autism |
| | Secret, sacred, rare |
| | Impatience: avoiding time constraint |
| | Emotions and structures |
| | Sensory sensitivity challenges |
| | Teaching neurodivergent students is inadequate |
| | Pre-thinking, planning, and organisation |
| | Exchange of ideas with other players |
| | Being and showing her true self in both worlds |
| | Minecraft facilitates friendships in both worlds |
| | Autcraft offers a portal between both worlds |
| | Freedom: Facing choices and decisions in both worlds |
| | Physical world interrupting the virtual world |
| | Virtual world interrupting the physical world |
| | Notion of being ‘unfinished’ |
| | Anchoring time to always remember how much she achieved |
| | Lifelong dream |
| | Facing her struggles |
| | Journey of the self |

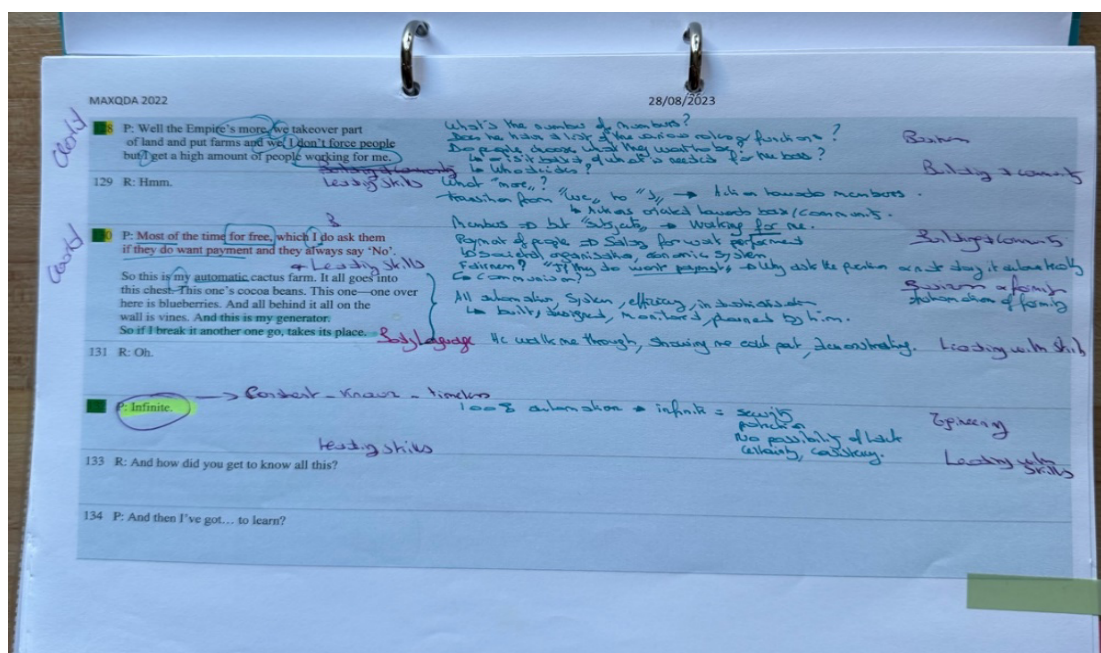
Note: Green represents theme 1
Blue represents theme 2
Orange represents theme 3

Annex 12. Participants' data organised in physical binders

Dipper



Dave



Alex

MAXQDA 2022 31/08/2023

30 P: kinda

31 P: but saying it actually is hard, I seem to have it in my mind

Difficult in expressing himself & what is clear in his mind.
↳ thought process, organization & etc
↳ articulation of I = challenging.

32 R: do you think you could give me an example? So, I have a better idea of what you mean?

33 P: Although my impairment is definitely 1 reason why, the bullying I get faced with also impacts me, because I don't wanna get judged. But tbh I don't really care what I say because I'm free to express myself

↳ seems to think autism is the bettered
↳ bullying not the main cause of his life.
↳ Autism assessment perceived as something other than this.
↳ Impairment → autism.

Introduction

34 P: ok well

35 R: I can imagine being bullied can make communication very hard. I'm sorry you experience this.

36 P: sometimes when I'm writing an essay for English, I sometimes write very unclearly (or I don't write it at all)

↳ No realises.
↳ thinking, writing, expression & hard
↳ sentence - repetition
↳ Communicating differently
↳ don't start: give up.

37 P: but I have it in my heart, it's just sometimes it's hard for me to say it

↳ Repetition: heart
↳ Communicating differently

Space

MAXQDA 2022 31/08/2023

7 R: Now, it's up to you to show me whatever you want and to explain to me what you want.

8 P: I guess I'll start down below here.

Down below = regular
Here → location space.
↳ hierarchy of conceptual

9 P: This is my normal head storage room.

Body language

↳ Spacing & implies order and
↳ Classification - order - organization.

10 R: omg, did you fight for all these heads?

11 P: Nope lol I bought most

↳ bought seems to refer to fighting
Buying = put? - or, regular
or sewing?
↳ importance

12 R: Did you build the base by yourself, or you have members?

↳ importance, discipline
↳ constant

13 P: I built most of this by myself, there's 1 house above that built by my friend. I also keep my patron heads down here.

↳ patron heads → new order for membership
↳ migration of other's work.
↳ classification - heavy, order.

14 R: How long did it take you to build this?

15 P: This area here took about 3 hours.

↳ contrast between almost
↳ Body language

↳ precise position of time
↳ Area location in space.
↳ Results seem scale than time involved

↳ forming life by pattern
↳ forming structure but scale diff.

2

Annex 13. Logic leading to the identification of cross-case theme

Logic Leading to the Identification of the Cross-Case Theme Communication

| Stage of cross-case analysis | Cross-case observations in the data | Guiding questions | Interpretive decision taken | Analytic outcome |
|---|--|---|---|---|
| Initial cross-case comparison | Across all four cases, participants repeatedly relied on non-verbal, embodied, and object-based forms of communication alongside or instead of written text (chat). These included body orientation, gesture, movement, spatial positioning, artefacts (e.g. signs, banners, blocks), and avatar presentation. | What forms of meaning-making is recurrent across cases when participants interact, explain, guide, or share information with me? | Recurrence of communication-behaviour across cases is considered as evidence of shared experience (significant). Communication means any way participants made meaning available to others within the environment (me included). | Identification of communication as a shared experiential domain requiring further analytic focus. |
| Examination of communication modality | Communication was enacted through diverse modalities: body gestures (e.g. head movement, circling, jumping), spatial positioning (facing objects or people), object-based artefacts (signs, banners, books, blocks), and avatar aesthetics. | How are the participants communicating since they are not next to each other? Are they mainly using the chat? Are they also communicating through what they do, where they go, and what they build? | Communication is interpreted as multi-modal and embodied, extending beyond text (chat) into spatial, material, and symbolic forms afforded by the game. | Support the argument to consider communication as an experiential theme. |
| Analysis of experiential communication | Participants used communicative resources differently: Dipper relied heavily on body orientation and affective gesture; Dave used spatial demonstration and artefacts to explain systems; Alex used symbolic artefacts and avatar design to communicate values and boundaries; Space used movement, spatial tracing, and hiding to manage interaction. | Do these differences suggest that participants are communicating in fundamentally different ways, or are they different ways of doing the same thing? | Variation is considered as analytically informative, reflecting participant-specific strategies for making meaning, attracting attention, setting boundaries, and managing interaction. Even if overall, they used the same strategies, they used them differently or emphasised different aspects. | Structuring of sub-themes illustrating gamers-avatars mediated communication: Communication through the body; Communication through objects; Communication through metaphors. |
| Attention to breakdowns and absence | Instances where body gestures were absent, mismatched, or misinterpreted (e.g. "wait here", "follow me") resulted in communication breakdowns, confusion, or dissonance between language, action, and meaning. | What happens when there are no communication cues or when they are misaligned? | Breakdowns are interpreted as revealing the <i>rules</i> and <i>expectations</i> governing communication within the game, highlighting reliance on embodied and spatial cues. | Reinforcement of communication as an enacted and negotiated process. |
| Role of the virtual environment | Minecraft/Autcraft afforded specific types of communication: avatars with bodies but limited facial expression, manipulable space, persistent objects (signs, banners), and symbolic customisation. | Are the participants talking about Minecraft, or are they using the game to communicate with others? | The virtual environment was considered as a communication medium that shapes how meaning is expressed, shared, and interpreted. | Determination of Communication as a cross-case theme articulated through participant-specific forms. |

Logic Leading to the Identification of the Cross-Case Theme Self

| Stage of cross-case analysis | Cross-case observations in the data | Guiding questions | Interpretive decision taken | Analytic outcome |
|--|--|---|---|--|
| Initial cross-case comparison | Across all four cases, experiential data repeatedly addressed how participants described themselves, related to their abilities and limitations, expressed personal values or preferences, reflected on change over time, and positioned themselves in relation to others and to Minecraft/Autcraft. | Do the participants address the notion of self-perception. Is it expressed differently and situated in different contexts? | Recurrence is considered as evidence of shared experiences (significant). Attention is directed to <i>what domain of experience</i> participants were repeatedly engaging with. | Identification of the 'Self' as a shared experiential domain across cases, warranting further analytic focus. |
| Examination of cross-case variation | The experiential focus on the Self appeared in distinct forms: Dipper emphasised regulation, focus, and care; Dave emphasised competence, authority, and mastery; Alex emphasised values, rights, and moral positioning; Space emphasised becoming, continuity, and emotional anchoring. | Does variation across cases undermine the coherence of this experiential domain? Does it indicate participant-specific expressions of a shared significance? | Variation is interpreted as analytically informative, consistent with idiographic commitments, indicating a shared phenomenological domain articulated through different life narratives. | Confirmation of Self as a viable cross-case theme. |
| Analysis of experiential movement | Across cases, self-related experiences involved movement and negotiation: internal ↔ external, past ↔ present ↔ future, symbolic ↔ functional, relational ↔ solitary. Selfhood was described as changing, enacted, and context dependent. | Is the specific experiential domain static? Is it linked to movement, transition, and development? | The Self is interpreted as dynamic and developing, aligning with phenomenological accounts of the Self as enacted and developing over time. | Structuring of sub-themes capturing this dynamism, including <i>Perception of Self, Symbolism of self, and Others and self</i> . |
| Role of the virtual environment | Minecraft/Autcraft consistently appeared as a space where aspects of the Self became visible. It seemed to act as a medium for externalising internal experience. Also suggested a site where continuity and change could be observed across time. | Are the participants' experiences primarily about being in the virtual environment itself, or is the virtual environment being used to express something else about their experience? | The virtual environment is considered as a mediating space. It helps articulate and observe self-experience. | Determination of the cross-case theme as Self, with Minecraft/Autcraft positioned as an analytic lens. |

Logic Leading to the Identification of the Cross-Case Theme Space

| Stage of cross-case analysis | Cross-case observations in the data | Guiding questions | Interpretive decision taken | Analytic outcome |
|--|--|--|---|--|
| Initial cross-case comparison | Across all four cases, experiential data repeatedly referred to movement between environments (virtual ↔ physical; world ↔ base; room ↔ room), spatial transitions, and the organisation of environments in relation to emotion, activity, and interaction. | When the participants move, build, organise or just are in their bases, what is happening at the same time? What changes? What stays stable? What does movement or spatial choice do for them or mean to them? | Recurrence of spatially oriented experiences is considered as evidence of shared significance. It highlights the focus on how space is lived, navigated, and made meaningful. | Identified Space as a shared experiential domain across cases, warranting focused cross-case analysis. |
| Examination of spatial overlap and movement | All the participants consistently moved between physical and virtual worlds (PW ↔ VW), and between different virtual spaces (base ↔ world; room ↔ room), often within the same interaction. These transitions were frequently accompanied by affective or regulatory shifts. | Do the participants experience the physical world and the virtual world as separate spaces, or as connected or as overlapping? | Both spaces are interpreted as continuous and penetrable, with meaning emerging through movement and overlap. | Identified spatial movement and overlap as a core feature of the cross-case theme <i>Space</i> . |
| Analysis of spatial form and depth | Across cases, space was described in terms of extensibility (expanding outward), depth (nested or layered interiors), and the balance between openness and enclosure. Participants invested meaning in size, layering, and spatial complexity. | How do participants experience and organise the virtual space in terms of expansion, depth, and containment? | Spatial form is interpreted as experientially meaningful, reflecting focus, immersion, safety, and engagement. | Development of sub-themes addressing extensible vs depth-oriented space and spatial immersion. |
| Attention to temporal organisation of space | Participants described building sequences, progression over time, hierarchy of spaces, and long-term projects with future-oriented goals. Space was linked to memory, progress, and anticipation. | Is space experienced as static, or as something that develops and accumulates meaning over time? | Space was considered as temporal and developmental, shaped by chronology, hierarchy, and purpose. | Formation of sub-themes relating to chronology, hierarchy, and purpose in spatial experience. |
| Stability, change, and regulation | Participants referenced restarts, consistency of environments, safe spaces, freedom of movement, and the role of space in emotional regulation (calming, relief, focus). | How do stability and change within the virtual space affect participants' emotional experience and regulation? | Space was considered as actively supporting regulation through predictability, safety, and freedom. | Consolidation of sub-themes addressing change vs consistency, safety, and freedom within space. |
| Affective engagement with space | Across cases, participants explicitly linked spatial practices to affect (e.g. pride, calm, relief, interest, enjoyment, frustration). Making, moving, and inhabiting space were emotionally charged activities. | Is the game space merely functional, or is it also affectively lived? | Experiences of Space were considered as emotionally embedded, with affect shaping and shaped by interaction with the game space. | Reinforcement of <i>Space</i> as a lived, affective, and regulatory experiential theme. |


| | | | | |
|-----------------------------------|--|---|--|--|
| Role of Minecraft/Autcraft | Minecraft in Autcraft provided a persistent, manipulable, and navigable environment in which movement, overlap, depth, and continuity could be enacted and observed. | Are the participants focused on the environment as a place, or on what being in that environment allows them to do? | The virtual environment was considered as a medium that makes spatial experience visible and negotiable. | Final articulation of Space as a cross-case theme emphasising how space is lived, organised, and emotionally inhabited: Movements in Space; Experience of Space; Configuration of Space. |
|-----------------------------------|--|---|--|--|

Annex 14. Opt-out Reminder

| | |
|---|--|
| 4 | R: Yeah if that's ok. But first let me do a bit of housework first. |
| 5 | R: Thanks for jumping on the occasion and for being eager to participate. So, what I wanted to say is that if any point you feel overwhelmed, we can pause the session or even reschedule, you decide. |
| 6 | Also, you can opt out if you want. So, if after the session (or even after) you change your mind and would like to be removed from the research, you can. I won't ask you anything. You can pull out until I start the analysis, but I'll let you know when that is. |

Annex 15. Participants' stories validation

Dipper



[Redacted Name] about 1 hour ago

I just read it and I love it!
You're very good at writing things. It's amazing.
There is nothing that I think need changed.

Dipper's mum



To: Christine Sousa Marmoy



Mon 29/05/2023 11:47

Start reply with:

Thank you. I appreciate that.

Thank you!

Thank you so much! I really appreciate it!

CAUTION: This email originated outside the University. Check before clicking links or attachments.

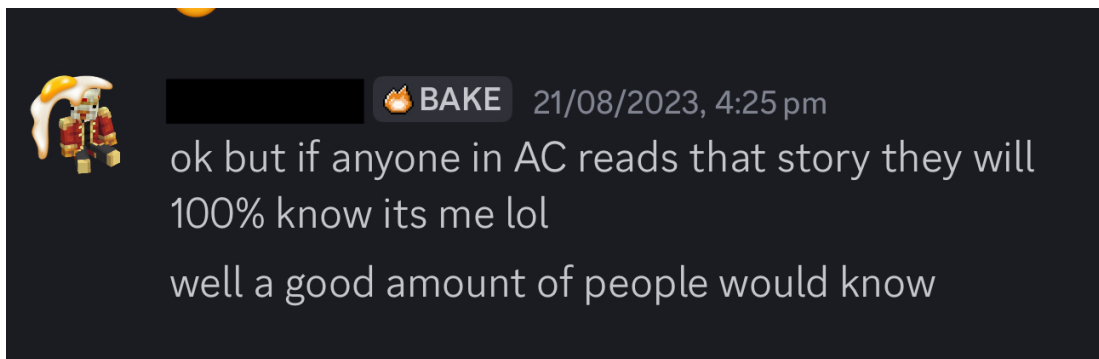
Hi there,

I've passed this on to Tansie. They've messaged you on Autcraft.

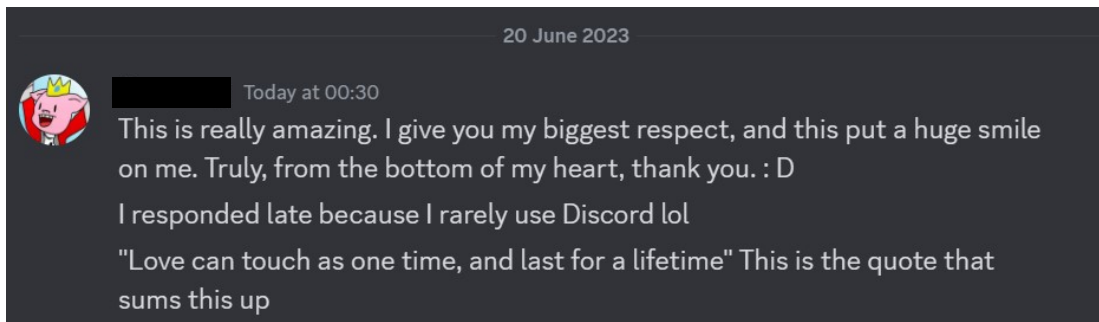
Thank you so much for being so patient and understanding with T. The story is beautifully written. It appears that you really understand.

Many thanks

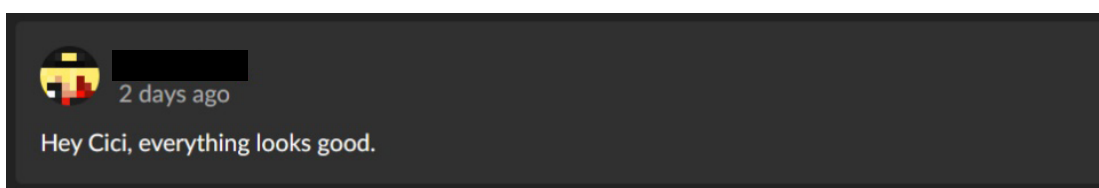
Dave



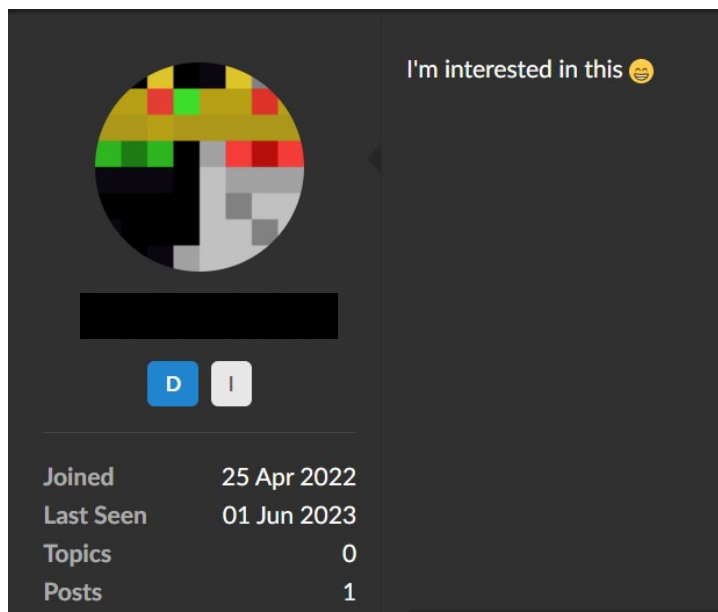
Alex



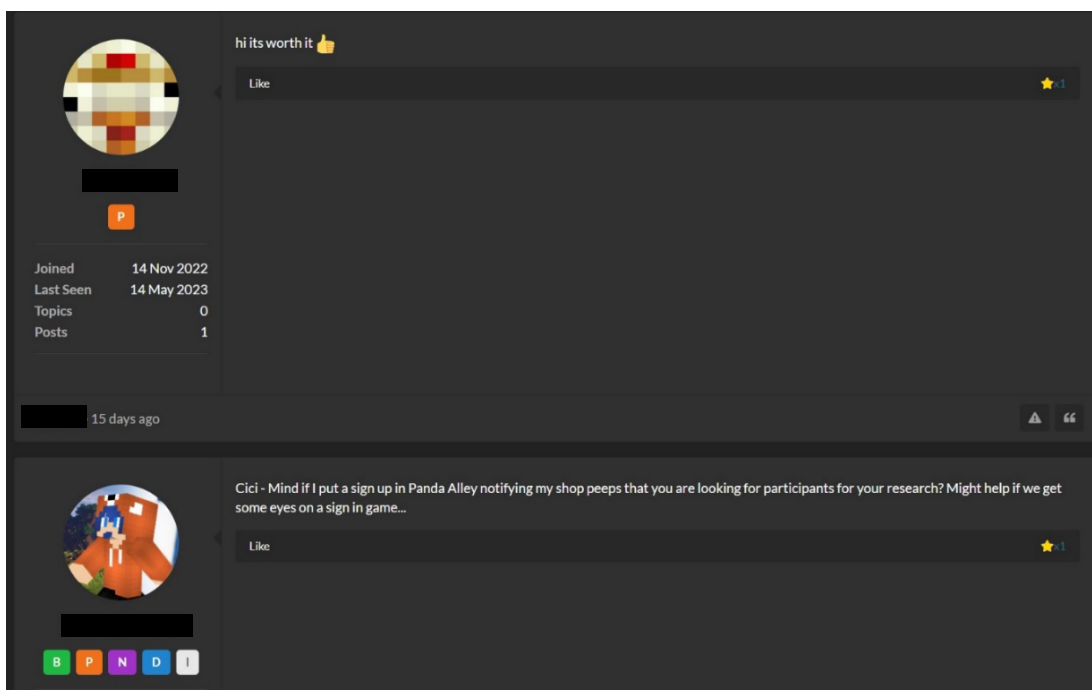
Space



Annex 16. Dipper's response to the advert



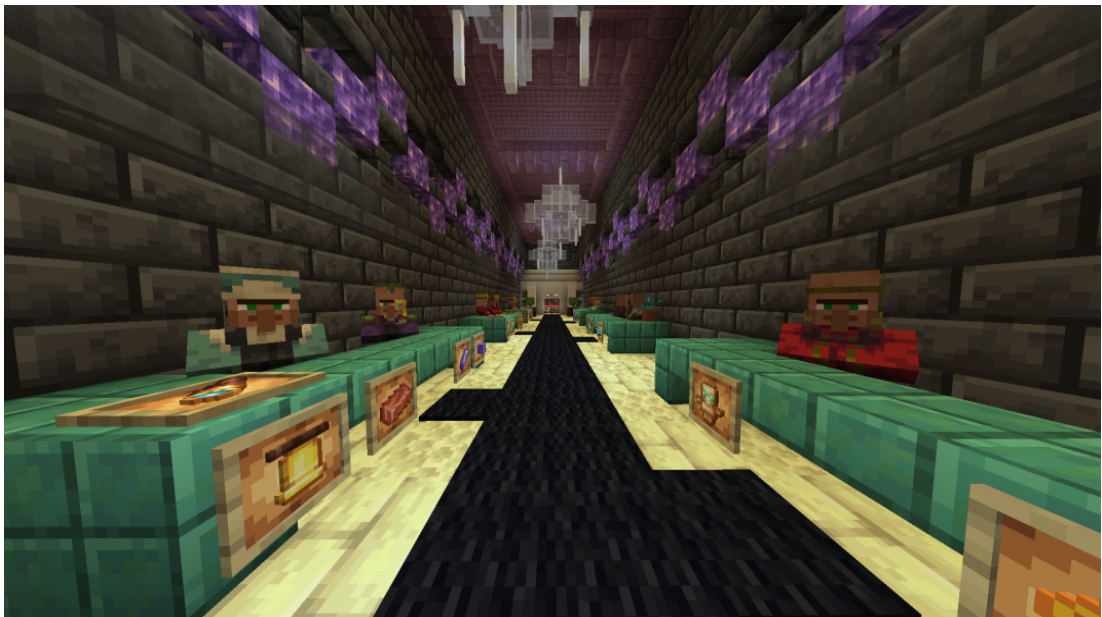
Annex 17. Dave supporting the project



Annex 18. Dave's Auditorium



Annex 19. Dave's Monarch Market



Annex 20. Dave's Library Tavern



Annex 21. Participants' feedback on the research process

12 P: I told my mum about it and she was fine with it so I don't think I will pull out as I personally really think your **research** is interesting. (Sp, 15.127)

155 P: aww thanks u made my day! Glad to meet you too :D never really done this before but this awesome! (Al, 17.155)

11 R: First, I wanted to remind you that you still can opt out of the research if you want to, until my analysis. And if you feel it's too much, let me know, we'll pause or reschedule. It's really not an issue.

12 P: I wont I **like** it (Da, 40.12)