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Growing Inclusive and Sustainable Futures

Exploring teacher experiences with an outdoor gardening program at special needs schools in Germany

M.A. Education Policies for Global Development (GLOBED)

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Abstract

School gardens are often presented as inclusive spaces where students can participate and contribute in different ways. Yet less is known about how teachers experience these environments and how they make them accessible for students with special educational needs and disabilities (SEND). This study explores teachers' experiences with the GemüseAckerdemie, a garden-based learning (GBL) program implemented across Germany, Austria, and Switzerland. In this qualitative study, I conducted seven semi-structured interviews with nine teachers working at German special needs schools (Förderschulen) across five federal states. Using reflexive thematic analysis, I examine how teachers experience and build inclusive learning among students with SEND in the school garden. Findings reveal three interrelated themes: teachers experience the garden as an authentic, multisensory, and practical learning environment; actively construct participation for diverse learners; and encounter less hierarchical learning situations that reshape how they perceive and relate to their students. The study argues that inclusive learning in outdoor learning (OL) settings emerges through the interplay between the garden and teachers' everyday pedagogical practice, while also being shaped by various structural barriers. These insights reveal the invisible work of teachers in making inclusive OL and GBL happen and may be useful for teachers, OL organizations, and education professionals seeking to design more accessible and inclusive OL and GBL environments.

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1. Introduction

“The garden is an inclusive place of learning where everyone contributes to the growth of vegetables with their own abilities” (Acker e.V., 2023, p. 10, own translation). This vision of the school garden as a space where all learners can participate is central to the approach of the *GemüseAckerdemie*, a garden-based learning (GBL) program offered by *Acker*, an NGO that runs outdoor educational programs in Germany, Austria, and Switzerland. It also reflects the broader pedagogical idea within outdoor learning (OL) that learning outside of the classroom in nature can offer opportunities for participation and engagement that are not always possible within more traditional educational settings (Friedman et al., 2025; Hollingsworth & Giblin, 2024; Sturges et al., 2025).

Over the past two decades especially, research on OL has expanded considerably, with studies linking learning in nature to a range of positive academic, social, emotional, and environmental outcomes for children and young people (Godwin et al., 2025; Szczytko et al., 2018). School gardens in particular have been associated with improvements in environmental awareness, food literacy, social skills, wellbeing, and student engagement (Acker e.V., 2025; Blair, 2009; Dring et al., 2020; Lohr et al., 2021). OL environments are often described as providing practical, hands-on, and experiential opportunities that allow students to learn through direct interaction with the world around them (Austin, 2022; Blair, 2009; Dymont & Bell, 2008; Kelly et al., 2022; Silvers et al., 2026).

At the same time, questions of inclusion have become increasingly central to educational policy and practice, both nationally and internationally (Kultusministerkonferenz [KMK], n.d.; United Nations, n.d.). Following Germany’s ratification of the United Nations Convention on the Rights of Persons with Disabilities (UNBRK), schools have faced growing pressure to ensure that all students can participate meaningfully in education, especially those who have been identified as having special educational needs and disabilities (SEND) (Klemm, 2022). Yet despite growing interest in both OL and inclusive education, the relationship between these two fields remains underexplored. While OL is frequently presented as an accessible and inclusive space, relatively little research has examined what inclusion looks like in practice within OL, especially for teachers working with students with SEND (Austin, 2022; Friedman et al., 2025; Padesky & Padesky, 2026; Sturges et al., 2025).

This gap is particularly notable given recent critiques of outdoor education as a field. Scholars have argued that OL has historically been shaped around ableist assumptions about who can participate in nature-based activities and who belongs within outdoor spaces (Aylward & Mitten, 2022; Padesky & Padesky, 2026).

As a result, discussions of accessibility, disability, and diverse learning needs are often still missing in mainstream discussions within research and practice. Existing studies that do focus on students with SEND suggest that OL can offer valuable opportunities for participation, engagement, and personal development (Austin, 2022; Friedman et al., 2025; Hollingsworth & Giblin, 2024; Hopper, 2017). However, much of this research focuses mainly on student outcomes and younger children (Blair, 2009; Godwin et al., 2025; Szczytko et al., 2018). Furthermore, it rarely examines how teachers themselves navigate the practical realities of creating inclusive learning opportunities outdoors. Yet it is teachers who experience OL firsthand. Through their daily pedagogical decisions, they actively shape how students with SEND engage and participate in outdoor settings. Their perspectives and the barriers they face are therefore essential to understanding what can make OL inclusive.

Additionally, the German context of OL offers an interesting setting in which to explore these questions. Compared to countries such as Denmark, Scotland, or New Zealand, where learning outside the classroom has become embedded within educational practice and curricula, OL remains less established within German schools and is often limited to occasional excursions or project-based activities (Sahrakhiz et al., 2018). At the same time, Germany continues to navigate ongoing debates surrounding inclusion and the role of special needs schools (*Förderschulen*) within the education system (Klemm 2022; Klemm et al., 2023). Understanding how inclusive learning is experienced and constructed by teachers within outdoor environments therefore contributes to both the discussions within outdoor education, but also to broader debates about participation, accessibility, and educational inclusion.

The GemüseAckerdemie provides a case through which to examine these tensions. Developed by Acker, the GBL program aims to connect children and young people with food production, sustainability, and nature through regular participation in school gardening activities focused on growing vegetables (Acker e.V., 2023). Although originally designed for general primary schools, the program is also implemented in a range of *Förderschulen* across Germany. These schools are attended by students who have been identified as requiring additional support and offer an opportunity to explore how teachers experience and facilitate inclusive learning within an outdoor educational program for a diverse range of learners.

This study seeks to contribute to this discussion by examining teachers' experiences with the GemüseAckerdemie in German *Förderschulen*. It does so by exploring how teachers experience and actively construct inclusive learning opportunities within the garden. This thesis is guided by the following research question: *How do teachers experience and build inclusive learning among students with SEND in the outdoor learning program of the GemüseAckerdemie?* By focusing on teachers' perspectives, this research contributes to growing conversations about inclusive pedagogy, OL, and the participation of students with SEND in outdoor educational spaces. In doing so, it aims to provide a deeper understanding of what it takes for a garden to become an inclusive learning environment for students with different abilities.

2. Literature Review

2.1 Inclusive education in Germany

Germany's approach to inclusive and special needs education is shaped by a history of segregated schooling and its decentralized education system. Overall, the German school system is considered to be highly stratified, with systems like early-school tracking that stream students into different school types at an early age based on their performance (Blanck et al., 2025). Additionally, Germany's education system runs under educational federalism. Each of the 16 German federal states (*Länder*) hold cultural sovereignty (*Kulturhoheit*) over their educational legislation and policies (Heisig, 2018). While they follow the broader educational framework as outlined by the Basic Law (*Grundgesetz*) and the education policy recommendations put out by the Standing Conference of the Ministers of Education, Science, and Cultural Affairs (Kultusministerkonferenz, [KMK]), the implementation of these remains largely the responsibility of the individual states (European Agency for Special Needs and Inclusive Education [EASNIE], 2026). As a result, while the standards set out by the KMK are used as a basis, specific approaches to inclusive and special education vary considerably across the German states (Heisig, 2018).

Since the early nineteenth century, children and young people considered to have certain disabilities in Germany have been educated in separate institutions. This practice has expanded in the twentieth century with the establishment of a differentiated special education school system (*Sonderschulwesen*) that organized schools by type of disability or support need (Pfahl & Powell, 2011). The German education system continues to distinguish between special needs schools (SNS) (*Förderschulen*) and mainstream schools (*allgemeinbildende Schulen* or *Regelschulen*) for students with SEND (Eurydice, 2026). This study uses the terms special needs school (SNS) and mainstream school for consistency¹. In most federal states, parents have the right to choose where their child is educated, while teachers and schools can make recommendations for either form of schooling (Pfahl & Powell, 2011; Eurydice, 2026).

The formal framework for special educational provision was established through the KMK's 1994 recommendations (KMK, 1994). These define special educational support needs (*sonderpädagogischer Förderbedarf*) as occurring in children and young people "whose educational, developmental, and learning abilities are impaired to such an extent that they cannot be adequately supported in mainstream schooling

¹ For a note on how inclusive language is used in this thesis, see section 3.6

without special educational assistance” (KMK, 1994, p. 5, own translation). The framework identifies eight distinct areas of special educational support (*Förderschwerpunkte*): *Lernen* (learning), *Sprache* (speech), *emotionale und soziale Entwicklung* (emotional and social development), *geistige Entwicklung* (intellectual development), *Hören und Kommunikation* (hearing and communication), *Sehen* (sight), *körperlich-motorische Entwicklung* (physical and motor development), and *Kranke* (instruction for pupils with long-term or chronic illnesses) (KMK, 1994). In 2000, a recommendation specifically for students with ‘autistic behavior’ (*autistischem Verhalten*) was also added (KMK, 2000). The KMK also acknowledges that certain areas of special educational support can overlap or occur in combination and that support should be adapted to each individual students’ specific needs (KMK, 2019). SNS are generally characterized by smaller class sizes than mainstream schools, differentiated instruction and learning goals, and integrated therapeutic services such as physiotherapy, speech therapy, and behavioral support (Eurydice, 2026; KMK, 1994).

Since the 1994 document was developed, several area-specific recommendations have since been updated. These include ‘learning’ (2019), ‘intellectual development’ (2021), and ‘emotional and social development’ (2024c), while the recommendation for ‘physical and motor development’ has not been updated since 1998. Across the recommendations, learning is understood as a highly individual process that must respond to students’ heterogeneity and diverse developmental pathways. These recommend sensory-perceptual, and action-oriented approaches to support individual development and prepare students for broader social and vocational participation (KMK, 1998, 2019, 2021). The recommendation for ‘intellectual development’ specifically frames this in terms of building an *Erfahrungswelt* (experiential world) for students (KMK, 2021). Building self-efficacy through structured, predictable routines is also seen as central to fostering independence while recognizing students as active participants in their own learning and development (KMK, 1998, 2021, 2024c).

In 2007, Germany became one of the first countries to sign the UN Convention on Persons with Disabilities (UNBRK), which became legally binding from 2009 onwards and advocates for greater inclusion in the general education system. Article 24 of the UNBRK guarantees persons with disabilities the right to education without discrimination and on the basis of equal opportunity. It also mandates an inclusive education system at all levels in which persons with disabilities are not excluded based on their disability and appropriate support is provided to facilitate their effective participation (United Nations, 2006).

Over the last decade, the number of students receiving special educational support² has continued to increase in Germany. According to Klemm et al. (2023), possible explanations include changes in diagnostic practices, increasing acceptance of SEND, demographic changes among the student population, funding incentives tied to diagnoses, and growing academic demands. While approximately 595,700 students received

² In the KMK definition catalogue of 2024/25, students with special educational support needs are defined as those who receive official special needs support, regardless of whether they have received an official diagnosis (KMK, 2024b, p. 34).

special educational support in 2022, this number has risen to over 623,334 by the 2024/25 school year (KMK, 2024a, 2026). At the same time, a growing proportion of these students are being educated in mainstream schools, with the nation-wide³ inclusion rate reaching approximately 44% in 2024/25 (Gresch et. al., 2026; KMK, 2026). However, SNS continue to play a significant role in the education of students with SEND. In the 2024/25 school year, 350,623 students attended Förderschulen, representing more than half of all students identified as requiring special educational support (KMK, 2026). Currently, the majority (52%) of all students receiving special education support at both SNS and mainstream schools fall under the area of ‘learning’ (Heisig, 2018; KMK, 2026). While inclusive schooling has expanded, SNS remain the educational setting for a substantial number of students receiving special educational support.

Much of the discourse and literature around SNS in Germany has focused on access to mainstream schooling and the structural dimensions of inclusion (Blanck et al., 2025; Pfahl & Powell, 2011). Additionally, questions have been raised about whether Germany is meeting its obligations under the UNBRK, given the slow pace of transition toward inclusive mainstream schooling (Klemm, 2022). However, less attention has been paid to how inclusion is enacted in practice on a classroom level, especially at SNS. Florian and Black-Hawkins (2011) point to this as a broader gap in the field, arguing that the ways educators and teachers create inclusive opportunities for participation, belonging, and learning for students with different abilities and support needs remain underexplored.

2.2 Inclusion: What is it and who does it?

To understand inclusive learning and pedagogy, it is important to define what is meant by inclusion. According to the KMK, “Inclusion in education aims to provide all students, regardless of their individual abilities, needs, or backgrounds, with equal opportunities for education and participation.” (KMK, n.d, para 1). This conceptualization of inclusion aligns with the broader international definition as proposed by the United Nations (UN) sustainable development goals (SDGs), which aim to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, n.d., Goal 4) by 2030. The UNBRK also opens with the statement “Democracy needs inclusion” (p. 2) and emphasizes the right, specifically for people with disabilities, to education (UN, 2006).

While there have been many theoretical attempts to define inclusion, Florian (2014) notes that inclusive education has been critiqued for “promising more than it can deliver” (p. 286) and argues that more research is needed on how inclusion works in practice. This also suggests that understanding inclusion requires understanding the role of teachers and the everyday pedagogical work through which they create opportunities

³ As mentioned earlier, due to Germany’s educational federalism, the implementation of special needs education varies considerably across the 16 federal states. The proportion of students identified as requiring special educational support ranges from 5.6% to 9.8% depending on the state, and the proportion of these students educated in inclusive mainstream schools ranges even more widely, from 26% to 83% (Heisig, 2018). A thorough review of these state-level differences goes beyond the scope of this thesis. For a more detailed account, see Heisig (2018).

for inclusive participation. Florian and Black-Hawkins (2011) found that teachers who enact inclusive pedagogy do not simply adapt tasks for specific students after designing a lesson for the rest of the class. Instead, they intentionally design learning conditions that are flexible enough from the outset so that diverse participation becomes possible. The authors describe this as “extending what is generally available to everybody, as opposed to providing for all by differentiating for some” (Florian & Black-Hawkins, 2011, p. 813). Ainscow (2020) similarly frames inclusion as a process focused on improving the presence, participation, and achievement of all learners, with particular attention to those at risk of being overlooked or marginalized. He also argues that barriers to participation lie in the learning environment and its design, not in the students themselves. Designing learning spaces with diverse participation in mind from the beginning is therefore key to ensuring more equitable access to learning (Ainscow, 2020; Sturges et al., 2025). Together, Ainscow (2020) and Florian and Black-Hawkins (2011) suggest that inclusive learning requires both intentional environmental design and the active pedagogical work of teachers who enact it in practice.

2.3 Outdoor and garden-based learning

If inclusion is understood as something that happens through the interaction between teachers’ pedagogical approaches and the accessibility of the learning environment, then OL and GBL offer a useful lens through which to examine what inclusive learning looks like when it takes place outside of the typical indoor classroom. In recent decades, OL has attracted growing attention in educational research and practice due to increasing global awareness of the importance of environmental education and sustainability, such as the UN SDGs which see environmental education as an important contributor to mitigating the effects of climate change (Dring et al., 2020). OL refers to intentionally planned learning that takes place outside in natural environments (Dring et al., 2020; Kelly et al., 2022). There are various forms of OL, including outdoor play, forest schools, adventure learning, and field trips that take place in outdoor settings (Becker et al., 2017; Friedman et al., 2022; Godwin et al., 2025). Much of the OL literature originates from countries where learning outdoors has been embedded in educational policy and practice for a long time, such as England and the Scandinavian countries. In contrast, OL remains comparatively less established in German schools today and is more commonly implemented through occasional field trips and projects⁴ (Sahrakhiz et al., 2018). Recent years have seen renewed interest, with educational scholars calling for school gardens to become a more central part of German schooling (Deutsche Presse-Agentur [dpa], 2024). Bavaria, for example, has updated its curriculum recommendations to encourage teachers to incorporate learning outside the classroom into everyday teaching (Becker et al., 2017).

⁴ Interestingly, school gardens have a long tradition in German education, with roots dating back to the 18th century. While they were once an established part of schooling, educational reforms in West Germany during the 1960s led to their gradual disappearance from the curriculum (Jäkel & Wittkowske, 2022). In former East Germany, school gardening remained a compulsory subject until reunification in 1990 (Neumann, 2024). This explains why school gardens remain more widespread in eastern than western Germany. Thuringia is the only federal state where school gardening is still a compulsory subject (Jäkel & Wittkowske, 2022).

Teaching in a garden (GBL) is one form of OL which has been characterized both by teachers and students as multidisciplinary, experiential, unpredictable, relaxing, inquiry-based, and spontaneous (Austin, 2022; Blair, 2009; Hollingsworth & Giblin, 2024). This diverse set of characteristics reflects the many ways in which learning can take place in this natural setting, with activities ranging from gardening tasks such as digging, sowing, and watering, to more sensory experiences such as tasting, smelling, and feeling (Blair, 2009). The pedagogical importance of the learning environment has been emphasized in educational traditions such as Reggio Emilia, where the environment is understood as a ‘third pedagogue’ (Strong-Wilson & Ellis, 2007). Rather than simply providing the setting for learning, the environment itself is seen as an active pedagogical participant that shapes what students notice, how they interact, and what becomes possible in terms of their learning (Strong-Wilson & Ellis, 2007). The garden, with its sensory richness, unpredictability, and concrete tangibility embodies this idea of a ‘living’ pedagogue. It generates spontaneous encounters with different life forms and offers a kind of embodied, multisensory engagement that is structurally difficult to replicate indoors. As Blair (2009) notes, the garden is intensely local because all that it brings with it, such as the weather, the soil, the insects, and the different seasons are already there, allowing students to learn through direct contact with these natural phenomena.

Studies consistently report the benefits of OL and GBL for children, such as improvements in student motivation, engagement, academic outcomes, and attitude toward school (Blair, 2009; Dring et al., 2020; Godwin et al., 2025; Hollingsworth & Giblin, 2024; Szczytko et al., 2018). Research with sixth-grade biology students in Germany found that learning outdoors was associated with more positive emotions, including happiness, pride, and wonder, than learning in the classroom (Pollin & Retzlaff-Fürst, 2021). GBL has also been associated with a calming or therapeutic effect, with both teachers and students reporting feeling more at ease and relaxed when learning outdoors (Austin, 2022; Dring et al., 2020; Hollingsworth & Giblin, 2024). The diversity of tasks and experiences also allows learners to engage with the garden in different ways depending on their individual abilities (Dyment & Bell, 2008; Friedman et al., 2022).

The benefits of OL and GBL also extend to the social dimensions of learning, including positive effects on peer relationships, cooperation, and social and emotional development (Hollingsworth & Giblin, 2024; Lohr et al., 2021; Pollin & Retzlaff-Fürst, 2021). Importantly, these social shifts also affect the student-teacher relationship. As Kelly et al. (2022) describe, OL repositions the teacher as a more facilitative role, which creates a space for different kinds of relationships and group dynamics to emerge. Students interviewed in a garden program in the United States reported feeling more connected to their teachers when working in the garden because it felt like working together rather than being told what to do, which they contrasted with their experience of the conventional classroom (Hollingsworth & Giblin, 2024). Austin (2022) also found that teachers using school gardens as a place of learning perceived that the garden work brings everyone on the same level, stating that “the usual hierarchies between teacher and pupil, adult and child break down and

teamwork becomes the norm” (p. 719). Blair (2009) also emphasizes the spontaneous and non-hierarchical nature of the gardening process and how it can cause multi-directional learning, where both students and teachers learn together and from one another.

2.4 Outdoor learning and students with SEND

Despite the growing evidence of the benefits of learning in nature and the UN Convention on the Rights of the Child, which guarantees all children the right to experience, explore, and play in nature, historically, the field of OL has not been designed with all learners in mind (Sturges, et al., 2025). While OL and GBL have been identified as having the potential to encourage more inclusive learning than traditional indoor settings (Godwin et al., 2025), the research on GBL often does not outline specific ways in which gardening can be planned and conducted with inclusion in mind (Corsano et al., 2025).

Aylward and Mitten (2022) argue that OL has its roots in Eurocentric, able-bodied, and predominantly male traditions, and that there have been few coordinated attempts to make the mainstream OL sector genuinely inclusive for diverse groups. Waite et al. (2023) identifies children and young people who are at highest risk of being excluded from OL and nature-based activities to be from “low income, minority ethnic backgrounds, refugee families and children with disabilities” (p. 54). Silvers et al. (2026), in a mixed methods study of environmental learning organizations across the United States, found that over 75% of OL organizations perceived their programs as accessible to students with disabilities. However, when asked whether programming was specifically designed to meet legal accessibility standards for these students, these numbers dropped significantly. The authors attribute this gap partly to practical barriers, such as limited funding and the difficulty of making uneven outdoor terrain physically accessible. Beyond these structural factors, they also point to problematic assumptions within the field that “individuals with disabilities are not represented in program attendance because they do not have an interest in engaging with nature or have a ‘typical outdoor lifestyle’” (Silvers et al., 2026, p. 214). However, the limited research that has centered the voices and experiences of people with disabilities challenges these assumptions (Silvers et al., 2026).

Additionally, multiple studies found that OL can be particularly beneficial for children with SEND (Friedman et al., 2022; Godwin et al., 2025; Padesky & Padesky, 2026). The most consistent literature on students with SEND in OL spaces focuses on neurodivergent students, particularly those with ADHD and autism. These studies report that OL environments are associated with reduced anxiety, improved emotional regulation, and greater social interaction (Austin, 2022; Dring et al., 2020; Szczytko et al., 2018). Friedman et al. (2025) interviewed 14 practitioners engaging in nature-based learning with autistic children across three countries. They found that outdoor spaces offered autistic children more freedom to engage on their own terms, due to lower demands and fewer normative social expectations than conventional classrooms. Furthermore, drawing on a case study at a primary SNS in the UK, Hopper (2017) found that structured OL with clear routines was particularly effective for students with SEND, with predictability being especially supportive for

autistic students. This also aligns with the reoccurring finding that neurodivergent children who find learning in indoor classrooms challenging have been found to thrive in outdoor settings (Dring et al. 2020; Kelly et al., 2022). However, Friedman et al. (2025) also found that OL is not inherently positive for all autistic children and that there is no one-size-fits-all approach. For some autistic students, the unpredictable sensory environment of outdoor spaces can be a source of anxiety, emphasizing the importance of adapting the environment to meet the child's needs rather than expecting the child to adapt (Friedman et al., 2022; Friedman et al., 2025; Padesky & Padesky, 2026).

2.5 The role of teachers in inclusive OL

Adapting OL environments to students' individual needs highlights the central role of teachers in mediating OL for students with SEND. As Florian and Black-Hawkins (2011) and Ainscow (2020) argue, creating accessible learning opportunities requires ongoing pedagogical work. This work is shaped by how teachers perceive, interpret, and respond to student behavior in outdoor environments. Szczytko et al. (2018), in a study of an outdoor environmental education program for fifth-grade students with emotional, cognitive, and behavioral disabilities⁵ in the United States, found that, despite their initial hesitations of teaching their students outside, teachers reported longer attention spans and less disruptive behavior outdoors by the end of the year. Importantly, the authors suggest that this changed how teachers perceived their students. Behaviors perceived as disruptive in the classroom, such as interrupting with questions, were seen as indicators of engagement in the outdoor context (Szczytko et al., 2018). These shifts in teachers' perceptions are important because teachers have been described as the 'gatekeepers' of students' learning in outdoor settings (Dring et al., 2020). Additionally, as Szczytko et al. (2018) explain, how teachers perceive and understand their students' behaviors and abilities can influence students' academic trajectories well into the future. This is important for students with SEND who are particularly vulnerable to being understood primarily through their difficulties (Florian & Black-Hawkins, 2011). As the literature suggests, OL can offer teachers a new way of perceiving their students, their behaviors, and their abilities.

Creating inclusive OL opportunities also places considerable demands on teachers. Multiple studies highlight the structural and pedagogical challenges involved in this work. Corsano et al. (2025) describe that teachers must respond to individual students while simultaneously managing the needs of the whole group. However, this can be a challenging task for teachers and caregivers working in gardens with students with SEND (Godwin et al., 2025; Padesky & Padesky, 2026). This construction work is skilled and difficult to sustain because it is affected by many factors, such as the weather, lack of time, staffing constraints, physical accessibility barriers to the gardens and fluctuating institutional support (Austin, 2022; Blair, 2009; Godwin et al., 2025; Szczytko et al., 2018; Waite et al. 2023). These conditions shape what teachers themselves can do

⁵ Emotional, behavioral, and learning disabilities here refer to "students with a variety of emotional, behavioral, and cognitive impairments such as Attention Deficit Hyperactivity Disorder (ADHD), autism and dyslexia" (Szczytko et. al., 2018, p. 2).

and highlight the complex environments within which OL and GBL learning takes place (Austin, 2022; Corsano, et. al., 2025; Dring et al., 2020). Despite these barriers, Austin (2022) found that teachers in Irish primary schools perceived the benefits of the garden as outweighing the challenges and seeing barriers as something that can be overcome. However, many teachers also believed that “in order for a garden to be successful, the support of the whole school community is essential” (Austin, 2022, p. 713). This highlights the importance of acknowledging that the success of OL should not fall into the hands of a few motivated individuals but relies on larger community support and acceptance. Implementing inclusive OL requires a better understanding of the realities of teachers’ everyday practice and the conditions that enable or constrain their work.

2.6. Research gap and relevance

Taken together, the literature suggests that OL and GBL can offer meaningful opportunities for students with SEND. However, these depend on how learning environments are designed, how teachers interpret students’ behaviors and abilities, and how participation is supported in practice. This points to an important gap in the literature. While inclusive pedagogy has been described as something actively constructed through teaching practice (Florian & Black-Hawkins, 2011), existing research on outdoor learning still tends to focus more on student outcomes than on how teachers themselves experience and navigate this work.

Additionally, existing studies focusing on student outcomes in OL and GBL present several limitations. Much of the research focuses on a relatively narrow range of diagnostic categories, most commonly ADHD and autism, while students with physical disabilities are far less visible in the literature (Friedman et al., 2025; Padesky & Padesky, 2026). Existing studies also focus largely on primary-aged students in mainstream schools, leaving older students and students attending dedicated SNS underrepresented (Blair, 2009; Hopper, 2017; Waite et al., 2023). As a result, less is known about how GBL works in settings where students have a wide range of support needs, ages and abilities.

This study responds to these gaps by examining how teachers experience and construct inclusive OL in practice. This is particularly relevant in the German context, where OL and GBL remain less explored in recent literature and where SNS continue to play an important role in the school system. By focusing on teacher experiences, this study contributes to a better understanding of how the inclusive potential of GBL can be translated into practice for students with diverse learning and support needs. The following chapter outlines the study context and methodological approach taken to explore these questions.

3. Methodology

3.1 Research context

This study is situated within a collaboration with Acker⁶, a non-profit organization active across the DACH region that offers a range of educational programs, including the school-based gardening program ‘GemüseAckerdemie’ (Vegetable Academy). Founded in 2014, the GemüseAckerdemie is a multi-year, practice-oriented GBL program in which students and teachers learn to sustainably grow vegetables on their own school grounds. The program is designed primarily for students in grades 3 to 6 (approximately ages 6-12) and aims to integrate themes of sustainability, nutrition, and environmental awareness into everyday school life (Acker e.V., 2025). Today, more than 1,200 schools and 164,000 students have participated in the program. Acker’s long-term vision is that, by 2030, every child will have the opportunity to experience where food comes from and how it grows during their school years (Acker e.V., n.d.-a).

The GemüseAckerdemie is structured as a multi-year program that supports schools in becoming more independent in their gardening practices through several stages. During the first 3-4 years, schools receive extensive support. This includes access to a digital learning platform with teaching materials and gardening resources, newsletters, teacher training opportunities, vegetable seedlings and seeds, and practical guidance from trained garden coaches (AckerCoaches). The AckerCoaches also support schools through planting workshops and supervised planting sessions. This support is gradually reduced as schools develop more autonomy. After the official program period, schools can continue participating through advanced program stages and the ‘AckerAlumni’ network to remain part of the broader Acker community while managing their gardens independently.

In the 2025/26 school year, 128 Förderschulen participated in the GemüseAckerdemie (Acker e.V., 2026). The present study forms part of a broader ongoing impact evaluation conducted by Acker, which seeks to better understand how the program is experienced and implemented within SNS settings.

3.2 Research design

This thesis adopts an exploratory qualitative research design to investigate how teachers experience and actively construct inclusive learning within the GemüseAckerdemie in German Förderschulen. Rather than evaluating the GemüseAckerdemie or measuring predefined outcomes, my aim is to understand teachers’

⁶ In English, ‘Acker’ translates to a field, or arable land and is used as a play on words throughout Acker’s various program names (ie. GemüseAckerdemie, instead of ‘Akademie’). In the context of Acker’s programs and this thesis, the ‘Acker’ specifically refers to the vegetable garden plot. For consistency, I will use the term ‘garden’ when referring to the ‘Acker’ in English, at times using the German term where it is important in direct quotations or program-specific references such as ‘AckerCoach’.

subjective experiences and how they create, adapt, and negotiate conditions for participation among students with diverse learning and support needs.

Through a constructivist ontology, I understand social reality as dynamic and co-constructed (Creswell & Creswell, 2022). Teachers' experiences are therefore approached as context-dependent and shaped by individual and collective perspectives. Epistemologically, I follow an interpretivist stance that explores participants' subjective meanings (Cohen et al., 2018). From this perspective, inclusion and inclusive pedagogy are not treated as a fixed or objectively measurable phenomena, but as processes that are continuously interpreted, negotiated, and enacted by teachers within specific institutional and social contexts, aligning with Florian and Black-Hawkins (2011) theorization of inclusion outlined in section 2.2.

3.3 Participants

I conducted a total of seven interviews with nine teachers across five German federal states. Five interviews were one-on-one, while two involved two teachers from the same school. Figure 1 shows the geographic distribution of schools included in the sample. All schools are located in western Germany, which, as discussed in section 2.3, is the region where school gardens are historically less established. All nine interviewees work with autistic students, and seven out of nine participating teachers work with students with the support area 'intellectual development'. As can be seen in Table 1, all schools have one main area of special educational support but also cater to a variety of other areas.

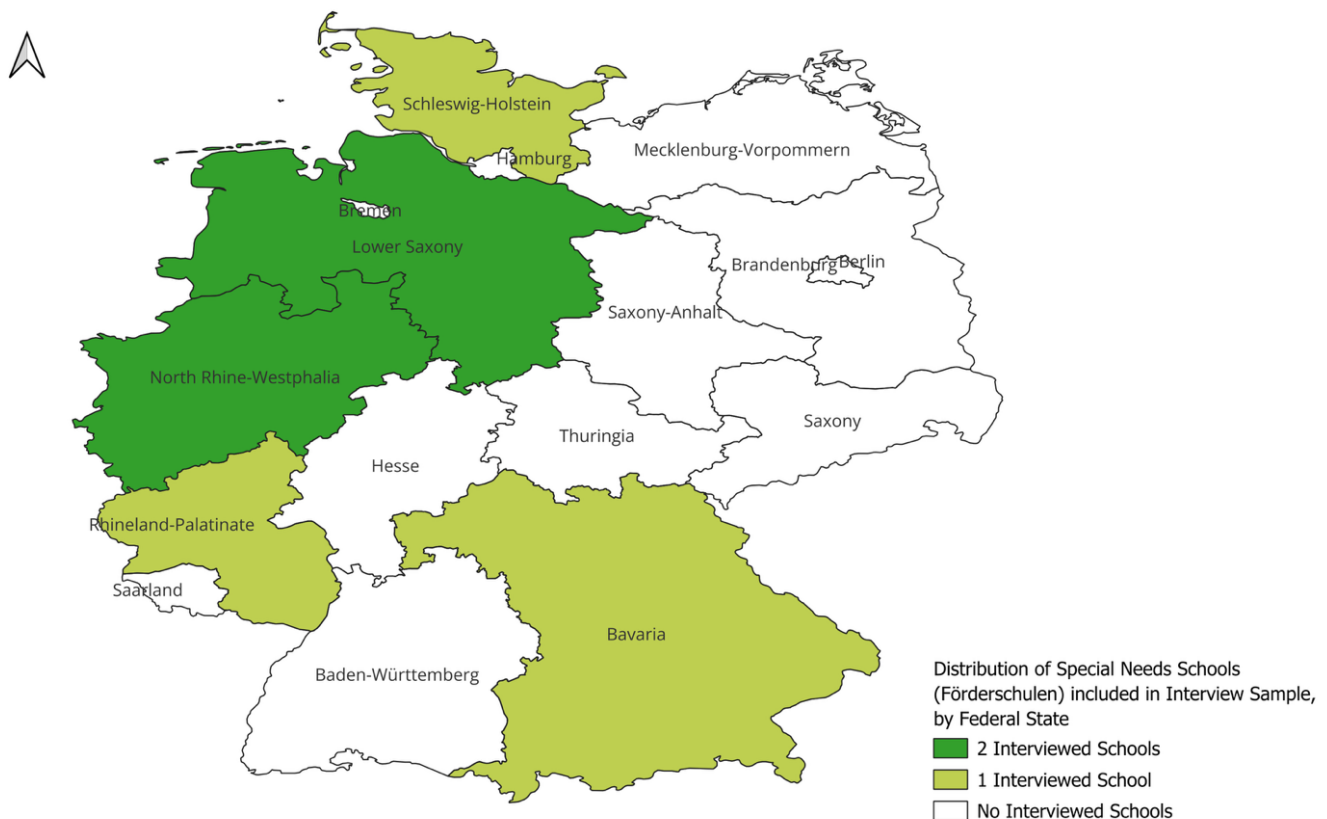


Figure 1 - Distribution of special needs schools included in interview sample, by Federal State

I recruited the participants through purposive sampling based on an initial survey conducted by Acker in November 2025 which included 54 teachers working at Förderschulen. Of the 54 teachers, 25 teachers indicated willingness to participate in a follow-up interview. From this pool, I initially contacted a selection of 11 teachers leveraging selected criteria from the survey data to create a diverse sample. This included geographic location, areas of special educational support, group sizes and indicated age ranges of the students, differentiated survey responses including positive and critical aspects about the program, and working independently or together with colleagues. Further, an initial analysis of the open-ended answers was conducted to purposefully include themes relevant to the research question. For practical reasons, schools in Bavaria and Saxony were excluded from the first round of invitations due to school holidays at the time and contacted in a second round in March. Of the 11 initial invitations, six teachers responded and agreed to participate. A second round of three invitations to schools in Bavaria and Saxony resulted in one additional participant from Bavaria. In total, 14 invitations were sent, resulting in nine participants across seven interviews.

I also designed my sampling strategy to recruit interview participants so that the sample reflected the gender distribution in the survey. Based on participants' first names, eight of the nine teachers interviewed present as women and one as a man⁷. This distribution (88.9% women) is consistent with the gendered pattern of the original survey sample, in which approximately 80% of all respondents (43 out of 54) and 84% of those willing to be interviewed (21 out of 25) presented as women.

⁷ It is important to note that gender was not explicitly asked in the original survey, and this estimation is based on name presentation, which does not capture the full complexity of gender identity.

Table 1 - Overview of interview participants

Pseudonym	Main area of special educational support (Förderschwerpunkt)	Additional support areas	Approximate student age range	Federal State
Alina ¹	learning	autistic students; emotional and social development;	8-14	Rhineland-Palatinate
Carolina ¹	learning	autistic students; emotional and social development	14-18	Rhineland-Palatinate
Emilia ²	intellectual development	autistic students; emotional and social development; learning	16-20	North Rhine-Westphalia
Hannah ²	intellectual development	autistic students; emotional and social development; learning	8-12	North Rhine-Westphalia
Julia	physical and motor development	autistic students; intellectual development; learning	14-18	Bavaria
Marie	hearing and communication	autistic students; emotional and social development; intellectual development; learning; physical and motor development	14-19	North Rhine-Westphalia
Markus	intellectual development	autistic students; physical and motor development	14-16	Lower Saxony
Marlene	intellectual development	autistic students; emotional and social development; physical and motor development	12-15	Lower Saxony
Theresa	intellectual development	autistic students; emotional and social development; physical and motor development	15-18	Schleswig-Holstein
^{1 2} Teachers from the same school, interviewed together.				

3.4 Data collection

I collected data through semi-structured interviews, which allowed me to guide the conversation while still leaving space for open-ended exchange and follow-up probes. The interview guide (see Appendix A and B) is structured thematically following principles for qualitative semi-structured interviewing as outlined by Gray (2021). I began with contextual questions about teachers' roles and school settings before moving to their experiences of OL, student engagement, and organizational conditions. I deliberately chose not to ask teachers to define inclusion to avoid probing towards a theoretical discussion and ensuring a focus on everyday practices and lived experiences as defined in my research interest. Before each interview, I reviewed the participants' prior survey responses to tailor questions to their specific context, helping to ground the conversation in their concrete experiences while still following the overall structure of the guide.

All interviews were conducted in German, as this is the participants' professional and native language and the language in which the GemüseAckerdemie operates. The interview guide was developed in consultation with my university supervisor and with Acker's Impact Team to ensure that the questions were

both methodologically sound and relevant to the program context. All interviews were conducted online via video call and audio- and/or video-recorded with participants' written and verbal consent.

3.5 Data analysis

I analyzed the data using reflexive thematic analysis (Braun and Clarke, 2021), as I wanted to understand patterns of meaning across my participants' accounts. I transcribed, coded and analyzed my data in German to retain the participants' own language and formulations. I translated quotes into English only at the write-up stage, since translating prior to analysis risks introducing interpretive distortion (Sutrisno et al., 2014).

I approached my analysis iteratively, beginning during and immediately after transcription, when initial patterns and recurring ideas started to become apparent. I coded all seven interviews in NVivo, using an abductive approach that combined deductive codes drawn from transcription and familiarization with the data and inductive codes generated as new ideas emerged (Timmermans & Tavory, 2012). I entered the data with broad sensitizing questions drawn from the literature and my research question, while remaining open to unexpected patterns. This is consistent with what Braun and Clarke (2021) describe as a theoretically informed yet data-driven approach to thematic analysis. It also reflects the iterative refinement process outlined by Cohen et al. (2018), which allows unexpected themes, tensions, and practices to emerge inductively from participants' experiences.

Throughout coding, I kept a working codebook and wrote analytical memos and thick descriptions to capture emerging interpretations and connections between codes. As analysis progressed, my research question shifted from solely focusing on teachers' experiences of the program to how teachers actively construct inclusive learning opportunities through their work in the gardens.

3.6 Reflexivity and positionality

Reflexivity requires actively examining how my own position and assumptions shape the research process and my interpretations (Cohen et al., 2018; Gray, 2021). I came to this study with a personal interest in outdoor education, which allowed me to engage deeply with the topic but also could incline me toward affirming the positive experiences teachers described. I counterbalanced this by reflecting on my positionality and paying careful attention to moments of tension and complexity in teachers' accounts during analysis. This allowed me to complicate my initial impressions rather than seek confirmation of them, both of which strengthen the validity of the research (Braun & Clarke, 2021; Creswell & Creswell, 2022).

At the same time, I am an outsider to the contexts I studied: I am able-bodied and have no professional background in special needs education or prior experience of Förderschulen. This positionality also shaped how I approached language throughout the thesis. I was conscious of how language can reflect assumptions about disability, and it was important for me to avoid the deficit-oriented framing that has been critiqued in the

field of disability studies as much as possible (Friedman et al., 2025; Sturges et al., 2025)⁸. I used the official German terminology used by my participants and the wider literature and followed the United Kingdom [UK] government guidance on inclusive language, which informed my choice of the term SEND (UK Government, n.d., 2026).

I also engaged in an extended period of familiarization at the Acker office in Berlin, which included attending two planting workshops at one SNS and one mainstream school (see Images 1 and 2). These visits were not part of the formal data collection process but allowed me to better contextualize the experiences of my interviewees. To mitigate potential conflicts of interest, all interviews were conducted independently, Acker did not have access to raw interview data, and the analysis and interpretation were carried out under independent university supervision. These strategies strengthened the validity of my findings by helping ensure that my analysis reflected the experiences and perspectives of my interviewees, while also making my research process and analytical decisions transparent (Creswell & Creswell, 2022)



Image 1 - Students preparing to plant the seedlings



Image 2 - Planted seedlings in a raised garden bed with hand-crafted signs (from left to right: lacinato kale, turnip cabbage, radish)

⁸ Ruiz-Gallardo (2013), for example, groups “special-needs students” (p. 256) with ‘at-risk’ youth, defined primarily through their “disruptive behavior disorder (DBD) episodes” (p. 259). Such deficit-oriented framing has increasingly been criticized in SEND research, where scholars advocate for language that emphasizes students’ strengths and capacities rather than their perceived deficits or deviations from what society constructs as the ‘norm’ (Friedman et al., 2025; Sturges et al., 2025).

3.7 Ethical considerations

This study received ethical approval from the University of Glasgow. All participants received a participant information sheet prior to their interview explaining the purpose of the study, data usage, their willingness to participate, and their right to withdraw at any point without consequences for their relationship with Acker or their school. These forms were signed by all participants and verbal consent was also obtained at the start of each interview. To avoid any perception of institutional pressure, teachers were invited to contact me directly to participate. Confidentiality and anonymity were maintained throughout by removing all personal identifiers during transcription, referring to participants by pseudonyms, and storing all anonymized materials in accordance with GDPR and University of Glasgow data management guidelines. Since Acker facilitated access to participants, a data sharing agreement was drafted and signed to maintain research independence. Anonymized findings will be shared with Acker following submission.

Although this study focuses on teachers' professional experiences, I remained mindful that their accounts concern children with diverse learning needs. Thus, I carefully framed my questions around teachers' own perceptions and practices, ensuring that no sensitive questions were asked about their students.

3.8 Limitations

This thesis has several limitations. The purposive sample of nine teachers across seven interviews reflects the practical constraints of a master thesis timeline. The findings are therefore not intended to be representative of all teachers implementing the GemüseAckerdemie, nor of teacher experiences at SNS in Germany. Rather than claiming generalizability, I understand the findings of this study as context-specific insights that may resonate with and inform similar contexts elsewhere (Braun & Clarke, 2021). A further limitation is that the teachers who responded to interview invitations may have been more willing to share their experience and therefore also have a more positive orientation toward the program than those who did not, which could reflect a form of self-selection bias (Robinson, 2014). Additionally, my role as a researcher embedded within Acker may also have shaped what participants were willing to share and how I interpreted their experiences, despite the steps taken to maintain independence outlined in section 3.6.

Another important limitation is that this study captures only teachers' perspectives. Students' lived experiences of learning in the garden are likely to differ from what teachers noticed and interpreted. Finally, the translation of qualitative data from German to English carries inherent limitations, as some terminology in special needs education does not translate directly. As a native speaker of both languages, I was able to navigate these challenges, but some loss of nuance in translation is likely unavoidable. Where translation risks losing important meaning, I have included the German term alongside an English explanation. The AI tool Microsoft Copilot (accessed via my University of Glasgow account) was used at times to cross-check translations and ensure no important meaning was lost.

4. Findings

This chapter presents three main themes that emerged from the interviews. The first discusses the role of the garden as an authentic, self-generating learning environment. The second theme focuses on the role of teachers as active constructors of participation. Lastly, the third theme delves into the relational aspect the garden work which shifts teachers' perceptions of students' abilities and behaviors, while allowing for new relationships and connections to emerge.

4.1. Theme 1: The Garden as an authentic, self-generating learning environment

This first theme begins with the garden itself. Teachers described the garden as an authentic, sensory, unpredictable learning environment that closely aligns with the practical pedagogical approaches used in SNS.

4.1.1 The garden as a self-generating learning space

A recurring observation across interviews was the contrast teachers drew between the classroom and the garden as learning environments. Teachers described the classroom as a space where learning situations and materials often have to be deliberately prepared and brought into the room. The garden, by contrast, was experienced as a space where possibilities for learning were already present. As Markus put it:

The difference is that learning in the classroom, it's always like an artificially produced situation, because you always have to bring something into the class that isn't actually there. Whereas the garden outside is a natural learning space, everything we need is already there.

Here, Markus distinguishes between the classroom, where the learning environment must be artificially constructed, and the garden, where the setting itself is the subject of study. Multiple teachers echoed this sentiment, highlighting that the garden, through its unpredictability and authenticity, provides an intrinsically motivating atmosphere for learning. Students "get into it [the garden work] super quickly", stated Marlene, because the environment itself is so engaging. The idea that the environment has an effect on the kind of learning that takes place is consistent with what Strong-Wilson and Ellis (2007) describe as the environment as the third pedagogue. The learning environment is seen as an active pedagogical participant that has a 'life of its own' and shapes the learning possibilities students have (Strong-Wilson & Ellis, 2007). Teachers describe the garden as being 'alive', 'unpredictable', and 'natural', something that cannot be controlled. It naturally presents opportunities for students to engage and learn.

Since the garden has a life of its own, it also makes it fundamentally unpredictable, a quality that teachers described as both positive and at times challenging. The weather changes, a bee flies by and scares the students, a worm appears unexpectedly in a handful of soil, and the students turn to the teacher with endless questions. Marlene explained this, stating:

One of the differences [to the classroom] is that you are outside and exposed to the weather conditions, which is sometimes nice and sometimes also difficult [...] it's just that nothing is artificially created.

Hannah referred to the inherent unpredictability of the garden and described how lessons often take a direction that was not originally planned:

So a lot of it is just like, spontaneous: What's going on outside that day? What can we do? What do the students see? What catches their attention? And... that's not always exactly what I had planned to do, beforehand.

As Blair (2009) notes, the natural elements, such as the sun, dirt, and insects teach about the garden themselves. They offer opportunities for unstructured learning that are not part of the original lesson plan and can happen in spontaneous ways.

4.1.2. Multisensory learning and diverse participation in the garden

What makes the garden particularly alive and active as a learning environment is its multisensory nature. When asked to describe a typical session in the garden, teachers referred to the importance of multisensory experiences, both for learning and as motivation for their students. They can smell the strawberries, taste the tomatoes, touch the soil, observe what plants look like at different stages of growth, and have unexpected encounters with animals, like insects and worms. Hannah described a session with her group of younger students that revolved entirely around sensory exploration:

When my students were really young, a lesson often simply looked like this: we observe and smell and taste in the garden, and then we go to the tomato plants and who can find a red tomato or an orange tomato, and what does it look like and how does it smell, and we try it [...].

Markus described the garden more broadly as a space that opens up opportunities to learn with all the senses:

I mean... the vegetable garden is on the one hand a kind of opportunity to experience a lot with all senses. From the weather to the soil, to the plants, to the seeds [...] All of the sensory experiences are possible there.

This multisensory quality is particularly relevant in the context of SNS. As shown in Table 1, many interviewees work at schools serving students with diverse learning profiles, including cognitive, sensory, physical, and emotional needs. As outlined by the KMK (1994), for students, particularly those with cognitive areas of special educational support, learning is most accessible when it is concrete and experiential. The garden offers these experiential and concrete opportunities to learn, through touch, taste, smell, movement, and observation and allows students to participate who might be excluded from other forms of engagement and learning. As Markus stated,

Epecially for students with multiple severe disabilities who can't physically participate [in the garden work] themselves, they have lots of opportunities to participate through their sense of smell, through other sensory experiences [...].

Participation is not always understood as actively completing or executing gardening tasks, but rather as a sensory experience. Marlene explained:

We also have students whose disabilities are so severe they can't actively participate [in the garden work]. But I wouldn't say that they don't benefit from it. For example, we got blankets so that they can be placed on the grass and just take it all in, that people are working around them, sometimes they'll get something to hold in their hands, or they get to smell something. [...] Basically, everyone can get something out of it, I wouldn't say there are any students that don't benefit from it.

These accounts show that participation in the garden is understood as more than just completing typical gardening tasks. For many teachers, participation means observing, sensing, and experiencing the garden alongside others. The concept of '*miterleben*' (experiencing alongside), described across interviews reflects an understanding of participation as being present within a shared experience. Learning in the garden allows all students to be included in different ways, even when they are unable to engage directly in gardening work.

The sensory and uncontrollable nature of the garden also enables another important learning experience, namely the dismantling of fears and inhibitions. Several teachers described how students who initially react with anxiety or disgust to soil, insects, or unfamiliar textures progressively become more comfortable through repeated exposure. Hannah described watching her students' relationship with worms transform across a series of lessons:

At first everyone went, 'Eww, there's a worm!' then we did a series about worms and we looked at it in class and fed it and gave it a name, and afterwards everyone dared to pick up the worm with their hands and we also looked, not just in the garden, but also in class. We watched a video about 'What are

worms good for, they're really important for us'. And then it changed from 'Eww, there's a worm', to 'Ohh, there's a worm, is it maybe related to our worm?' and 'Be careful, don't squish it!'

While the sensory richness of the garden can create opportunities for students to gradually expand their comfort zones and engage with new experiences, teachers were honest about the fact that the sensory environment of the garden is not always easy to navigate for all students. Several described how some students find the sensory aspect of the garden overwhelming, like the dirt, the irregular textures, and the unpredictability of living things. Hannah also noted,

And for some [students], they just can't stand the tactile sensation, the dirt, they can't stand it even with gloves on, and everything is 'yuck' and they try to pull away and back off, and yeah, of course that happens too.

Multiple teachers described this in relation to autistic students in their learning groups who present specific challenges when it comes to tactile experiences such as the inconsistency of soil textures, plants that do not look uniform, or the sensory overload of wearing gloves or rubber boots. This results in them not wanting to participate in the gardening activities:

[...] Autistic people, well, don't really like touching the ground. And they really don't like, um, yeah, that sensation, or having to put on gloves, or things like that, or even putting on rubber boots, um, that [the garden] is often not a good place for them, from what I've seen. To observe, um, sure, but not so much for, yeah, actually working the soil, that's difficult. (Theresa)

These challenges align with those identified in the literature, where Friedman et al. (2025) found that the OL might not always be the right fit for all autistic students as it can be a scary place for children with aversions towards uneven terrains and who have difficulties with sensorimotor skills.

Despite these challenges, teachers described meaningful participation as possible. Hannah described a situation where an autistic student would frequently disrupt classroom lessons due to her vocal stims. In the garden, the same student was able to make as much noise as she liked. Although she did not like to put her hands in the soil, she was still able to be present during the gardening lessons and part of the group. Hannah explained: "For an outsider, she's not actively working. But she can be there with the learning group. And in that moment, that's already something that's really great." While Hannah explains that her student's way of engaging with the group might not fit the conventional understanding of what 'working' in a garden looks like, she sees this participation as valuable because her student has an opportunity to express herself freely while still being a part of a collective learning experience. Overall, teachers described participation in nuanced ways, showing how students can engage with the garden through their individual needs, abilities, and different senses.

4.1.3. An extension of Förderschule pedagogy

Multiple teachers described the garden as fitting with the pedagogical principles that already guide their work. As Emilia observed, “these special educational principles - working in small steps, working in a hands-on way, repeating things - you find all of that in garden work.”. Thus, the garden offers a learning environment that fits well within the pedagogical structure and practice of SNS. Another teacher explained that repetition forms an important aspect of the garden work and reflects the pedagogical approach of SNS:

I believe that one key principle, especially for special education schools, is the principle of repetition. And the fact that things simply unfold in a similar pattern, in a routine, that this routine provides a sense of security and, with it, the feeling that ‘Now I already know what’s coming’ and ‘I already know what my part will be’ (Julia)

Through repetition, students learn what to expect in the garden and gradually develop a sense of security, independence, and confidence in their work. Teachers also described how the garden naturally supports developmental and therapeutic goals, specifically those related to fine and gross physical and motor skills. Marlene explained that students can experience ‘*Therapiemüdigkeit*’ (therapy fatigue) which makes them reluctant to participate in physical therapy sessions at school. In the garden, however, these therapeutic movements occur organically through the gardening work:

And also that [physical therapy] just happens naturally, too - you simply have to somehow crouch down or bend over or turn around when you’re working. And it just happens, yeah, by doing, just like that. (Marlene)

For several teachers, the practical aspect of the garden extends to preparing students for life and work beyond school. Especially for teachers working with older students in their final years of schooling, the garden serves as a place for vocational training for students with diverse areas of support. Julia explained that the older students at her school with both support areas ‘physical and motor development’ and ‘learning’ who do not plan on pursuing further education complete a dedicated vocational preparation year. This focuses specifically on preparing students for future employment. The learning goals she focuses on with this group are learning to carry out physical tasks, to manage their own energy and time, and to learn the essentials of workplace safety:

The break isn’t scheduled to coincide with the bell [...] this is another aspect of vocational preparation. The students manage their own break themselves and must also learn to come back from the break independently, so there’s no bell reminding them, but rather ‘I notice that I’m exhausted right now, I need to drink something, I’ll finish my break and come back to work’.

Similar goals were also described by Marie who explained that “practical work has a high value for us in the upper years” and that working in the garden helps students build physical endurance and the ability to follow through on difficult tasks. For Marie, this was especially important for her older students with support needs in ‘intellectual development’ and ‘learning’, as the garden work reflected some of their vocational aspirations. Marie described a student in his final year whose existing interest in landscape gardening was confirmed through his work in the school garden. For others, the garden is a place that allows them to explore this. Markus explained that through the practical work in the garden, some students discover their vocational interest in gardening. His school created formal partnerships with local gardens and cemeteries, enabling students to translate the gardening skills they acquired through the GemüseAckerdemie into workplace experience through internships and, in some cases, future paid positions as assistant gardeners.

Overall, the garden emerges as a space that extends and reinforces principles already central to SNS pedagogy such as concrete, hands-on learning, repetition and routine, therapeutic integration, and preparation for life and work beyond school. It offers the kind of *Erfahrungswelt* (experiential world) described in the KMK recommendations, where learning becomes practical, sensory-perceptual, and rooted in concrete experience (KMK, 1994, 2019, 2021).

4.2. Theme 2: Teachers as active constructors of participation in the garden

While the garden offers a learning environment that is alive, spontaneous, and aligned with the pedagogical approaches of SNS, this does not mean that teachers simply experience the learning that takes place. Across the interviews, it became clear that student participation in the garden is continuously constructed through teachers’ professional practice and judgements to ensure that all learners can meaningfully engage to the best of their abilities.

4.2.1. Planning and steering in the moment

When asked to describe a typical session in the garden, teachers explained that they usually arrive with a plan. Before each session, they consider what needs to be done, what the weather might require that day, the individual students’ strengths and capabilities to participate, and how to distribute tasks in a way that allows everyone to participate meaningfully. Part of their role in the gardens, as they describe it, is to be an ‘Anleiter’ (instructor), who maintains the structure and leads the work. As Carolina described while Alina nodded along::

I see myself in two roles. On the one hand, of course, a learning companion, because I do have a plan: What should the students learn today? What do we want to do? What do we want to achieve? And often I’m also in the role of foreman, that’s how I always feel, no?

It is from this plural position of planner, guide, companion, and instructor that teachers navigate what the garden has in store for them each day. As both Marlene and Theresa described, the group gathers at the

start, the present ‘adult(s)’ assess what needs doing, and the session continues from there. However, as seen in section 4.1.1., this planning is often interrupted by the uncontrollable garden. In response, teachers need to adapt and actively construct the learning environment in a way that allows it to become accessible to diverse learners. As Marlene put it: “We always have to steer things a little bit”. This ‘*nachsteuern*’ (steering and correcting) in the moment, takes many forms. Sometimes it means redistributing tasks when a student is overwhelmed or underchallenged. Other times it means differentiating tasks so that students with different abilities can participate in some capacity. Marie described how this active guidance can be a challenge because it requires teachers to be constantly aware and reactive, which can be difficult when there are a lot of students in the garden. She described one of her students who does not like getting dirty in the garden which leads her to quickly disengage:

[...] we always accompany her in the garden, but as soon as you don’t guide her, she’s gone again. So you really have to keep an eye on her, point things out, and say something like, “Do you want to try a tomato now?” or “Look here, there’s the cucumbers, come on, let’s take another bite,” or something like that. So, you have to actively guide her toward it, she wouldn’t do it on her own.

This guidance takes a lot of time and effort and sometimes it means that teachers go out of their way to ensure students can have meaningful experiences in the garden. Marlene mentioned a communication error that led to all the potatoes being dug up and her response was to rebury them. Knowing how much the students enjoy harvesting the potatoes and how accessible the activity is for a wide range of learners, Marlene deliberately reconstructed the situation to ensure that this learning experience remained available to them.

4.2.2. Designing participation through group work, tasks, and tools

For teachers, making gardening activities accessible means constantly considering what each student can contribute and how different forms of participation can be made possible. As Theresa explained, this is not always an easy task:

This year the group also includes students who have very complex needs, some of whom are in wheelchairs, and not all of them - only about half - can really actively participate, while the other half are there more as observers. You really have to think carefully about how to involve them.

One way teachers address this is how they construct group work. Theresa described assembling groups with attention to both their fine motor skill and physical strength to ensure that each group can complete the full range of tasks at a given garden bed:

I look at what’s being planted in which bed, and if I see, Oh, this is a more demanding bed, then I make sure there’s someone in the group who is stronger and someone who is maybe a little bit weaker, where

you know they might not be as skilled with their hands - and they're in charge of digging the hole and the one with more fine motor skills puts the seedling in and covers it with soil. So the groups are set up very heterogeneously [...]

Here, Theresa actively divides the tasks among groups so that students with different abilities can jointly contribute to a shared outcome. This shows that the teachers' role involves working with individual differences by designing groups in which students' abilities can complement each other and help them work together effectively. Marlene also explained this approach of making deliberate adaptations to ensure that everyone can participate to the best of their abilities:

You look at things and think, OK, this [student] can weed well while sitting down, but because he walks so poorly, he can't push the wheelbarrow, but someone else can do that [...]. So we try to use what's available, to help each other.

How teachers form groups also supports the development of important social and practical competences. Some teachers let students choose their own groups while gently guiding those choices to encourage teamwork: "No student works alone [...]. On the one hand, the students choose themselves, on the other hand, I say, 'perhaps today, if we try this combination, see if you can work it out together'." (Julia). Carolina described how this pairing leads to encounters that are mutually beneficial for the students: "The one leads the other, and the other lets themselves be pulled into the activity a bit, where perhaps before there was a little hesitation and um, reluctance, and from that, the students are simply better off together.". Overall, the garden as a social place of learning also aligns with the literature which shows that OL and GBL can have positive effects on students' social learning and feeling of connectedness (Austin, 2022; Hollingsworth & Giblin, 2024; Lohr et al., 2021) By facilitating group work, the teachers encourage the development of social skills and effective teamwork. Students' abilities are worked with rather than worked against, resulting in positive opportunities for working together towards a common goal.

By differentiating tasks and intentionally building groups, teachers can encourage participation among groups of very diverse students. However, for some students, the tools and physical setup of the garden itself present an additional barrier to participation. Not everyone is able to use the tools as they are typically designed because they are not always made accessibly. Julia described in detail how her school has made adaptations to the tools and setup of the garden so that students with mobility needs, such as those using wheelchairs, can actively participate in the gardening tasks:

In general, I think you can find a task in the garden for every student. When it comes to the area of physical and motor development [...] We have garden beds that are accessible with concrete slabs, so

that wheelchair users can get around everywhere. We have soft knee cushions so that you can kneel with support. We have tools with short and long handles, so now you can reach everywhere, and lighter or heavier tools depending on how much strength students have [...] You can attach a watering can next to the wheelchair or on a table at the wheelchair, guide the hand, slowly lower the spout of the watering can, and suddenly you hear water coming out. We can attach a piece of plastic rain gutter underneath to direct the water where it needs to go. Or we have a hose cart with a small, attached sprinkler head, where you can adjust the water pressure, and that way even students with more severe disabilities can take part in watering.

Teachers need to adapt the tools they use and distribute the gardening tasks in ways that align with the abilities of diverse students and enable all students to participate in the garden. As Julia stated: “I think it is our task to figure out: Which tool, which activity can I adapt to what you can do.”

Teachers also described specific pedagogical approaches they use to encourage students with sensory aversions to participate in the gardening activities. Markus explained using a backward chaining approach, where students begin with the final step of a task to experience immediate success, such as placing an onion bulb into a pre-dug hole. With time, they work backwards to eventually complete the whole sequence themselves. As he stated, “we start at a point that is as easy as possible for the student and then build it up systematically”. Hannah described a similar approach, offering alternatives while still gently encouraging students to participate and noticing progress over time:

I try to lead them to it anyway and say, ‘we can wash up straight after’, or ‘you can go inside earlier to wash up’, or ‘look, it’s really not so bad’ [...] And for some of them it really happens that at some point they don’t even notice when they’re dirty, and it’s really not a problem at all.

Teachers consistently described the considerable professional effort involved in adapting tasks, organizing groups, and responding to individual needs. At the same time, they emphasized that some barriers to participation remain outside their control.

4.2.3. The limits of adaptation: time, staffing, and support

Many teachers work with very heterogenous groups, where some students require close supervision and support. Ensuring participation therefore depends on having enough adults present in the garden. Marie explained that three students in her current group have been assessed as needing one-on-one support but are still waiting for that support to be assigned. They attend the garden sessions regardless, which makes it difficult to manage the sessions and ensure that all students can participate. Similar difficulties were noted by Padesky and Padesky (2026), who found that working with students with SEND outdoors can make it difficult for

teachers to balance individual support needs with the engagement and safety of the whole group. Alina also pointed out this challenge:

Of course, we also have to make sure that we pay special attention to the more restless kids, you know, when it comes to handling tools and such, because that's often a challenge. That's why our groups are very small, and our class sizes are also very small. So we have a maximum of 15 kids in a class; after that, we usually split them up starting at 16, um, and we just couldn't handle that with a whole class on our own, depending on, um, how active the kids are, you really have to keep a close eye on them when they're using the equipment [...]

These constraints were also expressed by Emilia who explained that sessions at her school require at least two teachers to be present, meaning some classes who want to garden regularly cannot always do so because there is not enough support staff available. Even when there are enough staff, it is not always easy to build shared interest and investment in the garden beyond a small group of committed individuals. Alina and Carolina explained that the number of colleagues who had originally taken on shared responsibility for the garden had reduced from a handful of colleagues to essentially one additional person because colleagues found it difficult to commit their time and efforts to the garden. This highlights that student participation also depends on a teacher's capacity to provide the support students require, which is not always possible. Theresa described a similar tension between her commitment to the garden and the practical limits of her time: "I would wish that it [the garden] were more present in school. But for that I would need more time, and I don't have it [...]". Despite not having enough time, her investment in the garden went beyond school hours. She described her mother accompanying her during holidays to tend to the garden together. Markus described that he had to come to school during a holiday once because the plants were being delivered that day and he was worried they would not survive the long weekend.

While teachers actively find ways to facilitate diverse participation, they emphasized that doing so requires ongoing investment, time, and flexibility, which they do not always have. This resonates with Blair (2009), who identifies lack of time and limited capacity as major constraints to teachers' work in school garden. Austin (2022) similarly emphasizes that teachers need support from colleagues and the wider school community to sustain this work. This highlights that ensuring student participation in the garden depends on the sustained professional effort of teachers who often work under significant constraints.

4.3. Theme 3: Experiencing students differently: The garden as a relational space

The work of making participation possible also shapes teachers' own experiences in the garden. This is reflected in shifts in how they perceive their students, understand their own role, and build relationships through the garden work. Together, these shifts suggest that learning in the garden creates conditions in which students are seen differently and new forms of connection become possible.

4.3.1. The garden reframes teachers' perceptions of students

Multiple teachers described that the garden changed the way that they experience certain behaviors and competencies. As stated by Carolina:

This past school year I had the experience that especially students who tend to reach their limits in the more theory-driven school day, who have a strong need for movement and have a hard time concentrating in class, that those students actually had a real chance to receive positive feedback in the school garden. In their everyday school life, they often experience that they don't really do things the way they're supposed to, they often disrupt and they get a lot of negative feedback. And in the school garden, those 'academic competencies' that some students just aren't very strong in, those completely fade into the background, you know? There [in the school garden], it's about completely different competencies, and I always find it really nice to see that students who otherwise cause a lot of stress in class and are, um, quite a challenge suddenly become the most hardworking, energetic, and willing-to-make-an-effort students in the school garden.

Behaviors such as having a lot of energy or need for movement that can be seen as 'challenging' or problematic in the classroom become an asset in the garden, allowing students to show a different side of themselves. The garden work also requires different competencies, allowing students whose strengths are more related to physical work to shine. Hannah echoed this experience, stating:

And it's always been that way, that the students who are more prone to behavioral issues and harder to manage, that this was this best place for them to work, because in Math or German class, they always say: 'Oh, I can't do this, I don't want to, I don't feel like it', and there [in the school garden], they could do something the others couldn't: they could do physical work and they even came back to class much more relaxed and at ease. That's why I've always felt the garden, especially for our students, is a great place for them to unwind, a place where they have to know, and can show, different skills [...]

Marlene also explained that students who particularly benefit from the school garden are those "[...] who have more problems in the classroom, for example, because they can't sit still [...]". She gave the example of a student in her group that loves to dig holes, but who struggles in the classroom. At certain times in the

school garden, he is allowed to just dig: “And no one comes up to him to say ‘No, there’s something growing there’, he’s just allowed to dig and then he covers up the holes and then the soil is loose, and everything is good”. In this case, the student’s behavior is both beneficial to him and to the garden; he is allowed to do an activity that he enjoys without receiving negative feedback, while the digging also loosens the soil which is good for the plants. This reflects the findings across the OL literature, where students who struggle in conventional classroom settings have repeatedly been found to engage more outdoors (Dring et al., 2020; Kelly et al., 2022). Szczytko et al. (2018) also found that teachers’ perceptions of student behavior shifted in outdoor settings, where behaviors previously deemed as disruptive were seen as positive signs of engagement.

The reframing of student’s behaviors and abilities was also not exclusively in reference to students with difficult behaviors and high movement needs. Alina stated:

And at the same time, I also find that even the quiet ones, the ones who don’t really show it, just find their own peace in the garden, and then they do their work so meticulously, and are able to get something out of it too. So, there are always individual students, where we’re sometimes completely surprised, in terms of their dedication, where I really didn’t expect it. [...] So we just constantly have these surprising moments.

Some teachers also described powerful moments in which the garden revealed students’ different emotional and relational dimensions. Julia gave an example of a student with a history of severe family violence. In the classroom, this student was loud, disruptive, and struggled with rules. One day in the garden, Julia found him completely absorbed, watching the worms as he crouched beside a garden bed. He spoke to her in a fascinated whisper:

‘Look what I found’. And it’s that sense of being moved and that awareness and then the fact that I’m able to share such experiences with my students, it gives me a new perspective, where I then say, ‘If you are capable of encountering a worm with such tenderness and fascination, then we have to try to create moments like that in other situations too, so that you can become aware of the fact that you are more than your experiences of violence.

This encounter shifted the focus away from what the student struggles with in class toward what he is capable of. The garden becomes a space in which alternative narratives about students can emerge, creating new possibilities of understanding and engagement. Markus also explained that his students, specifically those with ADHD, come back from the gardening lesson “completely relaxed, and they notice it themselves too, they say ‘Oh I feel good right now’”. Thus, the garden creates positive moments in which both teachers and students can experience themselves, and each other, differently.

Because several of the teachers work in the gardens with an ‘AG’ (gardening club) group, they also work with students outside of their regular class. This creates opportunities to report back to those students’ classroom teachers and offer them a different perspective on the student’s behavior than the one they tend to see, as Carolina stated: “[...] like: ‘Look, this student who gives you so much trouble - in the school garden, they have a space where they can really pour themselves into the work and channel their energy in a meaningful way’. It’s just a really nice kind of feedback for both the teachers and students”.

This different perspective also extends to students whose participation in school is often shaped by language barriers. Dymont and Bell (2008) found that school gardens, due to their tangible and physical nature, can remove and mitigate language barriers for students who might struggle to integrate in other school activities. Julia echoes this, describing the garden as a space where language becomes less central to participation:

When we are working on the Acker [school garden], suddenly there are no more language barriers, no matter which countries my students come from, or what emotional and social difficulties they are currently experiencing. These things often fade into the background.

Taken together, these moments show that the garden does not necessarily change students’ behaviors, but it changes how teachers experience and interpret them.

4.3.2. Shifting teacher roles: from instructor to learning companion

These moments of seeing students differently also have an impact on the teacher-student relationship because the gardens shift the teachers’ own perceived roles. Across interviews, teachers described the garden as a place where hierarchies become blurred as they work alongside their students. Emilia nodded while Hannah described how sessions typically begin with her in the role of instructor and gradually move towards a flatter, more de-hierarchized role: “At some point it all blends together, and when we have the break together, everyone is kind of on the same level, I would almost say.” Marlene also explained that this is an aspect that she enjoys about the work in the garden, that everyone is doing the same:

I’m pulling the weeds just like you do. In the classroom, even when we try to teach at eye-level, it often ends up being ‘I’m the one with the worksheet’ or ‘This is the task and you do it and I’ll look at it.’ I don’t mean it in a negative way at all, but it’s just ‘Hey, we’re both crouching down here and we’re working together and discovering things together’.

Markus described this in relation to his own learning. Having joined the GemüseAckerdemie with no previous gardening experience, he sees himself both as the instructor, but also a ‘*Mitgärtner*’ (co-gardener) who is learning alongside his students:

In the end, it is this learning through a shared object together with them. It is not ‘someone comes who knows everything’ - we learn together as a class community. You step a little out of the teacher role, perhaps more as a companion, a co-learner, a co-gardener, in that moment.

Theresa described experiencing her own role in the garden as that of a gardener who genuinely enjoys the feeling of doing the gardening work and a ‘*Lernbegleiterin*’ (learning companion) who gets to work together with her students as a team to experience something together. Carolina explained feeling similarly, like a learning companion and less like a typical teacher with her gardening club than in the classroom. Rather, she sees herself as a role model who leads through participation, actively engaging in the gardening work alongside her students. She wants students to see that “a garden like this takes a lot of work, so I have to roll up my sleeves, put on some gloves, and get to work”.

It is important to note that this role shift was not described across all interviews. Marie, for example, described her role on the Acker as primarily that of an instructor as she is the person who structures the session and directs the work. Due to various structural conditions, such as having a very heterogenous group and not enough collegial support, it is more difficult to have significant one-on-one moments with her students. This also aligns with the barriers outlined in the section 4.2.3., that teachers often face objective difficulties to OL that can make it more challenging.

4.3.3. Deepening relationships through shared garden work

Several teachers emphasized that working with students on a personal level is not something new in the Förderschule pedagogy. Emilia explained that the student-teacher relationship at her school is very personal and Hannah agreed, stating: “We already have a different relationship to our students anyway, because without a good relationship you simply can’t work together, or learn together, that’s just how it is”. Markus referred to this as “professional closeness, rather than professional distance”, explaining that being close to your students is a feature of SNS, due to the small classes and less of a ‘typical’ frontal teaching style. He describes this as a different kind of ‘*Miteinander*’, loosely translated to a state of ‘togetherness’ and something that is not exclusive to the work in the garden, but rather the pedagogical approach of SNS. Emilia and Theresa echoed this by explaining that the garden work deepens something that is already there:

I think that’s Förderschule. [...] You come to school in the morning and there’s already someone saying ‘Oh, good morning’ [...] and they give you a hug, and you hug them back. [...] So, it’s not that I’m saying ‘That’s [the garden] completely different. I can imagine that at a mainstream school it might be or if you have an AG [...] Rather, it’s a really important building block that contributes to the fact that we feel a close sense of school community.

What gardening does add is the experience of working toward a shared goal and the conversations and connections that arise from that. Carolina described a student she had in her AG group only once who encountered her in the hallways several times the week after to discuss the raspberry bushes that still needed pruning: “You have a shared topic with the students, which is always really nice, that is just not about school”. Julia described something similar: “There are so many magical moments that I got to experience, that positively influenced both my relationship to the students and their relationship to each other.” Markus also described the contrast of a shared accomplishment in the garden versus in the classroom:

And the sense of accomplishment is a different one than, say, if a student gets an A on a math test. That’s also great, I’m sure the teacher is happy about that too. But when the zucchini has grown in the garden and you can eat it later, it’s just this shared product of both of us. We both contributed to making that product happen, and that just feels totally different.

That tangible shared product that was grown, harvested, eaten, and achieved together allows for a different, more collective experience of accomplishment and success. Marlene also described a similar feeling explaining: “It [learning in the garden] really is... yeah somehow more on eye-level, and what I really notice a lot is the feeling of ‘we experienced something together’”. The work in the garden strengthens the sense of community that already exists at Förderschulen, giving the teachers new moments of connection to both new and old students. This also aligns with what Austin (2022) found in mainstream schools, that working in the garden strengthens community bonds.

These relational moments are also shaped by how garden work takes place. Julia described that the physical and social configuration of the garden creates different opportunities for interpersonal interactions:

Some conflicts can just be resolved really well under the open sky, when you’re just pottering around side by side and don’t have to look each other in the eye the whole time [...] I can have really good conversations while we’re digging or watering or weeding alongside each other, there’s something really meditative about it. And then our soft knee cushions, and everyone is digging in the soil, looking ahead, and in passing, the wisdoms of life are exchanged.

This connects to Friedman et al. (2025) who found that outdoor nature-based learning spaces allow for different kinds of social behaviors, such as a lack of direct eye contact. They found that this can make neurodivergent children feel more comfortable, specifically those on the autism spectrum. It also aligns with the social benefits of green spaces in schools that Dymont and Bell (2008) found, where students who were encountering difficulties working with other students or teachers in the classroom had the opportunity to experience something different. A teacher’s statement in one of their interviews resonates with what Julia said:

“Through leaf-raking, digging and planting, negative energy is transformed into positive life force.” (p. 178) - that life force being a greater sense of self-esteem and positive social connections (Dyment & Bell, 2008).

5. Discussion

5.1 Inclusive GBL as the interplay between environment and teacher practice

The findings of this study suggest that inclusive learning in the GemüseAckerdemie emerges through the interplay between the garden environment and teachers' everyday pedagogical practice. The sensory, practical, and embodied nature of the garden creates new opportunities for diverse participation that align closely with pedagogical principles already central to the work in SNS. But those opportunities do not realize themselves automatically. Teachers actively construct inclusive access through ongoing planning, task adaptation, tool modification, and group composition. Additionally, they do so under structural conditions that are not always supportive of this work, such as limited time and staff support. When this construction work succeeds, something important shifts in terms of the relational aspect of learning: students whose difficulties are often more visible in classroom settings may be seen and experienced differently in the garden, often as capable, curious, and engaged. This affects how teachers see their students and their abilities, giving them important moments of connection. Together, these three dimensions suggest that inclusive learning in outdoor settings is neither a property of the environment alone nor a product of individual teacher effort alone, but something that emerges from the interaction between the two and leads to new experiences for both students and teachers.

5.2 Participation and learning opportunities of SEND students in GBL

These findings add to a growing body of literature suggesting that OL and GBL can be a meaningful and valuable learning experience for students with SEND. This is consistent with findings from both mainstream school contexts and studies focused specifically on students with SEND (Austin, 2022; Godwin et al., 2025; Hollingsworth & Giblin, 2024; Hopper, 2017; Szczytko et al., 2018). Teachers consistently described the garden as a space where students could participate, contribute, and experience success in ways that the classroom does not always allow. For some students, participation involved planting, harvesting, or taking responsibility for tasks in the garden. For others, it involved observing, spending time outdoors alongside classmates, engaging through their different senses, or just getting to be present within the shared experience of gardening. Thus, participation in GBL was understood as flexible and shaped by the diverse abilities, preferences, and support needs of students. The teachers demonstrate that the participation of all does not necessarily mean that everyone participates in identical ways. Rather that it involves teachers actively creating different opportunities for all students to engage in ways that build on their strengths, interests, and abilities.

This understanding of participation relates to and extends the idea of inclusion as a process of ensuring greater access to participation and achievement for all learners (Ainscow, 2020; Florian & Black-Hawkins, 2011). While Ainscow (2020) identifies presence as an important dimension of inclusive learning, the findings of this study help specify what presence can mean in practice. In the teachers' accounts, presence is not passive. For students with more complex disabilities, being present involves sensory engagement or experiencing the group activity alongside others. Their accounts suggest that presence can become a meaningful form of participation when students are part of a shared learning situation in ways that embrace and reflect to their unique abilities and needs. This contributes to a more practice-based understanding of inclusion and responds to Florian and Black-Hawkins' (2011) call for more research on how inclusive pedagogy is enacted in everyday settings.

Broadening participation in this way also has implications for how students are perceived by their teachers. Florian and Black-Hawkins (2011) argue that educational thinking continues to be shaped by assumptions associated with 'bell-curve thinking', in which ability is treated as unevenly distributed and some students come to be understood primarily through what they cannot do. Students who have been identified as having SEND are particularly vulnerable to these deficit-oriented understandings because their difficulties often become the dominant lens through which their learning is interpreted (Florian & Black-Hawkins, 2011). In this study, several teachers described students who struggled in the classroom but demonstrated confidence, persistence, and new competences in the garden. Because the garden requires different skills, different students and different abilities become visible. This relational dimension is significant because teacher perceptions influence how students experience school and can have lasting effects on their educational outcomes (Szczytko et al., 2018). Learning in the garden creates conditions in which students can be seen differently, allowing teachers to recognize strengths that may be less visible in more traditional, indoor learning environments.

This also has implications beyond the SNS context. Students with SEND are present in all schools, and as Germany continues its gradual move away from the segregated special education model toward more inclusive schooling, the question of how to make learning environments accessible to diverse learners becomes relevant for all schools. As Pfahl and Powell (2011) note, more diversity in schools benefits all children. In this context, experiential GBL may offer valuable opportunities for both SNS and mainstream schools by creating different ways for students with diverse abilities to participate and learn together, while also allowing teachers to encounter their students in new ways.

5.3 GBL as vocational preparation for older students with SEND

Another important finding is the role of the garden as a place for vocational training for older students. As noted in the literature review, research on OL and GBL focuses largely on preschool and primary-aged children (Blair, 2009; Waite et al., 2023). Szczytko et al. (2018) also found that many teachers do not perceive OL as appropriate for formal instruction beyond these early years. In this study, eight of the nine teachers interviewed

work with students aged 12 and up, showing that GBL in SNS can extend beyond younger age groups and beyond the program's intended age of grades 3 to 6 (Acker e.V., 2025).

For many of the older students, teachers described the garden as a space where practical work skills can be developed. Julia's description of students managing their own breaks and Marie's account of a student whose vocational interest in gardening was strengthened through the garden work suggest that GBL can support students in exploring their occupational interests. This is particularly significant given the post-school trajectories of many SNS students. Menze et al. (2021) found that students leaving *Förderschulen* with the support focus 'learning' often experience difficult transitions into training and employment and are more likely to enter supported vocational pathways than graduates from mainstream schools. In this context, the teachers' accounts suggest that the garden can provide opportunities for students to develop practical competencies relevant beyond school. These include effective time management, self-regulation, and staying focused on the task at hand. This points to an underexplored dimension of OL and GBL and suggests that further research is needed on its relevance for older students.

5.4 From teacher adaptation to inclusive OL design

While teachers described the garden as a meaningful and valuable place of learning, this study also reveals that the work of making OL inclusive for students with SEND currently falls largely on individual teachers. Teachers described adapting tools, creating their own materials, modifying activities, and investing considerable personal time and energy into ensuring that students with diverse needs could participate meaningfully in the garden. This reflects a pattern identified in the literature, where the success of inclusive OL often depends on a small number of highly committed individuals rather than on structures that systematically support inclusion (Austin, 2022; Corsano et al., 2025; Kelly et al., 2022).

One explanation for this additional labor lies in the historical development of OL as previously discussed. As Aylward and Mitten (2022) argue, outdoor education has often been designed around able-bodied norms, which brings with it assumptions about who and what kinds of bodies are able to participate in outdoor spaces. Similar concerns are raised by Silvers et al. (2026), who found that many OL organizations describe themselves as inclusive while not actually meeting important accessibility standards in practice. Waite et al. (2023) further highlight how opportunities to engage with nature are frequently developed without meaningful input from the communities they are intended to serve. This question of who is considered in the design and representation of OL spaces also appeared in my interview with Julia. She reflected on the lack of visibility of people with physical disabilities within the Acker platform: "I would like to see more visibility of these examples on the Acker platform... what is missing for me is the diversity of people with physical disabilities who are active on an Acker [garden]". While this observation relates specifically to the *GemüseAckerdemie*, it points to a broader question within OL about who we imagine as belonging in these spaces. Whether learning

is inclusive, therefore, becomes not only a question of whether students can physically access a learning space, but also whether they can recognize themselves within it.

Thus, making OL and GBL more inclusive requires removing physical barriers to participation and challenging assumptions about who OL is designed for. The teachers in this study repeatedly demonstrated that students with diverse support needs can and do participate meaningfully in GBL. Yet if students with SEND remain largely invisible within the narratives and culture surrounding outdoor education, it is difficult to provide more inclusive learning opportunities for people with many different abilities and support needs. Addressing this disconnect is therefore part of the broader work of creating more inclusive OL environments in which diverse learners are considered from the beginning.

5.5 Recommendations for the GemüseAckerdemie: Designing for diverse learners

While the conversations with teachers revealed important insights on how GBL takes place in the context of SNS, teachers also shared important and concrete ideas on how the GemüseAckerdemie could be further developed to better meet the needs of diverse learners. All nine teachers expressed their enthusiasm for the GemüseAckerdemie and described being motivated to continue implementing it in their schools. They also spoke very positively about the support provided by Acker, including the weekly newsletters, the online learning platform, and especially the AckerCoaches. Several teachers emphasized that the AckerCoach's positive engagement with students and practical expertise made the planting sessions a highlight of the program for both the students and teachers.

At the same time, teachers identified concrete areas where the GemüseAckerdemie could become more accessible for students with diverse abilities and support needs. They expressed a wish for more materials in simplified language, with more images, pictograms, and symbol systems such as Metacom, which many of their students already use in their everyday learning. Several teachers suggested that these materials should be developed in dialogue with experienced special education professionals, who can review and advise on materials with the needs of SNS students in mind.

More broadly, teachers expressed a wish for the GemüseAckerdemie to be designed with a wider range of learners in mind. Marlene explained that students at SNS have very diverse abilities and that: "[...] having a separate section for Förderschulen [on the digital learning platform] – I'd find that silly, because lots of primary schools can use the same materials too." Her comment reflects a broader principle of inclusive pedagogy discussed throughout this study: creating inclusive learning opportunities means widening participation for all learners, rather than treating accessibility as something relevant only for specific groups. By building more accessibility into the program from the start, the adaptive burden on individual teachers could be reduced, allowing them to spend more time doing what they described as most valuable: learning in the garden together with their students.

6. Conclusion

This study set out to understand how teachers experience and build inclusive learning within the OL context of the GemüseAkerdemie. The findings suggest that school gardens can create meaningful opportunities for participation, learning, and belonging, but that these opportunities depend on the pedagogical work of teachers. Inclusion was experienced as an ongoing process of responding to individual needs, adapting activities and materials, and creating multiple ways for students to engage in learning.

These findings contribute to discussions on inclusive pedagogy by shifting attention from whether OL is inclusive to how inclusion is enacted by teachers. Previous research has highlighted several benefits of OL for students with SEND. This study shows that these benefits are shaped by teachers' professional judgement and continuous adaptation under circumstances that are not always supportive of this work. In doing so, it also highlights the considerable, and often invisible, pedagogical work involved in making OL accessible for students with diverse learning and support needs.

The findings further suggest that creating more inclusive OL and GBL should not rest solely on the efforts of individual motivated teachers. Inclusion should also be considered in the design of OL programs themselves through accessible materials, inclusive infrastructure, greater representation of disability, and collaboration with special education professionals and students. Designing with diverse learners in mind from the outset has the potential to anticipate and reduce barriers and better support teachers in their everyday practice.

Finally, this study highlights several directions for future research. While this thesis focuses on teachers' experiences, it is also important to explore how students with diverse support needs experience participation in OL. Bringing together the perspectives of teachers, students, and OL organizations can contribute to a richer understanding of how OL environments can become places where all learners are able to fully participate and feel that they belong.

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Appendix A – Original Interview Questions (in German)

1. Der Unterricht & der Acker im Schulalltag & Motivation

- a. Rolle an der Schule
 - i. Kannst du mir kurz erzählen, welche Rolle du an deiner Schule hast und mit welcher Lerngruppe du aktuell arbeitest? (z.B. Fächer, Arbeitserfahrung, Förderschwerpunkt, Lerngruppe, etc.)
- b. Unterricht im Klassenraum
 - i. Wie sieht bei dir eine typische Unterrichtsstunde im Klassenraum aus? (z.B. Dauer, Struktur, pädagogischer Ansatz, Routinen, Arbeitsformen etc.)
- c. Einstieg ins Ackern
 - i. Wie bist du selbst dazu gekommen, beim Ackern mitzumachen? (War das deine eigene Initiative, oder wurdest du von der Schulleitung oder Kolleg*innen angefragt?)
 - ii. Was hat dich motiviert, trotzdem (oder gerade deswegen) mitzumachen?
 - iii. Wie ist der Acker in deinen Schulalltag eingebettet?

2. Lernen & Zusammenarbeit auf dem Acker

- a. Acker als Lernort
 - i. Wie würdest du den Acker als Lernort beschreiben?
 - ii. Kannst du eine typische Ackerstunde beschreiben?
- b. Unterschiede zum Klassenraum
 - i. Unterscheidet sich das Lernen auf dem Acker vom Lernen im Klassenraum? (Wenn ja, wie? ie. in Bezug auf Verhaltensweisen wie Aufmerksamkeit, Motivation, Stimmungen, etc.)
 - ii. Woran merkst du, dass Schüler:innen auf dem Acker etwas lernen oder Fortschritte machen?
- c. Wer kann gut mitmachen?
 - i. Wenn du an deine Gruppe auf dem Acker denkst: Gibt es Schüler:innen für die der Acker ein besonders guter Lernort ist? Was macht das aus?
 - ii. Gibt es auch Schüler:innen, für die es auf dem Acker eher schwierig ist? (Woran liegt das aus deiner Sicht?)

- iii. Gibt es bestimmte Anpassungen oder Unterstützungsmaßnahmen, die du vornimmst?
- d. Zusammenarbeit der Schüler:innen
 - i. Wie erlebst du die Zusammenarbeit der Schüler:innen auf dem Acker? (Wie verteilen sich die Schüler:innen auf Aufgaben oder Rollen?)
 - ii. Gibt es Situationen, in denen Schüler:innen mit unterschiedlichen Bedürfnissen zusammenarbeiten? Wie sieht das konkret aus?

3. Rolle der Lehrkraft & Wünsche

- a. Beziehung Lehrkraft- Schüler:innen
 - i. Wie erlebst du deine eigene Rolle auf dem Acker?
 - ii. Verändert sich die Beziehung zwischen dir und den Schüler:innen wenn ihr gemeinsam draußen ackert?
 - iii. Gibt es Schüler:innen, die draußen anders auf dich zugehen als im Klassenraum?
- b. Wünsche
 - i. Wie würdest du dir wünschen, dass sich das Ackern an deiner Schule in Zukunft weiterentwickelt?
 - ii. Gibt es etwas, das du dir für deine Arbeit auf dem Acker noch wünschen würdest?
 - iii. Gibt es etwas, das wir noch nicht angesprochen haben, dass dir wichtig ist und du noch mit mir teilen möchtest?

Appendix B – Translated* Interview Questions

*translated into English from German with the help of Microsoft Copilot

1. Teaching & the Garden in Daily School Life & Motivation

- a. Role at the school
 - i. Can you briefly describe your role at your school and the group of students you are currently working with? (e.g., subjects, work experience, special education focus, student group, etc.)
- b. Getting involved with the garden
 - i. How did you personally become involved in the gardening program? (Was it your own initiative, or were you asked by school leadership or colleagues?)
 - ii. What motivated you to participate anyway (or especially because of this)?

2. Learning & Collaboration in the Garden

- a. Garden as a learning environment
 - i. Can you describe a typical garden lesson?
 - ii. How would you describe the garden as a learning environment?
 - iii. How is gardening integrated into your school routine? (How often per week? Once, multiple times? How large is the group?)
- b. Differences compared to the classroom
 - i. How does learning in the garden differ from learning in the classroom? (e.g., in terms of behaviors such as attention, motivation, mood, etc.)
 - ii. How can you tell that students are learning or making progress in the garden?
- c. Who can participate effectively?
 - i. Thinking of your group in the garden: Are there students for whom the garden is a particularly good learning environment? How do you tell? What criteria are relevant?
 - ii. Are there students for whom the garden is rather challenging? (Why do you think this is the case?)
 - iii. Are there specific adjustments or support measures that you implement (or that could be implemented to support those students who struggle)?
- d. Student collaboration

- i. How do you experience student collaboration in the garden? (How do students divide tasks or roles?)
- ii. Are there situations in which students with different needs work together? What does that look like concretely?

3. Teacher Role & Wishes

a. Teacher-student relationship

- i. How do you experience your own role in the garden?
- ii. Does the relationship between you and your students change when you garden together outdoors?
- iii. Are there students who approach you differently outdoors than in the classroom?

b. Wishes

- i. How would you like the gardening program at your school to develop in the future?
- ii. Is there anything else you would wish for in your work in the garden?
- iii. Is there anything we haven't discussed yet that is important to you and that you would like to share?