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Contents

From the Editor i
Murray

Montessori Adaptations: Case Studies of Application and Access 1
Debs, Murray, & Kuh

Why Montessori Education Did Not Take Root in Portugal—or Did It?
Selective Reception, Curricular Convergence, and Pedagogical Invisibility 19
Alves da Cunha

The Prepared Adult and Trauma- Informed Practice in Montessori Education 29
Anson

Stimulating and Developmentally Supportive Practices in Early Childhood Education:
A Multiple- Case Study 41
Slováček

Teacher Evaluation in Public Montessori Education: A Selected Literature Review 58
Robbins

November 2026

From the Editor

The *Journal of Montessori Research* (*JMR*) has achieved the impressive milestone of having more than 20 manuscripts under consideration at one time. The larger number of manuscripts has resulted in the largest-ever issue this fall with five informative articles, which are introduced below. I am also announcing an artificial intelligence (AI) policy for *JMR* developed in collaboration with the University of Kansas Libraries. This policy is available on the *JMR* website and is consistent with other OJS journals similarly managed by the university.

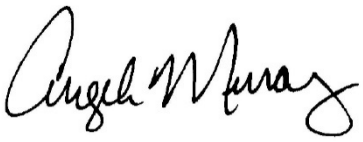
I am pleased to introduce the five outstanding articles in this issue:

- In "Montessori Adaptations: Case Studies of Application and Access" by Mira Debs, myself, and Lisa Kuh, my colleagues and I explore adaptations of Montessori education around the world designed to serve larger populations of students in a wider variety of learning contexts than can be served by fully implemented Montessori programs.
- In another article examining international adoption of Montessori education, "Why Montessori Did Not Take Root in Portugal—or Did It? Selective Reception, Curricular Convergence, and Pedagogical Invisibility," Joana Alves da Cunha describes Montessori history in Portugal as a unique case of "educational borrowing" and "institutionalization" of the approach.
- In "The Prepared Adult and Trauma-Informed Practice in Montessori Education," Meghan Anson examines how credentialed educators understand and enact trauma-informed principles within Montessori classrooms, finding adaptation is one of many ways practitioners respond to needs of students with history of trauma.
- Matej Slováček's "Stimulating and Developmentally Supportive Practices in Early Childhood Education: A Multiple-Case Study" examines truly adapted educational intervention sessions, designed according to Montessori principles, in non-Montessori contexts and finds qualitative changes in a variety of outcomes.
- The final article, by Caroline E. Robbins, "Teacher Evaluation in Public Montessori Education: A Selected Literature Review" concludes that evaluation systems for public Montessori teachers could benefit from applying self-determination theory constructs of autonomy, competence, and relatedness, and enhancing the pedagogical alignment of teacher evaluation systems within Montessori practice.

I hope you enjoy reading more about each of these topics in the full articles featured in this issue.

While the number of manuscripts under consideration is exciting, it also requires managing many authors and reviewers simultaneously, resulting in extended timelines for consideration. Your patience is very much appreciated if you are one of those authors whose article is currently under consideration. It also means we are in greater need of willing reviewers with updated reviewing interests on file. Reviewers are required to have a terminal degree in their field, so typically a doctorate-level degree, which would be a PhD or EdD in education. Of course, terminal degrees in other related fields are encouraged as well. Please register as a reviewer if you are not already, and update your bio and reviewing interests to help support the ongoing work of the journal.

Sincerely,



Angela K. Murray, PhD
Editor, *Journal of Montessori Research*
Chair, AERA Montessori Education SIG

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Montessori Adaptations: Case Studies of Application and Access

Mira Debs, Yale University
Angela Murray, University of Kansas
Lisa Kuh, JCC Association of North America's Department of Early Childhood

Heather E. Gerker, Guest Editor

Keywords: *Montessori, access, public education, adaptation, educational transfer*

Abstract: Educators are often inspired by Montessori education and seek to bring it to diverse populations. Yet they are often told they must fully implement the model in order to realize its benefits. Although studies show the educational benefits of full Montessori implementation, theories of educational transfer recognize that broad dissemination requires flexibility and adaptation. We examine five strategically selected case studies from 1958 to the present that adapt Montessori pedagogy, in order to increase access: 1) rural Balwadis in India, 2) Community-Rooted Education (CoRE) in India, South Africa, and Tanzania, 3) the Complementary Curriculum Approach in the United States, 4) Montessori on Wheels in the United States, and 5) Aktion Sonnenschein (The Sunshine Project) in Germany and the United States. Across the five case studies, Montessori adaptations take primary inspiration from Maria Montessori's ideas, to create Montessori-inspired spaces and presentations that promote children's autonomy and freedom. Program innovations include mobile classrooms, and combining health care and education services. Adapted programs are less likely to have trained teachers, follow the Montessori scope and sequence, offer a full three-hour work cycle, or have a comprehensive set of Montessori classroom materials. Despite the limitations, these cases offer inventive approaches that suggest how Montessori practices can serve a larger population of students in a wider variety of learning contexts.

Montessori education has been a global educational movement for more than 100 years, as represented by nearly 16,000 schools in 148 countries today (Debs et al., 2022). A growing body of research demonstrates high-quality Montessori education produces positive results in terms of academic and nonacademic outcomes, yet the fact that 91% of Montessori schools are private limits access to these benefits for many children (Debs et al., 2022; Demangeon et al., 2023; Manship, 2023; Randolph et al., 2023).

Montessori researchers and practitioners frequently encounter non-Montessori educators who are curious and inspired to bring Montessori practices[1] to their classrooms. In the past, Montessori organizations have responded to this interest with caution. Maria Montessori believed that her curriculum must be fully implemented

with fidelity or not implemented at all (Kramer, 1988). There's also a long history of profiteers using Montessori education as "branding" without accompanying substance (Debs, 2022, p. 9). From the traditional education side, few mainstream teacher preparation programs include Montessori pedagogy, resulting in educators with a lack of information or even negative perceptions of Montessori education as exclusive, expensive, and elitist (Debs, 2019; Dodd-Nufrio, 2011; Whitescarver & Cossentino, 2008).

In recent years, numerous organizations in the United States, like Montessori Public Policy Initiative, the National Center for Montessori in the Public Sector, the Association Montessori Internationale (AMI) and Association Montessori International/USA (AMI/USA), and the American Montessori Society (AMS), have been working to expand access to high-fidelity, fully implemented public Montessori education, arguing that children from all socioeconomic backgrounds should have access to high-quality Montessori education. Some Montessori organizations, like AMI's Educateurs sans Frontières (Educators without Borders [EsF]), the South African Montessori Association, and AMS, have worked to expand access by recognizing programs at varying levels of Montessori implementation.

In addition, practitioners are creatively adapting Montessori practices to support a variety of settings, including dementia care, undergraduate and graduate education, and law school (DeBlasis, 2023; Johnson, 2022; Murray et al., 2022; Sheppard et al., 2016). Initial research has documented how these educators adapt or localize Montessori principles to specific national and local cultural contexts and constraints (Alhashim & Berson, 2023; Chen & Guo, 2021; Johnson, 2022; Johnson et al., 2025; Kasour et al., 2023; Wright, 2026).

To explore specific situations that have adapted Montessori education to broaden educational access, we examine five global case studies from 1958 to the present, which represent a range of populations, including rural students, students with special needs, and students from historically marginalized communities. We sought cases from a range of countries where practitioners began with formal Montessori training and appreciation of Montessori fidelity before beginning their adaptations. In examining the selected case studies, we ask the following questions:

1. How have educators adapted Montessori practices to expand access for more diverse communities?
2. What problems were these adaptations trying to solve?
3. What do these adaptations have in common? How are they different?
4. How can fundamental Montessori practices be leveraged in non-Montessori contexts?

By comparing the Montessori adaptations, we identify common ways Montessori educators have balanced fidelity to Montessori practices with questions of access. Across the five case studies, to create Montessori-inspired spaces and lessons, Montessori adaptations take their greatest inspiration from Maria Montessori's ideas around children's autonomy. Innovations include mobile Montessori classrooms, and combining education and healthcare delivery. Adapted programs are less likely to have trained teachers, follow the Montessori scope and sequence, have a comprehensive set of Montessori classroom materials, and may be flexible about students' time for uninterrupted work. Despite these limitations, commonalities across the case studies offer ideas for others seeking to bring Montessori practices to broader audiences.

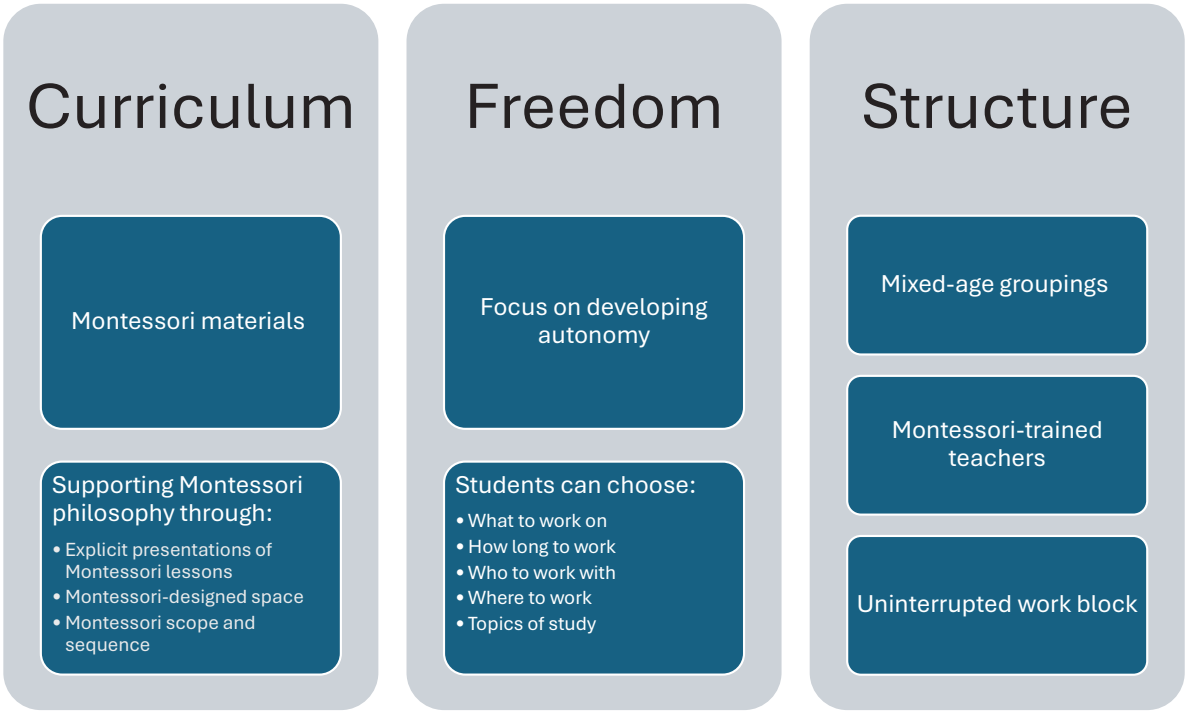
Theoretical Framework

Before considering these specific case studies of Montessori adaptations, we first outline key principles of Montessori education and then consider how education transfer led to the global proliferation of Montessori education throughout its history.

Key Principles of Montessori Education

Montessori education is a learner-centered approach, serving infants through adults. Although significant variation exists in Montessori implementation, a range of international Montessori organizations consistently reference key principles (Debs et al., 2022). These principles include the following: supporting Montessori philosophy, mixed-age groupings, Montessori-trained teachers, Montessori materials, freedom of choice, and uninterrupted blocks of work time. Murray and colleagues (2019) organized key aspects of Montessori fidelity into three broad categories: curriculum, freedom, and structure. Figure 1 illustrates how we conceptualize six key Montessori principles organized within these three broad categories.

Figure 1
Key Montessori Principles



Curriculum

Curriculum includes not only Montessori materials but also practices that support Montessori philosophy, including learning materials prescribed for each age level. Materials are specifically designed to teach important concepts through children's repeated hands-on use and are viewed as required equipment in high-fidelity classrooms (Lillard & McHugh, 2019a).

Practices that support the Montessori curriculum include incorporating explicit presentations, making the classroom uncluttered and aesthetically pleasing, and implementing the Montessori curriculum scope and sequence. In contrast to play-based preschools, where children explore with minimal intervention from the teacher, Montessori teachers model through explicit presentations how to work with materials and engage in Practical Life activities, including caring for the environment (organizing, gardening, arranging flowers), caring for plants or animals, and self- or community care such as preparing food, cleaning, or serving others (Lillard & McHugh, 2019b). Keeping the classroom organized, uncluttered, and aesthetically pleasing is another important aspect of Montessori curriculum (Lillard & McHugh, 2019a). Educators design the classroom, called the Prepared Environment, to meet student needs by incorporating furnishings like low shelves with trays to facilitate choice, avoiding overstimulation by minimizing bright colors and wall decorations, and emphasizing beauty and simplicity (Lillard & McHugh, 2019a). Traditionally, a curriculum's scope and sequence provide uniform content and a consistent order in which it is delivered. The Montessori scope and sequence is individualized to each child's needs, scaffolded sequentially, and often expressed through the materials which are intentionally designed to increase in complexity as a child develops.

Freedom

Montessori education emphasizes freedom with responsibility, developing students who are autonomous and capable of independent activity (Lillard & McHugh, 2019b). The curriculum and structure combine to give students significant freedom in several parts of their learning. Students get to decide (a) what to work on at any given time, (b) how long to work on a particular activity, (c) whom, if anyone, to work with, (d) where

to work in the classroom, and (e) specific topics they wish to explore. In addition, responsibility and natural consequences, such as requiring students to clean up if they make a mess, mean students cannot do whatever they want without limits.

Structure

Structure defines a program's parameters that go beyond the classroom, and are often program- or schoolwide decisions such as how students are placed in classrooms or the school's daily schedule. In our model, the structural features of a Montessori program model include mixed-age classroom groupings across three-year age spans. For example, the most common arrangements are 3- to 6-year-olds in Early Childhood, 6- to 9-year-olds in Lower Elementary, and 9- to 12-year-olds in Upper Elementary (Lillard & McHugh, 2019a). High-fidelity Montessori schools plan long blocks of time each day for children to engage in their chosen work, ideally 2- to 3-hour blocks of time each morning[2] so special activities like art, music, or recess do not interrupt the flow of child-driven activity. A separate 2-hour work block is often set in the afternoon (Lillard & McHugh, 2019a). Finally, classroom teachers are fully trained in an accredited Montessori teacher preparation program. These certifications are sometimes, but not always, associated with university degree programs and most often last more than a year and include practical classroom experience (AMS, 2024; Seldin, 2022).

Now that we have outlined the key principles of Montessori education and our organizing model for Montessori practices, we consider the theoretical framework of education transfer and how it has applied to global Montessori expansion.

Education Transfer and the Spread of Montessori Ideas

Educational transfer, "the movement of ideas, structures and practices in education policy, from one time and place to another" is a central concept in comparative education research (Perry & Tor, 2009, p. 510). Educational transfer occurs between the "borrower" and the "lender" (p. 516) on a continuum from the most to the least power differential between the two. On one end of the spectrum is the *imposition* of educational practices from the lender to the borrower through sometimes coercive efforts. *Diffusion* is the other end of the spectrum and reflects a spontaneous transfer of ideas from the lender to the borrower without explicit intention. In the middle, *lesson-drawing* reflects situations in which the borrower deliberately adopts or adapts educational ideas from the lender.

Transfer of Montessori educational ideas throughout history reflects the lesson transfer spectrum. Like many European social and cultural education practices, Montessori education was historically *imposed* on Indigenous and Global South communities (Murray et al., 2023). Conversely, many Montessori ideas were unintentionally and rather spontaneously *diffused* in the field of education (e.g., child-sized chairs, sensitive periods, and importance of environment and movement for development) without these ideas being attributed specifically to Maria Montessori (Fabri, 2023). Finally, the history of Montessori education is rife with examples of enthusiastic advocates *lesson-drawing* by adopting and adapting Montessori principles to their unique contexts. This paper focuses on several cases of Montessori *lesson-drawing*.

Methods and Data Sources

This study employs a strategic case study selection approach, not representative cases or an exhaustive search, but illustrative cases (Small, 2009). Selection criteria included the following: (a) founders with an explicit link to Montessori education and an appreciation for high-fidelity practices, (b) efforts to work as part of a broader organizational project, (c) explicit development of an adaptation rather than just bringing Montessori education to a new audience, and (d) focus on striving to solve a specific problem to expand access. As Table 1 demonstrates, we identified illustrative cases diverse in terms of geography, time frame, and settings or populations. In the case of the Complementary Curriculum Approach, cofounder Lisa Kuh served also as a coauthor on this paper. Indeed, a conversation with the other coauthors about her approach formed the inspiration for this project.

After selecting the five case studies, our research team gathered data from primary documents as well as publications from the programs and also independent sources. In addition, we conducted 11 interviews and corresponded with relevant practitioners involved in Montessori on Wheels (MOW), Community-Rooted Education (CoRE), the Complementary Curriculum Approach (CCA), and Aktion Sonnenschein (The Sunshine Project).[3] We asked participants about their programs' origins, missions, and specific aspects (see Appendix for interview questions). We omit the names of CCA interviewees due to their ongoing roles in public

Table 1
Case Studies

Case	Communities Served	Time Frame	Key Adaptations
Balwadis	Rural and tribal children in India	1945–present	Using local objects as materials, emphasis on local art and culture
Community-Rooted Education (CoRE)	Rural and low-income center-based programs in India, South Africa, and Tanzania, some publicly funded	2016–present	"Montessori in a Box" starter supply of Montessori materials, teachers make remaining materials. Shortened training for teachers (10 days instead of one year)
Complementary Curriculum Approach	Public and center-based early childhood education programs in the United States	2014–present	Rather than focusing on Montessori materials, CCA uses "high-leverage practices," including providing compelling materials, explicit presentation, responsive scaffolding, and following children's interests
Montessori on Wheels	Underserved Black and Latine children in the United States	2022–present	Using Montessori philosophy and materials on a converted school bus to offer flexible learning experiences to families, schools, summer camps, and homeschooling groups
Aktion Sonnenschein (The Sunshine Project)	Children with disabilities through inclusion, in Germany and the United States	1968–present	Montessori lessons and practices modified and further scaffolded to support children with disabilities, with physical therapists and doctors integrated into program

schools. Everyone else in the study gave permission to be named.

Our data consisted of an Excel spreadsheet where we compiled detailed information about each case. In the following section, we describe each of the five global cases of Montessori adaptations and how they expand access to the specific populations they serve. In the analysis, we summarize common themes related to how programs are consistent or differ in their adaptations of Montessori practices.

Case Study Profiles

Balwadis in Rural Areas, India, 1958–Present

Tarabai Modak was a founder of Montessori education in India, but she ultimately adapted Montessori education to expand access to rural children by creating a Balwadi (children's garden). With Gijubhai Badheka, Modak founded one of the first Indian Montessori schools, Bal Mandir, in 1920. Even prior to Maria Montessori's visit to India in 1939, the pair developed early Indian Montessori infrastructure to coordinate activities, including a training center, Montessori journal *Shikshan Patrika*, and national organization Nutan Bal Shikshan Sangh, which Modak led until 1952 (Wilson, 1987, 2025).

By the 1940s, Modak had grown dissatisfied with the slow pace of Montessori expansion, even as Maria Montessori spent a decade training teachers in India. In a speech in 1944, Modak criticized the movement in India: "There are millions to be educated and not [only] a few children of the rich ... So far, most Montessori schools in India have been [run] in such a fashion that they seem to be fit for the very rich only" (pp. 8–9). Modak's critique was echoed by other Indian leaders, like Mahatma Gandhi, who was initially excited about the potential for Montessori education in India, only to be frustrated by Maria Montessori's refusal to adapt her training and classroom model to Indian rural conditions (Debs, 2022).

To address the critique, Modak founded Gram Bal Shiksha Kendra (Rural Child Education Centre) in 1945, focused on the Adivasi tribal community in Gujarat, where she developed a Montessori-inspired preschool model that could be adopted in rural areas for a very low cost. Her preschool model, outlined in the 1958 book, *Balwadis in Rural Areas*, describes creating a homelike program centrally located in the community: "Children attending a Balwadi are below six, so they often feel

uneasy to be far from their homes… a Balwadi building should be about a quarter or at the most, half a mile from the campus of a village or town" (Modak, 1958, p. 10). Moreover, Balwadis offered children freedom and autonomy through movement and choice without fear of punishment.

> A Balwadi is not a school where children must sit rigidly in their places and learn what is taught. It is an extension of the home, a sort of collective house for children of the same age… The Balwadi fulfills the special needs of children. Here children play about, handle things and make use of the things provided without any fear of being scolded now and then. That there is no punishment for breakages and mistakes is a great relief to them. They can move about and do what they are longing to do with full confidence and feeling that they are handling the things that belong to them. This atmosphere of freedom from fear and anxiety is a great help to the healthy growth of mind and body (Modak, 1958, pp. 2–3).

To keep costs low, in Modak's (1958) design, "most of the expensive [Montessori] materials are not used, and efforts are made to produce educational materials from the things obtainable locally such as shells, seeds, bamboo, etc." (p. 4). In her view, "purposeful activity" could include inexpensive activities like "walking, picking up and collecting things, watering plants, carrying things, and brickmaking and clay modeling" (Modak, 1958, pp. 12–14) as shown in Figure 2.

The project also innovated beyond the Montessori model to support needs of local communities. In 1969, following a visit from a UNICEF official, Modak incorporated nutrition and immunizations into the model, adding a critical health component. In 1975, the Indian government adopted this model into its Integrated Child Development Services (ICDS), a national system of Anganwadis (courtyard shelters) and Balwadis delivering health care and child care for mothers and children from birth to age 6. Today, ICDS serves 16 million children and is the largest public preschool and maternal and child nutrition program in the world (Tschurenev, 2021).

Despite its influence, the project has its limitations. Modak charged elitism, but she was an urban elite herself, an outsider in the tribal community she supported. She struggled to bring together children across caste divisions or to gain trust in rural and tribal communities (Wilson, 1987, 2025). The ICDS offers limited teacher training (Lokshin et al., 2005), and it is unclear how much of Modak's original Montessori-adapted vision is implemented. Still, given its reach across the country, the program's impact is substantial, and subsequent generations of educators have tried to reincorporate Montessori training into the Balwadi model.

Figure 2
Children Playing in Dirt



Note. In *Balwadis in Rural Areas* (1958), Tarabai Modak shares Practical Life activities based on resources already available to village children. Here, children use sieves and bowls for sifting and moving dirt in construction projects. (Photo credit: Indian Department of Agriculture and Farmers' Welfare. Public domain.)

Community Rooted Education (CoRE); India, South Africa, and Tanzania; 2016–Present

As with Modak's Balwadis, Indian educators developed Community Rooted Education (CoRE) to increase access to Montessori education in primarily low-income and rural areas. The initiative has subsequently spread to South Africa and Tanzania (EsF, n.d.-a). In contrast to Balwadis, which were inspired by Maria Montessori but not connected to Montessori organizations, CoRE emerged in 2016 following the fifth international Educateurs sans Frontières (EsF) Assembly hosted in Hyderabad, India. EsF is an AMI initiative with a mission to expand Montessori access. Thus, CoRE represents a sanctioned adaptation by the international Montessori organization founded by Maria Montessori (EsF, n.d.-b).

Following the EsF Assembly in Hyderabad, Montessori educators Helen Elias and Uma Ramani developed the main ideas of CoRE. They called it "community rooted" in contrast to traditional AMI

Montessori training, which is primarily offered only in major Indian cities and in the English language. In contrast, with CoRE, "we are going to the community, and we communicate to them in their language. So, we are not uprooting them from their culture, their traditions, and their language" (H. Elias, personal interview, September 5, 2026). Working with leaders in state and local government, local industry, and philanthropy, they piloted CoRE in government-operated, rural Anganwadis in Guntur, in the Indian state of Andhra Pradesh. In 2018–2019, the program offered training for more than 50 Guntur Anganwadi teachers.

The training is adapted to the needs of local educators. Instead of yearlong, structured AMI Montessori training, CoRE begins with a 10-day intensive followed by monthly two-day follow-up training over the course of one year (AMI, 2025). Beyond covering key principles of Montessori education and child development, South African CoRE leader Prudence Ramsey stressed that the CoRE program had "no blueprint…no curriculum per se" (P. Ramsey, personal interview, July 29, 2024). Elias explained, "You adapt; you have to tweak, depending on where they are on a daily basis, because it's all based on their understanding, and it's not about transferring contents." South African CoRE trainer Jennifer Moore added, "Every group of women that sits in front of you crafts the program, because you're following them…for we say, like you follow the child, we follow these adults" (J. Moore, personal interview, July 29, 2024).

Recognizing that teachers are often limited in how much they can adopt Montessori practices, Elias explained that the most important principle is making materials accessible to the children by placing them within reach on trays on child-sized shelves. In contrast to classrooms that have children running and yelling, according to Elias, "when [the teachers] brought [materials] down, they saw children immediately taking the material and making their own choice, and sitting, and they saw focus and concentrated work" (see Figure 3). This also impacted some skeptical teachers "and set them to start believing in the system" (H. Elias, personal interview, September 5, 2026). Through giving children choice and exposure to other Montessori principles, CoRE educators build children's autonomy and focus in learning.

Like the Balwadi model, CoRE uses locally made Montessori materials, often made by educators (see Figure 4). In Guntur, educators worked with local craftspeople to create a partial set of Montessori materials called "Montessori in a Box" for US$200—a full set of high-quality materials typically costs roughly US$25,000 per classroom (EsF, n.d.-a; H. Elias, personal communication, August 27, 2026). The program setup kept costs low by using recycled materials, making mats and napkins from educators' old saris, building shelves from discarded stone slabs, and crafting trays from milk crates (H. Elias, interview, September 5, 2026).

Ultimately, CoRE organizers emphasize that "the materials are not what makes the perfect Montessori environment. They help. But it's how the adult facilitates

Figure 3
Children Sewing



Note. Anganwadi educators in Hoshiarpur sew Montessori materials as part of their CoRE training. (Photo credit: Vivek High Montessori Institute, Chandigarh. Used with permission.)

Figure 4
Students Stringing Beads



Note. Anganwadi students in Hoshiarpur string beads and use the button frame. (Photo credit: Vivek High Montessori Institute, Chandigarh. Used with permission.)

that space that he or she has prepared for children to be in.… The principles become much more important than the actual materials" (J. Moore, personal interview, July 29, 2024). Changing teacher orientation toward setting up the classroom in ways that build children's autonomy is more important than specific materials contained within.

Though the community in Guntur warmly received the changes to their Anganwadis, external factors, including the COVID-19 pandemic and a political change in the state government, stopped expansion of CoRE in Andhra Pradesh (EsF, n.d.-a). Still, CoRE training had an enduring impact. Elias stayed in touch with teachers who shared that during the pandemic "the teachers and the children went around in their villages to show people how to wash hands," building off Montessori exercises in handwashing and personal hygiene (H. Elias, personal interview, September 5, 2026). Subsequent yearlong CoRE trainings have been held in 2023–2024 at the Shreyas Foundation school in Ahmedabad.[4] Also, 50 Anganwadi workers and 17 of their supervisors in the Hoshiarpur district in Punjab received CoRe training in 2026 in collaboration with the Indian Red Cross and a local AMI training center (*The Tribune*, 2026).

The number of trainees is important: CoRE is specifically designed to be implemented at a large scale. CoRE next expanded to South Africa, where it has served as a vehicle for early-childhood caregivers in underserved communities to further their education (P. Ramsey, personal interview, July 29, 2024; J. Moore, personal interview, July 29, 2024). Since 2020, seven trainers have led 16 CoRE training courses for nearly 450 early-childhood educators serving nearly 9,000 students in Stellenbosch and Johannesburg (EsF, n.d.-b; J. Moore, personal communication, March 15, 2026).

To increase accessibility, requirements for trainers have been relaxed. Facilitators with Montessori diplomas train CoRE teachers, rather than those who have completed the more extensive AMI Montessori Training of Trainers program (J. Moore, personal communication, March 23, 2026). In the most ambitious expansion thus far, in 2025, CoRE led a pilot training in two Tanzanian districts with 40 facilitators working with 178 early-childhood educators impacting 135,000 children (U. Ramani, personal communication, March 16, 2026; Moore, personal communication, March 15, 2026). With follow-up support from the Arthur Waser Foundation (2025), CoRE plans to offer training to 25%, or 5,000, public pre-primary teachers in Tanzania by 2030.

Further expansions of CoRE must be approved by AMI and prioritize locations able to develop community collaborations at scale, with a network of at least 10 or 12 programs (U. Ramani, personal communication, March 17, 2026; March 18, 2026). In the future, Elias aspires to see CoRE training shared with the hundreds of thousands of government-supported Anganwadis across India (H. Elias, personal interview, September 5, 2026).

CoRE trainers are careful to clarify that they are creating "CoRE schools," not Montessori schools (J. Moore, personal interview, July 29, 2024). But to Elias, the name doesn't matter. She elaborated, "So many times I've told people, 'You don't even have to call it Montessori…' Everything is there in the principles and in the practices that you do." (H. Elias, personal interview, September 5, 2026). In this way, CoRE demonstrates an important case of how a global Montessori organization shares a sanctioned Montessori adaptation, working closely with local community organizations to build training capacity in order to improve the training and quality of public early-childhood education programs.

Complementary Curriculum Approach, United States, 2008–Present

Just as CoRE has expanded alongside increased foundation and governmental support for early childhood education and its workforce, the CCA has been part of broader efforts to improve the capacity of public early childhood educators in the United States. A collaboration between Lisa Kuh and Iris Chin Ponte, it began in 2008 as a way of expanding young children's access to classroom environments providing freedom within intentionally designed structures. Through practice and scholarship, both educators had noticed an increasing problem of unengaged and dysregulated children in early-childhood classrooms. Teachers embraced a play-based curriculum but were reluctant to explicitly model how to work with classroom materials, believing adult guidance would stifle creativity.

To support teachers, Kuh and Ponte identified key aspects of classroom practice rooted in the works of Dewey, Montessori, Vygotsky, and Malaguzzi, resulting in their 2022 publication laying out a pedagogical framework supporting "high leverage" practices, meaning practices that effectively improve student learning (Ball & Forzani, 2011, p. 38). The framework's Four Intentions include (1) designing compelling materials, (2) offering explicit presentations, (3) engaging in responsive scaffolding, and (4) following children's interests (see Table 2). High leverage practices derived from the Montessori approach include the Prepared Environment, explicit presentations of materials, offering

Table 2

The Four Intentions of the Complementary Curriculum Approach

Compelling Materials	Design and offer materials to inspire curiosity, experimentation, and thoughtful decision-making
Explicit Presentation	Lessons modeling social interactions, self-care routines, and use of classroom materials to guide purposeful action, develop routines, and sustain independence
Responsive Scaffolding	Support interactions that build upon and expand children's explorations, moving in and out of children's experiences to scaffold new learning
Following Children's Interests	Plan experiences rooted in children's interests to spark deep, relevant learning rooted in "big idea" investigations that connect to children's lives and communities

Note. Adapted from Kuh & Ponte (2022).

work on trays, using work mats to define spaces, and using Montessori materials or designing compelling activities in a Montessori style. Montessori modeling of social interactions, known as Grace and Courtesy lessons, were adopted to support children's self-regulation, social-emotional development, and care for materials.

The CCA was implemented in Somerville, Massachusetts, a racially and socioeconomically diverse city in the Boston area, where Kuh served from 2014 to 2021 as director of early education. Somerville's early-childhood education mixed-delivery system—a collaboration of public, Head Start, and center-based childcare programs—formed a consortium of 10 or more early childhood programs, including more than 300 public school preschool students. Only one Montessori school in Somerville is part of the consortium. Teachers across settings received aligned professional learning opportunities, including coaching. In 2023, the CCA was formally adopted as the core of the district's early childhood curriculum, and the Four Intentions continue to ground the district's work (Somerville Early Education, 2026). CCA training has been adopted in other Boston metropolitan area communities, by the JCC Association of North America's early learning department, and as a foundation of the Massachusetts Institute of Technology's early-childhood learning architecture project implemented in Medellin, Colombia (Glass & Urrea, 2026).

Teachers and coaches interviewed for this project described changes to classroom practices as a result of the CCA. One coach noted that before implementation of the CCA, early-childhood educators' classroom design "was whatever the Lakeshore [Learning Store] catalog said. It was themes; we throw it all at them at the same time—lots of stuff, nothing is deep. There isn't quality to the learning. Then we would go into people's classrooms, and it was clutter" (CCA Participant 2, personal interview, March 6, 2024). Teachers exposed to the CCA developed Montessori-style tray work activities selectively curated from materials they already had, adopting practices such as using small mats to define children's workspaces, and giving explicit presentations on using materials. Another coach pointed out that such classroom design changes had a powerful impact on letting teachers "step back" and no longer have to constantly "manage the chaos" (CCA Participant 1, personal interview, February 28, 2024).

The intention related to explicit presentation of lessons, a key Montessori practice, was especially impactful. Coaches reported explicit presentation helped break down exactly what an activity entailed, and inspired educators to think about materials needed and what to say when presenting. Describing teacher practice, one coach said, "There wasn't a sense of how do we slow this down, how do we support from a strengths-based perspective? How do we support a range of learners? If [the child] can't do something, they are not at a deficit.… It is not the kid's fault.… Did [the teacher] explicitly teach the lesson?" (CCA Participant 2, personal interview, March 6, 2024).

A teacher noted, "I learned early on in my teaching, the more explicit and repetitive I am in my presentation the better. The Montessori practice of introducing something in an explicit presentation helped me hone my practice of presenting things. (CCA Participant 3, personal interview, March 11, 2024). The coaches described the way they modeled for teachers: "We took everything off the shelf and brought in baskets, bins, and then trays, and slowly put things back. We showed children how to choose, how to use materials, how to reset and put things back. [The teacher] couldn't believe [the change afterward] ... paring back and slowing down. It helps to regulate the kids" (CCA Participant 1, personal interview, February 28, 2024). Figure 5 and Figure 6 show an example of classroom materials before and after the introduction of tray work.

Through translations of Montessori ideas in the CCA, teachers who would not typically be exposed to Montessori practices received training in how to

Figure 5
Classroom Shelves Before CCA



Note. Materials placed on shelves without organization or intention make choice and engagement challenging. (Photo credit: Lisa Kuh. Used with permission.)

Figure 6
Classroom Shelves After CCA



Note. Materials have been reduced and placed on trays to allow children greater ease in choosing their work and cleaning up afterward. (Photo credit: Lisa Kuh. Used with permission.)

implement high-leverage adaptations. In turn, children from ethnically diverse and socioeconomically disadvantaged groups, who would not have access to Montessori schools, have rich educational experiences within public schools, Head Start, and center-based child care.

Rungano Montessori on Wheels (MOW), United States, 2022–Present

Expanding access to Montessori education also motivated Zimbabwean Montessori educator Tatenda Blessing Muchiriri. In 2020, after previously teaching in China and the United States, Moonshot EdVentures funded Muchiriri to open a microschool in Denver, Colorado. Muchiriri hoped to expand access to Montessori education to Black and Latine communities in neighborhoods distant from the city's several public Montessori schools. A secondary opportunity with Embark Space Fellowship had Muchiriri reconsider creating a stationary school, recognizing "transportation inequality" makes it hard for "parents who rely on public transportation or have unreliable transportation options…to get their children to schools that claim to have enriching, innovative and creative cross-cultural curricula" (CanvasRebel, 2022). Instead, Muchiriri envisioned a school that could travel to communities, taking Montessori education "to the streets" (CanvasRebel, 2022), embedding the program close to communities, as do Balwadis and CoRE.

Muchiriri stated, "Nobody was really moving education outside schools, outside institutions. So, the initial idea was, how can I share this beautiful way of learning and teaching that we can also bring to people who look like me? ... How can we take it outside the brick and mortar so that it is available within communities and churches that leverage where people are?" (T. B. Muchiriri, personal communication, March 4, 2024).

Muchiriri created Rungano MOW in 2022 in a converted school bus, to offer Montessori practices as a form of culturally responsive and liberatory education (Ayer et al., 2022; Rungano MOW, 2022). The bus is named *Rungano*, a Shona word that means "our stories," reflecting the program's focus on storytelling to bring together stories of Montessori educators, learners, parents, and caregivers, with a focus on empowering parents to be advocates for their children (Ayer et al., 2022, p. 2). As a classroom on wheels based in the Denver suburb of Aurora, MOW travels to various communities and offers hour-long supplementary workshops and play sessions to community groups. Though almost all of the learning equipment on the bus is composed of classic Montessori materials and art supplies, MOW does not attempt to replicate a complete Montessori classroom or offer formal Montessori lessons (T. B. Muchiriri, personal communication, March 4, 2024). However, through "exposure visits" on the bus, "[c]hildren move freely through the space, choosing materials that match their interests and developmental stage. They pour, sort, build, read, and experiment—guided by Montessori principles of independence and respect" (Rungano MOW, n.d.). As students arrive on the bus (see Figure 7) for their visit, they are provided with clear expectations and encouraged to explore.

Staff first focus on getting to know the child and caregiver, and then children select Montessori materials and have personal agency for their learning (Ayer et al., 2022; Slade, 2022). Given time constraints, MOW's goal is to leverage Montessori materials as tools to arouse curiosity and excitement about learning by creating a literal and figurative space that is an invitation to touch,

Figure 7

Interior View of Montessori on Wheels Rungano Bus



Note. (Photo courtesy of Montessori on Wheels. Used with permission.)

ask questions, and start dialogue. Muchiriri explained that early in his teaching career he realized many Black and Brown children had not experienced learning environments where they could choose what they wanted to learn so "this was the first time interacting with the concept in the classroom," but he noticed "most of my White kids…had some similar experiences with it, be it a museum or outside. So, they were engaged in this way of learning that they could choose what they want to learn" (T. B. Muchiriri, personal communication, March 4, 2024). Children without those experiences would hesitate in making a choice and need opportunities to express their own agency. The bus provides these types of experiences, leveraging the inviting design of Montessori materials in children's residential neighborhoods.

In developing partnerships, MOW takes an assets-based approach, by which Muchiriri recognizes "parents, siblings, family, and neighbors are the first 'storytellers'… through incorporating culturally responsive approaches that tap into the embedded knowledge in the community" (CanvasRebel, 2022). Muchiriri explains that MOW

> challenges a western idea that school is a stationary brick-and-mortar structure in which *the real* teachers impart *the true* curriculum. Taking Montessori "to the streets" exposes children to a dynamic exchange of organic, innovative, and indigenous pedagogy that expands children's worldview and ultimately makes for a more conscious citizenry (CanvasRebel, 2022).

As of March 2026, MOW has served more than 400 families in Aurora and Denver, and has worked with more than 150 public school students in reading literacy, math, and science (T. B. Muchiriri, personal communication, March 26, 2026).

Aktion Sonnenschein (The Sunshine Project), Germany and United States, 1968–Present

The final case study, Aktion Sonnenschein, was started in Germany in 1968 by internationally renowned developmental pediatrician Theodor Hellbrügge (Münchner Merkur, 2014). Hellbrügge founded a kindergarten and elementary school to bring the Montessori model to disabled children (Dattke, 2014). Though Maria Montessori's work with disabled children at the Orthophrenic School provided the foundation for her educational approach, Montessori classrooms designed for typically developing children often lack the explicit support necessary for fully including children with a wide range of disabilities (Moss & Epstein, 2023). To address this problem, Hellbrügge, working in collaboration with Mario Montessori, developed an international Montessori special education teacher training course. Hellbrügge's innovative program continues to serve children today by bringing clinical support into Montessori classrooms and involving physical therapists and medical doctors in pedagogical training, providing additional scaffolding to support students with disabilities (Boysen, 2023).

Hellbrügge's model entails the following:

- medical and education professionals who collaborate on diagnosis and therapy
- Montessori approach enhanced with therapy objectives
- multidisciplinary resource team, including speech-language, occupational therapy, physicians, and psychology professionals
- interventions which can be tailored to a variety of settings, including clinics, specialized schools, hospitals, residential facilities, special education classrooms, or general education classrooms
- strategies individualized for each child's needs
- parents who are included and supported in their integral role in the process (Nehring Massie, 2017, p. 276)

In the United States, the Hellbruegge Montessori inclusion approach is expanding through efforts of the Montessori Medical Partnership for Inclusion (MMPI, 2021) organization, which was cofounded in 2018 by Catherine Nehring Massie and Barbara Luborsky. MMPI initially focused on networking and connecting Montessori professionals and families to learn from

one another about inclusive Montessori programs. The organization's activities have expanded to building capacity for schools to include children with much greater diversity of needs. MMPI collaborated with the Montessori Therapy Training organization, Montessori-Berufsverband e.V., which works closely with Social Pediatric Kinderzentrum hospitals for the first professional development course offering international Montessori Therapy Training with English translation for English-speaking Montessori-trained practitioners (C. Nehring Massie, personal communication, March 6, 2024).

Nehring Massie explained that individuals involved in the MMPI-organized European Montessori inclusion trainings are required to have a Montessori credential, so the focus is on how to adapt the approach based on "underlying strengths and deficits" for each disability focus area and functioning associated with it to determine the best ways to support students. Participants are required to write adaptive lessons and design adaptive materials because "you can't just take your albums and realize them for all children." Nehring Massie continued, "You have this amazing curriculum and materials in front of you. What else do you need to know when this child comes in and it's not working?" (C. Nehring Massie, personal communication, March 6, 2024).

Even though adaptations to the Montessori Method are necessary to serve unique needs of disabled students, the notion of making changes to classic Montessori materials can be uncomfortable for Montessori-trained teachers. Thus, it is important the training "grant[s] them permission and justification" for making adjustments to Montessori materials, such as making an explicit to-do list (see Figure 8), changing colors on number rods, reducing the number of pieces used with a particular lesson, or adding physical texture to support visually impaired children (Ayer, 2021, p. 2). In this way, like with Balwadi, CoRE, and CCA, materials are modified as the classroom layout and presentation of materials continue to give children choice and open-ended time to work.

Today, Aktion Sonnenschein's (2026) Montessori Center of Diversity in Germany serves more than 600 children, with an integrated kindergarten, a therapeutic day care center, and an inclusive school consisting of primary, secondary, and vocational levels. Simultaneously, in the United States, MMPI offers a yearlong, virtual professional development program based on Hellbrügge's work, for previously certified Montessori teachers at the Early Childhood and Elementary levels. Working with a multidisciplinary team, including medical and psychology professionals, trainees learn to adapt Montessori lessons

Figure 8

Montessori Medical Partnership for Inclusion Visual Schedule



Note. This "To Do" and "Done" visual schedule supports and builds executive skills for independence in engaging in a sequence of Montessori works. (Photo courtesy of Montessori Medical Partnership for Inclusion. Used with permission.)

for unique needs of students who have developmental and learning difficulties. Ultimately, practitioners are empowered to adapt Montessori lessons to meet the needs of all their students. Considering all MMPI courses to date, it is estimated the organization has had 1,000 participants since the first course in Milwaukee in 2019 (C. Nehring Massie, personal communication, April 2, 2026). With a modified training that emphasizes greater adaptation of materials and instruction based on medical as well as developmental psychology within an educational space, Aktion Sonnenschein and MMPI have worked to expand access to Montessori principles for a greater number of students with special needs.

Analysis and Discussion

Across five case studies, lesson-drawing consistencies emerge in the intentional pairing of Montessori practice to innovative adaptations that allow for expansion of Montessori principles to more diverse contexts. Key strategies for promoting access include bringing educational programs closer to children's communities through nontraditional learning spaces like outdoor classrooms (Balwadis) and mobile buses (Montessori on Wheels), and incorporating medical care into programs, such as for students with disabilities (Aktion Sonnenschein) and those in rural communities (Balwadis). Better connecting to communities, and integrating education and health care, are in line with the community schools model, an approach growing in the United States, focused on

Figure 9a

Adaptation Case Studies Categorized by Levels of Implementation: Curriculum

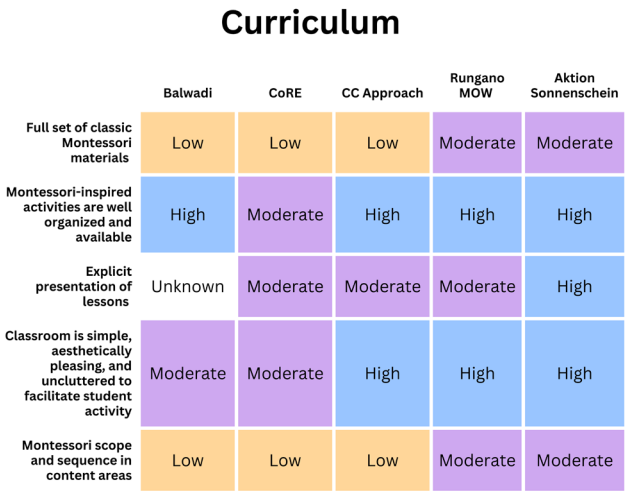


Figure 9b

Adaptation Case Studies Categorized by Levels of Implementation: Freedom

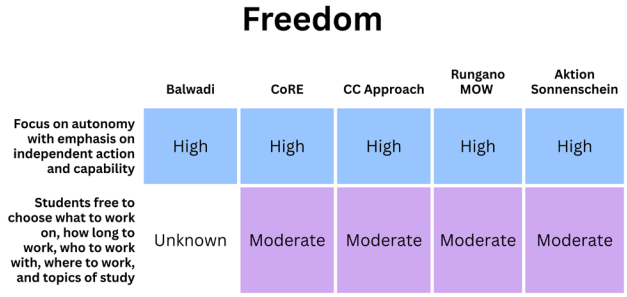
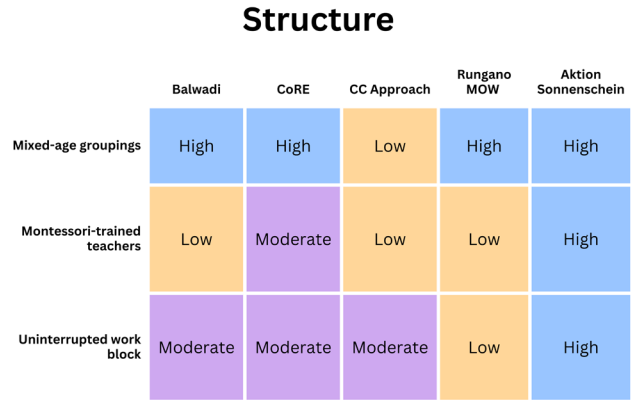


Figure 9c

Adaptation Case Studies Categorized by Levels of Implementation: Structure



leveraging local partnerships to provide a wide range of services and enrichment to students and families (Maier et al., 2017).

Other lessons identified come from how the level of Montessori practices implementation varied across case studies. We summarize these adaptations using the model introduced in Figure 1, based on findings by Debs et al. (2022) and Murray et al. (2019). Figures 9a, 9b, and 9c map the five case studies across these three categories. To evaluate the level of adaptation, we categorized each case by level of implementation for individual components of the model—from high (closest to ideal Montessori practice) to low (most adapted).

Curriculum: Though some aspects of the Montessori curriculum were evident, most of the adapted programs were unlikely to have a full set of Montessori materials or to follow the Montessori scope and sequence. An educator is often able to control classroom layout and activities, though not necessarily curriculum. As a result, making the classroom uncluttered and aesthetically pleasing, and providing a choice of Montessori-inspired activities on simple trays, emerged as accessible entry points. In the case studies, programs acknowledged the importance of explicit lessons before children work independently with classroom materials, but giving formal lessons on use of materials is often new to non-Montessori educators and results in only moderate levels of implementation on this element.

Freedom: The adapted programs followed Maria Montessori's emphasis on developing children's autonomy, making this the most consistently high area of implementation. Although prioritized to a high degree, the actual level of autonomy in practice differs from fully implemented Montessori classrooms. All of the adapted programs operationalized autonomy only to a moderate degree in terms of giving children choice in what work to complete, where to work, how long to work, and with whom they work.

Structure: The area in which the case study programs' adaptations depart most from fully implemented Montessori education is in program structure, with one-third of features considered to be at a low level of implementation. With the exception of mixed-age groupings, which were present in almost all adapted programs, other structural elements were rated either moderate or low. Features like hiring trained Montessori teachers and organizing around open-ended work blocks require institutional support and financial resources, presenting obstacles to many Montessori-inspired teachers and groups. Thus, with the exception of Aktion Sonnenschein, the other case study programs rely on teachers who have some minimal instruction but not full Montessori certification.

Limitations

Although we intentionally varied by country and student population, the cases represent a small number of global Montessori adaptations, so consideration of a broader range is a topic for future research. In addition, though we document each case's pedagogical practices, it is outside our research scope to measure their effectiveness. As some research has suggested greater gains for students attending fully implemented Montessori programs compared to those enrolled in modified Montessori programs (Lillard, 2012; Lillard & Heise, 2016), it is also worth conducting pre- and post-studies to demonstrate precisely how much and in what way student learning changes once classrooms introduce some level of Montessori practices.

Conclusion

Significance of the Research

Montessori pedagogy abounds with high leverage practices that have long existed in isolation, often unfamiliar to outsiders. Montessori educators have been protective of the unified model of Montessori education, often opposing piecemeal adoption of select Montessori practices. Although Montessori organizations have valid reasons to preserve Montessori fidelity, a number support initiatives that adapt Montessori practices to expand access. Still, lack of knowledge about Montessori pedagogy in general, the cost of training and materials, and insularity of the Montessori community have been barriers to broader adoption of Montessori practices.

The case studies highlight how educators have developed small-scale interventions inspired by Montessori practices in order to transform their classrooms and other learning spaces to make Montessori ideas accessible to broader populations of children. As these programs illustrate, it is possible to adopt some Montessori-inspired practices even without a complete set of classic Montessori materials, expensive furnishings, or formal training. When educators set up the learning space with intentionally designed activities and explicit presentations laid out in an uncluttered and aesthetic classroom, children can choose what is interesting to them, leading to examples of deeper engagement, focus, and discovery.

Author Information

Mira Debs is a lecturer in sociology and education Studies at Yale University. She can be reached at mira.debs@yale.edu.
https://orcid.org/0000-0001-5234-0689

Angela Murray is a lecturer in the School of Education and Human Sciences at the University of Kansas. She can be reached at akmurray@ku.edu.
https://orcid.org/0000-0001-6310-8842

Lisa Kuh is the program director for the JCC Association of North America's Department of Early Childhood and the co-director of the Complementary Curriculum Approach. She can be reached at lisakuh@gmail.com

Notes

[1] In this article, we use the terms "Montessori education" to mean the educational model in full implementation and "Montessori practices" when educators seek to borrow some aspects of Montessori education but not the system in its entirety.

[2] Though an uninterrupted three-hour work cycle has long been considered the gold standard practice among Montessori educators, recent research on Montessori's original texts indicate that she advocated for extended work periods but did not specify an exact time (Hermann, 2023).

[3] Institutional Review Boards at our respective institutions reviewed and approved this project.

[4] The Shreyas training represents an instance of CoRE implemented in a private school setting. In this case, trainers decided to use CoRE because no AMI Montessori training was available in Ahmedabad. Also note Shreyas Foundation's long history with Maria Montessori, who helped design the school buildings and set up the Montessori section of the school in 1961 (H. Elias, personal interview, 5 September, 2026; Shreyas Foundation, n.d.)

References

Aktion Sonnenschein. (2026). Welcome. https://aktionsonnenschein.com/

Alhashim, L. A., & Berson, I. (2023). Montessori education in Saudi Arabia. In A. K. Murray, E.-M. Tebano-Ahlquist, M. McKenna, and M. Debs (Eds). *The Bloomsbury handbook of Montessori education* (pp. 361–364). Bloomsbury Academic. https://www.bloomsbury.com/us/bloomsbury-handbook-of-montessori-education-9781350275614/

American Montessori Society. (2024). Montessori and institutions of higher learning. https://amshq.org/Educators/Montessori-Careers/Montessori-and-Inst-Of-Higher-Learning

Arthur Waser Foundation (July 25, 2025). CoRE programme: Montessori in public pre-primary schools in Tanzania. https://www.arthur-waser-foundation.ch/en/core-programme/

Association Montessori Internationale. (2025). EsF Community Rooted Education (CoRE). https://montessori-ami.org/training-programmes/qualifications/esf-community-rooted-education-core

Ayer, D. (2021). Medical Partnership for Inclusion returns online. *MontessoriPublic, 5*(2). https://www.montessoripublic.org/wp-content/uploads/2021/02/MP_Articles-PDF_V52-Ayer-Inclusion.pdf

Ayer, D., & Madison, E. (with Blessing Muchiriri, T.). (2022). Montessori on the move in Denver. *MontessoriPublic, 6*(2). https://www.montessoripublic.org/2022/05/montessori-on-the-move-in-denver/

Ball, D. L., & Forzani, F. M. (2011). Building a common core for learning to teach: And connecting professional learning to practice. *American Educator, 35*(2), 17. https://eric.ed.gov/?id=EJ931211

Boysen, J. (2023). Montessori education in Germany. In A. K. Murray, E.-M. Tebano-Ahlquist, M. McKenna, and M. Debs (Eds). *The Bloomsbury handbook of Montessori education* (pp. 321–325). Bloomsbury Academic. https://www.bloomsbury.com/us/bloomsbury-handbook-of-montessori-education-9781350275614/

CanvasRebel. (2022). Meet Tatenda Muchiriri. https://canvasrebel.com/meet-tatenda-muchiriri/

Chen, A., & Guo, S. L. (2021). The spread of Montessori education in mainland China. *Journal of Montessori Research in Education*, 3 (1), 1–8. https://doi.org/10.16993/jmre.17

Dattke, J. (2014). A Montessori model for inclusion. *NAMTA Journal, 39*(3), 107–119. https://files.eric.ed.gov/fulltext/EJ1183188.pdf

DeBlasis, A. L. (2023). Building legal competencies: The Montessori Method as a unifying approach to outcomes-based assessment in law schools. *Ohio Northern University Law Review, 42*(1). https://digitalcommons.onu.edu/onu_law_review/vol42/iss1/1

Debs, M. (2019). *Diverse families, desirable schools: Public Montessori in the era of school choice*. Harvard Education Press.

Debs, M. (2022). Montessori in India: Adapted, competing, and contested framings, 1915–2021. *History of Education Quarterly, 62*(4), 387–417. https://doi.org/10.1017/heq.2022.25

Debs, M. C., de Brouwer, J., Murray, A. K., Lawrence, L., Tyne, M., & von der Wehl, C. (2022). Global diffusion of Montessori schools: A report from the 2022 Global Montessori Census. *Journal of Montessori Research, 8*(2), 1–15. https://doi.org/10.17161/jomr.v8i2.18675

Demangeon, A., Claudel-Valentin, S., Aubry, A., & Tazouti, Y. (2023). A meta-analysis of the effects of Montessori education on five fields of development and learning in preschool and school-age children. *Contemporary Educational Psychology*, Article 102182. https://doi.org/10.1016/j.cedpsych.2023.102182

Dodd-Nufrio, A. T. (2011). Reggio Emilia, Maria Montessori, and John Dewey: Dispelling teachers' misconceptions and understanding theoretical foundations. *Early Childhood Education Journal, 39*, 235–237. https://doi.org/10.1007/s10643-011-0451-3

Educateurs sans Frontières. (n.d.-a). CoRE India. Association Montessori Internationale. https://montessori-esf.org/project/community-rooted-education-india

Educateurs sans Frontières. (n.d.-b). CoRE South Africa. Association Montessori Internationale. https://montessori-esf.org/project/community-rooted-education-south-africa

Fabri, M. (2023). Revisiting the foundations of Montessori education from a modern neuroscience perspective. In A. K. Murray, E.-M. Tebano-Ahlquist, M. McKenna, and M. Debs (Eds). *The Bloomsbury handbook of Montessori education* (pp. 179–188). Bloomsbury Academic. https://www.bloomsbury.com/us/bloomsbury-handbook-of-montessori-education-9781350275614/

Glass, E., & Urrea, C. (2026). *Early Childhood Learning Architecture: A framework for teaching and learning.* MIT pK–12 Initiative.

Hermann, J. M. (Spring, 2023). Mandate or myth: The uninterrupted 3-hour work cycle. *Montessori Life,* 35(1), 46–49. https://eric.ed.gov/?id=EJ1382324

Johnson, V. J. (2022). Education anywhere? A constructivist grounded theory study of Montessori around the world [Doctoral dissertation, University of Nebraska-Lincoln]. https://www.proquest.com/dissertations-theses/education-anywhere-constructivist-grounded-theory/docview/2708187605/se-2

Johnson, V. J., Dalla, R. L., & Babchuk, W. A. (2025). Meeting children in the margins: A grounded theory study of Montessori education's global reach. *Journal of Research in Childhood Education*, 1–34. https://doi.org/10.1080/02568543.2025.2538461

Kasour, M., Achtaich, N., & Achtaich, K. (2023). The Montessori Ppdagogy in Morocco: State of the art from a qualitative perspective. *Journal of Hunan University Natural Sciences, 50*(6). https://doi.org/10.55463/issn.1674-2974.50.6.16

Kramer, R. (1988). Maria Montessori: A biography. Hachette Books.

Kuh, L. P., & Ponte, I. C. (2022). *Complementary curriculum approach: Transform your practice through intentional teaching*. Exchange Press.

Lillard, A. S. (2012). Preschool children's development in classic Montessori, supplemented Montessori, and conventional programs. *Journal of school psychology,* 50(3), 379–401. https://doi.org/10.1016/j.jsp.2012.01.001

Lillard, A. S., & Heise, M. J. (2016). An intervention study: Removing supplemented materials from Montessori classrooms associated with better child outcomes. *Journal of Montessori Research, 2*(1), 16–26. https://doi.org/10.17161/jomr.v2i1.5678

Lillard, A. S., & McHugh, V. (2019a). Authentic Montessori: The dottoressa's view at the end of her life (Part I: The environment). *Journal of Montessori Research, 5*(1), 1–18. https://doi.org/10.171https://doi.org/10.17161/jomr.v5i1.771661/jomr.v5i1.7716

Lillard, A. S., & McHugh, V. (2019b). Authentic Montessori: The dottoressa's view at the end of her life (Part II: The teacher and the child). *Journal of Montessori Research, 5*(1), 1–18. https://doi.org/10.17161/jomr.v5i1.9753

Lokshin, M., Das Gupta, M., Gragnolati, M., & Ivaschenko, O. (2005). Improving child nutrition? The integrated child development services in India. *Development and Change 36*(4). 613–40.https://doi.org/10.1111/j.0012-155X.2005.00427.x

Maier, A., Daniel, J., Oakes, J., & Lam, L. (2017). Community schools as an effective school improvement strategy: A review of the evidence. *Learning Policy Institute*. https://files.eric.ed.gov/fulltext/ED606765.pdf

Manship, K. (2023). Evaluating the efficacy of Montessori education. In A. K. Murray, E.-M. Tebano-Ahlquist, M. McKenna, and M. Debs (Eds.). *The Bloomsbury handbook of Montessori education* (pp. 209–219). https://www.bloomsbury.com/us/bloomsbury-handbook-of-montessori-education-9781350275614/

Modak, T. (1944). Child education: Speech given to the Nutan Bal Shikshan Sangh. National Council of Women in India. *Bulletin xiv* (5): 8–9.

Modak, T. (1958). *Balwadis in rural areas.* New Delhi: Directorate of Extension and Training, Ministry of Food and Agriculture.

Montessori Medical Partnership for Inclusion. (2021). Outreach and support for an inclusive world, https://montessori4inclusion.org/

Moss, J. D., & Epstein, A. (2023). Montessori education and inclusion. In A. K. Murray, E.-M. Tebano-Ahlquist, M. McKenna, and M. Debs (Eds). *The Bloomsbury handbook of Montessori education* (pp. 479–487). Bloomsbury Academic. https://www.bloomsbury.com/us/bloomsbury-handbook-of-montessori-education-9781350275614/

Münchner Merkur. (2014, January 23). Theodor Hellbrügge ist tot [Theodor Hellbrügge is dead]. Merkur.de. https://www.merkur.de/lokales/muenchen/theodor-hellbruegge-ist-tot-zr-3329116.html

Murray, A. K., Daoust, C. J., & Chen, J. (2019). Developing instruments to measure Montessori instructional practices. *Journal of Montessori Research, 5*(1), 75–87. https://doi.org/10.17161/jomr.v5i1.9797

Murray, A. K., Miller, M., Postlewaite, E. L., & Clark, K. (2022, November). Implementing the Montessori approach in an undergraduate marketing course: A case study. In Frontiers in Education (Vol. 7, p. 1033752). *Frontiers*. https://doi.org/10.3389/feduc.2022.1033752

Murray, A. K., Tebano Ahlquist, E., McKenna, M., and Debs, M. (Eds.) (2023). *The Bloomsbury handbook of Montessori education.* Bloomsbury Academic. https://www.bloomsbury.com/us/bloomsbury-handbook-of-montessori-education-9781350275614/

Nehring Massie, C. (2017). Helping children with attentional challenges in the Montessori classroom: Introduction. *NAMTA Journal, 42*(2), 263–285. https://eric.ed.gov/?id=EJ1144538

Perry, L. B., & Tor, G. H. (2008). Understanding educational transfer: Theoretical perspectives and conceptual frameworks. *Prospects*, 38, 509–526. https://doi.org/10.1007/s11125-009-9092-3

Ramani, U. (n.d.). Community Rooted Education. Association Montessori Internationale. https://montessori-ami.org/sites/default/files/downloads/news/190407UmaRamani.pdf

Randolph, J. J., Bryson, A., Menon, L., Henderson, D. K., Kureethara Manuel, A., Michaels, S., rosenstein, d. l. w., McPherson, W., O'Grady, R., & Lillard, A. S. (2023). Montessori education's impact on academic and nonacademic outcomes: A systematic review. *Campbell Systematic Reviews, 19*, Article e1330. https://doi.org/10.1002/cl2.1330

Rungano Montessori on Wheels. (2022). *This is MoW.* [Video]. YouTube. https://youtu.be/3VoxhnO4ovM

Rungano Montessori on Wheels. (n.d.). *Exposure Visits*. Rungano Montessori on Wheels. Accessed August 9, 2026. https://www.montessorionwheels.org/exposure-visits

Seldin, T. (2022). *The future of Montessori teacher education.* The Montessori Foundation. https://www.montessori.org/the-future-of-montessori-teacher-education/

Sheppard, C. L., McArthur, C., & Hitzig, S. L. (2016). A systematic review of Montessori-based activities for persons with dementia. *Journal of the American Medical Directors Association, 17*(2), 117–122. https://doi.org/10.1016/j.jamda.2015.10.006

Shreyas Foundation. (n.d.) About Us. https://www.shreyasfoundation.in/about-us

Slade, E. (Host). (2022). *Montessori on Wheels* [Audio podcast]. Montessori in action podcast: Engaging conversations with Montessori practitioners. https://montessori-action.org/montessori-on-wheels

Small, M. L. (2009). How many cases do I need? On science and the logic of case selection in field-based research. *Ethnography, 10*(1), 5–38. https://doi.org/10.1177/1466138108099586

Somerville Early Education. (2026). Curriculum overview. https://somervilleearlyed.com/curriculum/

The Tribune. (February 27, 2026). Hoshiarpur leads the way: First dist to roll out community-based Montessori training. https://www.tribuneindia.com/news/jalandhar/hoshiarpur-leads-the-way-first-dist-to-roll-out-community-based-montessori-training/

Tschurenev, J. (2021). Montessori for all? Indian experiments in 'child education,' 1920s–1970s. *Comparative Education*, 57(3), 322–340. https://doi.org/10.1080/03050068.2021.1888408

Whitescarver, K., & Cossentino, J. (2008). Montessori and the mainstream: A century of reform on the margins. *Teachers College Record,* 110(12), 2571–2600. https://doi.org/10.1177/016146810811001202

Wilson, C. (1987). *Montessori in India: A study of the application of her method in a developing country* [Doctoral dissertation, University of Sydney]. University of Sydney Library. http://hdl.handle.net/2123/12044

Wilson, C. (2025). *Exploring the roots of Montessori in India.* Indian Montessori Foundation.

Wright, K. (2026). The prepared environment as behavior support, *Montessori Public*, 10(2), 1–3, https://www.montessoripublic.org/2026/06/the-prepared-environment-as-behavior-support/

Appendix

Montessori Adaptations Interview Questions

1. Tell me about your program.
    a. Who do you serve?
    b. What is the mission and vision for your work?
    c. What problems were you working to solve in your context?

2. How did these issues lead you to the adoption of the pedagogy or approach you currently use?

    a. (If named) What is the role of Montessori in your pedagogy? Primary, secondary, inspiration?
    b. How are you talking about what pedagogy you're using? Do you use the term Montessori at all? If not, why?
    c. Organizational link? Initiated at grassroots, initiated by organization?

3. We are curious what these elements of Montessori look like in your pedagogical context?

    a. What does training look like?
    b. Use of materials?
    c. Age group? Mixed-age groupings?
    d. Prepared environment?
    e. Explicit presentation of lessons?
    f. Freedom of choice?
    g. Three-hour work block?
    h. Other kinds of adaptation?

4. What has been the impact of adopting Montessori-inspired practices?

    a. What specific practices have you found most impactful for children and for teachers?
    b. Where do you see limitations?

4. What have been challenges to your project?

    a. What barriers did you encounter in the adoption of a Montessori-inspired approach?
    b. Was there resistance from practitioners?
    c. From families?
    d. From the community?
    e. From higher education?

6. What direct interactions, if at all, did you have with the Montessori community? Describe those interactions and their impact.

7. Are there any documents about your program that you would be able to share with us, beyond what is publicly available on the Web?

8. Is there anything we haven't asked you that you think is important to talk about?

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Why Montessori Education Did Not Take Root in Portugal—or Did It? Selective Reception, Curricular Convergence, and Pedagogical Invisibility

Joana Alves da Cunha, Institute of Education and School of Nursing, University of Minho, Braga, Portugal
https://orcid.org/0000-0002-3740-0636

Keywords: *Montessori education, Portugal, educational transfer, institutionalization, curriculum policy, history of education*

Abstract: Montessori education has circulated transnationally for more than a century, yet its institutional consolidation has varied markedly across national contexts. Portugal offers a revealing case: Montessori ideas entered pedagogical debate during the First Republic, appearing in legislation and local initiatives, but they did not stabilize as a continuous public or professional infrastructure. This qualitative historical-policy document study examines how Montessori pedagogy was received and translated in Portugal, which institutional conditions constrained consolidation, and how Montessori-compatible principles relate to the 1997 and 2016 versions of *Orientações Curriculares para a Educação Pré-Escolar* (OCEPE) [*Curriculum Guidelines for Pre-Primary Education*]. The study combines direct analysis of Alberty's 1918 report and the two OCEPE editions with a source-based synthesis of Portuguese educational historiography. Educational transfer, policy translation, and institutional theory guide explicit criteria for historical visibility, institutional recognition, and curricular convergence. Pedagogical invisibility is refined as a provisional heuristic for a bounded configuration: documented reception, discontinuous institutional anchoring, and later conceptual compatibility without explicit genealogical attribution. The construct is distinguished from Bernstein's invisible pedagogy, and curricular similarity is not treated as evidence of direct transmission. Portugal illustrates how a pedagogical tradition may remain historically legible while becoming institutionally and genealogically opaque.

Montessori education occupies a distinctive position in the global history of educational reform. Since the opening of the first Casa dei Bambini Montessori school in 1907, its ideas, texts, training courses, materials, and institutions have traveled through diverse political regimes and cultural settings. Contemporary historiography therefore treats the Montessori movement not as the linear dissemination of a fixed method, but as a transnational phenomenon shaped by reception, translation, and institutional conditions (Quarfood, 2022). The 2022 Global Montessori Census identified schools in 154 countries, documenting substantial variation in definitions, organizational structures, and public recognition (Debs et al., 2022). Global circulation, thus, cannot be equated with uniform adoption.

Portugal is instructive within this differentiated geography. Portuguese educators engaged directly with Montessori pedagogy in the 1910s—the Montessori Method entered reformist debate and official discourse, and Montessori-inspired initiatives appeared in local settings during the 20th century (Castanheira, 2006, 2013; Gomes-Ferreira et al., 2021; Manique da Silva & Vilhena, 2024). These episodes, however, did not generate a continuous national infrastructure comparable to settings in which Montessori education became publicly legible through sustained school networks, recognized teacher preparation, professional organizations, and policy accommodation.

Portuguese early childhood curriculum policy, nevertheless, articulates principles compatible with important elements of Montessori pedagogy. The 2016 *Orientações Curriculares para a Educação Pré-Escolar* (OCEPE) [*Curriculum Guidelines for Pre-Primary Education*], which outline Portugal's mandatory framework for preschool pedagogy, present children as active participants in the educational process, and connect autonomy with observation, participation, movement, and intentional organization of the environment (Silva et al., 2016); related orientations were already present in the first national OCEPE published in 1997 (Ministério da Educação, 1997). The resulting problem is not whether the OCEPE are Montessori curricula—they are not—but how to describe a tradition that was historically received and partially enacted, failed to acquire durable public institutional form, and remains conceptually legible within mainstream curriculum discourse.

This article proposes pedagogical invisibility as a provisional heuristic for that composite and domain-specific configuration. The concept refers to the coexistence of documented historical reception, discontinuous institutional anchoring, and a later cluster of curricular principles structurally compatible with the tradition without explicit genealogical attribution. It does not imply that agency, observation, autonomy, or environmental intentionality are exclusive to Montessori education, nor that similarity proves direct historical transmission.

Three questions guide the study: How was Montessori pedagogy received, selected, and translated in Portugal from the First Portuguese Republic through the mid-20th century? Which indicators of institutional recognition were present, and which remained weak or discontinuous? To what extent do the 1997 and 2016 versions of OCEPE converge with core Montessori principles, and what may reasonably be inferred from that convergence? By answering these questions, the article reframes the Portuguese trajectory beyond the binary of successful adoption versus rejection.

Theoretical Framework

Educational Transfer, Translation, and Institutionalization

Scholarship on educational transfer rejects the assumption that pedagogical models move intact from one setting to another. Phillips and Ochs (2004) conceptualize educational borrowing as a process involving attraction, decision, implementation, and internalization, whereas Cowen (2009) distinguishes transfer from the translation and transformation that occur when educational forms are recontextualized. Steiner-Khamsi (2004) further shows that imported reforms may serve political and symbolic purposes, even when local enactment diverges from the original model. Together, these perspectives direct attention to selection, reinterpretation, and domestic conditions that shape traveling ideas.

This literature also supports a distinction between diffusion and institutionalization. Diffusion concerns the circulation of ideas, people, texts, materials, practices, and labels; institutionalization concerns stabilization through durable rules, organizations, professional roles, and sources of legitimacy. Institutional endurance depends not only on pedagogical appeal but also on regulatory support, organizational carriers, professional preparation, cultural legitimacy, and reproducible routines (Scott, 2014). A pedagogy may therefore be widely discussed but weakly institutionalized, or institutionally present but substantially transformed.

Table 1

Operationalization of the Historical-Policy Analysis

Dimension	Operationalization and evidence	Interpretive boundary
Historical visibility	Explicit naming in debate, travel reports, publications, legislation, or public descriptions	A single reference shows visibility, not institutionalization.
Institutional recognition	Continuity across policy, provision, teacher preparation, professional organization, and public-system integration	An isolated school, course, or policy reference indicates partial recognition.
Contextual translation	Selection, criticism, adaptation, hybridization, or ideological reframing	Adaptation is neither failure nor evidence of fidelity.
Curricular convergence	A cumulative cluster of agency, observation, environment, independence, movement, and responsibility	No single principle is unique to Montessori pedagogy or proves influence.
Genealogical attribution	Explicit citation, acknowledged lineage, or institutions preserving a named tradition	Non-citation alone is not evidence of erasure.

This distinction is especially important in Montessori education because use of the term "Montessori" as a label does not itself guarantee fidelity to core Montessori practices, and implementation varies among schools (Lillard, 2017; Lillard & McHugh, 2019; Murray et al., 2019). Recent Dutch studies confirm that even a well-established Montessori sector may display variation in practice and therefore requires empirical assessment rather than inference from a school label (de Brouwer et al., 2024, 2026). *The Bloomsbury Handbook of Montessori Education* similarly presents a worldwide field united by recognizable principles but differentiated by national histories and institutional arrangements (Murray et al., 2023).

For this study, institutional recognition is treated as a continuum assessed through five indicators: explicit legal or policy recognition; sustained schools or programs with a Montessori identity; recognized and reproducible teacher-preparation pathways; professional organizations able to maintain standards, networks, and public representation; and durable integration into publicly funded or regulated provision. No single indicator is sufficient. A country may have private schools without policy integration, a policy reference without training capacity, or episodic training without a stable school network.

Pedagogical Invisibility as a Heuristic Construct

Building on research related to educational transfer and institutionalization, pedagogical invisibility is proposed here as a heuristic rather than an established theoretical category. The heuristic identifies cases in which a named pedagogical tradition has a documented history of reception but lacks continuous institutional anchoring, and a later policy framework contains a coherent configuration of principles compatible with that tradition. The analytical indicators used in this study are as follows: historical visibility, institutional recognition, contextual translation, curricular convergence, and genealogical attribution (see Table 1).

The construct is relational and domain-specific. A tradition may be visible in historical documents but weakly represented in professional infrastructure; it may be institutionally marginal yet explicitly named; or its principles may be conceptually legible although their genealogy is not. Pedagogical invisibility is therefore not complete absence, hidden authorship, or deliberate erasure. It is an inference that requires triangulation across historical, institutional, and curricular evidence and cannot be established by the absence of a name from one document.

The term must also be distinguished from Bernstein's (1975, 2000) visible and invisible pedagogies. Bernstein used that distinction to analyze the internal organization of pedagogic practice, including classification, framing, evaluative criteria, and the distribution of control within educational relations. Pedagogical invisibility, as used here, concerns historical and institutional visibility of a named tradition across time. A Montessori classroom could be analyzed through Bernstein's framework, but that analysis would not determine whether the Montessori Method is publicly recognized within a national education system.

Finally, pedagogical invisibility differs from hybridization, marginalization, and omission. Hybridization describes the visible recombination of pedagogical elements during local translation; marginalization denotes

peripheral positioning despite an identifiable institutional presence, a characterization applied to Montessori education in relation to mainstream schooling (Whitescarver & Cossentino, 2008); and omission is simply non-citation. Pedagogical invisibility concerns the relationship among reception, institutional discontinuity, and later conceptual compatibility without a sustained genealogy.

Comparative Expectations of Visibility

National curriculum documents do not necessarily name every pedagogical tradition whose ideas they synthesize, so curricular citation is only one possible form of recognition. The Netherlands illustrates a broader institutional ecology: Montessori education is publicly legible through a long-standing school sector, professional organization, teacher preparation, and contemporary implementation research (Debs et al., 2022; de Brouwer et al., 2024, 2026; Murray et al., 2023). The United States presents another configuration, combining private and public provision, national organizations, and multiple preparation routes but remaining partly outside the educational mainstream (Debs, 2019; Whitescarver & Cossentino, 2008).

These comparisons do not create an expectation that the OCEPE should cite Montessori education. They justify a narrower inquiry: Where historical reception is documented, does a later system preserve an explicit genealogy or institutional identity, and does a recognizable cluster of principles remain? Institutional recognition must therefore be assessed across policies, organizations, professional preparation, and provision rather than reduced to textual attribution.

Method

Design and Documentary Corpus

This study uses qualitative historical-policy document analysis (Bowen, 2009), combining contextual source criticism with directed qualitative content analysis (Hsieh & Shannon, 2005). The design is interpretive and comparative rather than causal, examining reception, translation, institutional continuity, and curricular compatibility, but does not test whether Montessori education directly produced particular OCEPE formulations.

The directly analyzed corpus comprises three document sets selected for their relevance to the research questions: Alberty's 1918 report on the international Montessori training course held in Barcelona in 1916, the 1997 OCEPE, and the 2016 OCEPE. Alberty's report provides firsthand evidence of reception, evaluation, and translation, whereas the two policy frameworks permit comparison across the democratic period. The broader historical and institutional context, including Republican legislation and two Bragança early childhood initiatives discussed below, was reconstructed through source-based Portuguese historiography, especially that of Cardona (1997), Castanheira (2006, 2013), Gomes-Ferreira et al. (2021), and Manique da Silva and Vilhena (2024). The distinction between documents directly analyzed and archival evidence accessed through specialist historical studies is maintained throughout the interpretation.

The corpus was purposively bounded by four criteria: direct relevance to the reception of Montessori education in Portugal; firsthand or official status of the central documents; relevance to institutional recognition; and capacity to illuminate national early childhood policy. The historical analysis concentrates on 1910–1960, encompassing early reception, Republican reform, authoritarian reconfiguration, and a significant mid-century Catholic initiative. The OCEPE extend the inquiry into contemporary curriculum policy. The study does not claim an exhaustive inventory of Portuguese Montessori schools, associations, training courses, or post-1974 initiatives.

Analytic Procedure

Analysis proceeded in three linked stages. First, Alberty's report and the historical evidence synthesized in specialist studies were analyzed in relation to provenance, institutional origin, purpose, political context, and authorial position. Coding identified explicit references to Montessori education, actors involved in circulation, endorsement or criticism, and evidence of selection, adaptation, hybridization, or ideological reframing.

Second, evidence was organized through the dimensions outlined in Table 1. Institutional recognition was assessed through the five indicators defined in the Theoretical Framework section. Strong institutionalization required continuity across several indicators, so an isolated school, training event, or policy reference was treated as partial or episodic recognition rather than durable consolidation.

Third, the 1997 and 2016 versions of OCEPE were compared through a matrix informed by scholarship on Montessori principles and implementation fidelity (Lillard & McHugh, 2019; Murray et al., 2019, 2023). Six domains were examined: child agency and

meaningful choice, observation and the adult's indirect role, environmental intentionality, independence and autonomy, movement and embodied activity, and social responsibility or freedom within limits. The matrix also recorded divergences, including absence of the following: prescribed Montessori materials, mixed-age groupings, uninterrupted work cycles, and a Montessori sequence of presentations. Convergence was judged cumulatively, as no single domain was treated as uniquely related to Montessori education or sufficient to establish influence.

As a single-author interpretive study, the analysis does not claim inter-rater reliability. Transparency is supported instead through explicit corpus boundaries, operational definitions, a comparative matrix, and consideration of rival interpretations. The documents are publicly available, and no human participants were involved. Institutional ethics approval was therefore not required.

Limitations and Interpretive Boundaries

Three limits govern the conclusions: Documentary convergence cannot demonstrate a direct pathway of transmission, because similar principles may arise from constructivist, sociocultural, democratic, Froebelian, Reggio Emilia, Portuguese participatory, or broader international early childhood traditions. Curriculum frameworks express official orientations but do not show how educators enact them. Finally, the non-citation of a named pedagogy in a synthetic policy document cannot, by itself, be interpreted as erasure.

Accordingly, pedagogical invisibility is applied only to the institutional and genealogical domains represented in the corpus. Montessori education was explicitly visible in selected historical documents and initiatives—the article does not claim invisibility in contemporary teacher education, professional discourse, or classroom practice, which would require separate empirical study.

Selective Reception and Fragmented Institutionalization in Portugal

Early 20th-Century Circulation

The first well-documented direct Portuguese engagement with Montessori pedagogy occurred in 1916, when Alberty and Estrela da Costa attended the Third International Montessori Course in Barcelona. Their mission was supported by the Lisbon City Council and the Casa Pia de Lisboa, indicating an institutional effort to examine international reform rather than private curiosity. Alberty subsequently produced a 151-page report, published in 1918, that became an important documentary record of Montessori education's Portuguese reception (Alberty, 1918; Manique da Silva & Vilhena, 2024).

The report records both attraction and selectivity. Alberty valued scientific observation, auto-education, environmental organization, and Maria Montessori's contribution to early childhood education, but questioned particular procedures and did not advocate unqualified transplantation. Manique da Silva and Vilhena (2024) show that the knowledge acquired in Barcelona was filtered through Alberty's own evaluations and Portuguese educational concerns. The episode thus exemplifies translation rather than replication.

This engagement developed within the reformist climate of the First Portuguese Republic, at a time when early childhood education became more visible in legislative and pedagogical debate. Portuguese historical research documents official openness to international models, including Montessori and Froebelian pedagogical models, but also shows that limited provision, scarce resources, uneven implementation, and political instability constrained continuity (Gomes-Ferreira et al., 2021). Legislative and discursive recognition could authorize a pedagogical possibility without creating the schools, teacher preparation, organizations, and administration required for a national Montessori system.

The first historical infant school of Bragança, which operated from 1915 to 1934, further illustrates selective reception. Castanheira (2006) identifies an educational ecology in which Montessori-associated elements coexisted with Froebelian and João de Deus traditions. The case is better understood as hybrid local practice than as a bounded Montessori institution: Principles entered educational activity, although the Montessori label and mechanisms of organizational continuity remained unstable.

Authoritarian Reconfiguration and Localized Translation

The consolidation of the Estado Novo (New State), Portugal's authoritarian regime, altered structural conditions for early childhood education. Public provision was progressively weakened and, by 1937, removed from the state system, as responsibility shifted toward private, charitable, and religious institutions (Cardona, 1997; Gomes-Ferreira et al., 2021). This change was not a rejection of Montessori education—it simply narrowed the public and professional space in

which any distinctive early childhood model might have developed through state-supported provision, recognized preparation, and administrative continuity.

The Jardim-Escola de Nossa Senhora das Graças (Our Lady of Grace Kindergarten School), established in Bragança in 1956, demonstrates that Montessori education did not disappear. The school was publicly presented as Montessori-inspired, yet the approach was reinterpreted within a Catholic framework and overlapped with the João de Deus tradition. Castanheira (2013) shows, for example, how the lesson of silence was connected to religious preparation and how the founding educator's prior training reinforced the coexistence of pedagogical matrices.

This initiative exemplifies ideological accommodation. Translation enabled selected Montessori practices to persist within a specific institutional niche, but the project remained geographically and organizationally limited. The Jardim-Escola de Nossa Senhora das Graças in Bragança, Portugal, did not generate nationally coordinated certification, a durable school network, or a policy framework capable of sustaining continuity across institutions and generations.

Assessing Institutional Recognition

Evaluated against the five indicators, the Portuguese record is mixed. Montessori education achieved legal and discursive visibility during the First Portuguese Republic, and identifiable Montessori-inspired settings appeared at particular moments. Yet recognized teacher-preparation pathways were not embedded in the public system, no nationwide professional infrastructure connected initiatives across political periods, and Montessori education did not become a continuous component of publicly supported provision.

This conclusion is temporal and sector-specific. It does not deny contemporary Portuguese schools, training initiatives, international affiliations, or renewed professional activity, which require a separate post-1974 history. The narrower finding is that early visibility did not mature into continuous public institutionalization across the 20th century. Portugal therefore exhibits fragmented institutionalization: genuine reception and episodic enactment without durable alignment among policy, preparation, organizational representation, and provision.

Fragmented institutionalization also explains why the trajectory cannot be described simply as failure. Montessori education was discussed, evaluated, hybridized, and locally enacted, but the organizational carriers capable of preserving a stable public identity and explicit genealogy remained discontinuous. Ideas could consequently remain available for later recombination even when the named tradition did not achieve structural prominence.

Curricular Convergence Without Explicit Genealogical Attribution

The 1997 and 2016 versions of OCEPE are appropriate for examining long-term conceptual compatibility, because they are the principal national reference frameworks for Portuguese preschool education in the democratic period. They articulate assumptions about the child, educator, learning, assessment, space, time, participation, and community, deliberately avoiding a prescriptive curriculum or catalog of pedagogical schools (Ministério da Educação, 1997; Silva et al., 2016). The genre of the OCEPE matters: Because the documents do not systematically attribute each principle to a named tradition, Montessori education's non-citation is neither surprising nor sufficient evidence of invisibility. Table 2 summarizes the convergences and divergences identified.

Child Agency, Choice, and Auto-Education

Both OCEPE editions portray children as active participants in learning, with the 2016 framework defining the child as an active participant in learning and in decisions concerning the educational process (Silva et al., 2016). Educators are expected to construct curriculum through attention to children's interests, initiatives, experience, and participation—planning is responsive rather than the uniform delivery of a fixed program.

This orientation is compatible with Maria Montessori's concept of auto-education, in which purposeful activity and meaningful choice support self-construction in a prepared environment (Montessori, 1912/1967, 1949/2012). The compatibility becomes analytically significant when agency is considered with observation, environmental organization, independence, and an indirect adult role. Important differences remain: The OCEPE do not prescribe a Montessori work cycle, sequential presentations, or choice within Montessori materials, and their account of agency is more explicitly connected to collective curriculum negotiation and democratic participation.

Table 2
Comparison of Montessori Principles and the 1997 and 2016 Versions of OCEPE

Domain	OCEPE–Montessori comparison of models	Permitted inference
Child agency and choice	The OCEPE position children as active participants; Montessori education emphasizes auto-education and meaningful choice. OCEPE agency is more explicitly collective.	Strong structural compatibility, shared with other participatory traditions
Observation and adult role	OCEPE observation, documentation, planning, and formative assessment parallel the emphasis on observation and indirect guidance in Montessori pedagogy.	Strong compatibility, but not unique to Montessori education
Environment and independence	The OCEPE organize space, materials, time, and relations to support autonomy; the prepared environment in Montessori education has a comparable purpose.	Very strong principle-level convergence; classroom models not equivalent
Movement and embodiment	Both integrate movement into learning; Montessori education places greater emphasis on purposeful movement and practical life.	Moderate-to-strong compatibility
Community and responsibility	The OCEPE stress democratic participation and shared responsibility; Montessori education emphasizes freedom within limits, Grace and Courtesy, and care of community.	Partial convergence with different normative framing
Montessori-specific structures	The OCEPE do not prescribe Montessori materials, mixed-age groups, uninterrupted work cycles, or a Montessori presentation sequence.	Important divergence: the OCEPE are not Montessori curricula

Observation, Intentionality, and Formative Assessment

Observation is central to both OCEPE editions. The 2016 framework develops a cycle of observing, recording, documenting, planning, acting, and evaluating, with formative assessment to support learning rather than to rank children (Silva et al., 2016). Educators interpret activity, adjusting their decisions accordingly.

Maria Montessori similarly placed disciplined observation at the foundation of the adult's work. The educator prepares the environment, presents materials, observes, and intervenes with restraint so activity can proceed with increasing independence (Montessori, 1912/1967; Lillard, 2017). The overlap links an active image of the child to a redistribution of adult authority, although the OCEPE connect documentation more explicitly to participation, communication with families, and professional reflection.

The Educational Environment and Independence

Environmental intentionality is the strongest area of convergence. The OCEPE conceptualize the educational environment as an integrated organization of space, materials, time, relationships, and institutional conditions. The 2016 edition connects children's knowledge and use of space to independence and autonomy, emphasizing accessibility, flexibility, aesthetic quality, and participation in organization (Silva et al., 2016).

In Montessori education, the prepared environment performs a comparable function as an indirect educator: Order, accessibility, proportion, beauty, movement, and selected materials support concentration and functional independence (Montessori, 1949/2012; Lillard & McHugh, 2019). In both the Montessori and OCEPE frameworks, space shapes possibilities for action and reduces reliance on constant adult assistance. The divergence is substantial, however, because Montessori environments include specialized materials and developmental sequences, whereas the OCEPE authorize contextual adaptation rather than a standardized classroom model.

Movement, Community, and Freedom Within Limits

The OCEPE integrate movement, outdoor activity, play, exploration, and routines into a holistic understanding of learning. They also present the group as a participatory community in which children assume responsibilities, cooperate, contribute to decisions, and negotiate rules. These dimensions are particularly explicit in the 2016 OCEPE, reflecting democratic, inclusive, and rights-based policy language.

Montessori education likewise connects movement with cognition and supports independence through practical life and sensorial activity, free movement within an ordered environment, and repeated purposeful action. Social organization is shaped by freedom within limits, Grace and Courtesy, care of the environment, and responsibility toward a mixed-age community (Lillard, 2017; Montessori, 1949/2012). The organizational compatibility does not erase philosophical differences. The OCEPE foreground democratic participation and the co-construction of learning and curriculum, whereas the original formulation of Montessori pedagogy rests on a distinct developmental anthropology and an account of self-discipline emerging through concentrated activity.

Interpreting Convergence

Considered cumulatively, the OCEPE converge with Montessori pedagogy across themes such as child agency, observation, environmental intentionality, independence, movement, and social responsibility, with several principles becoming more explicit in the 2016 version. The OCEPE also diverge in their non-prescriptive form, democratic language, openness to multiple traditions, and absence of Montessori-specific materials, mixed-age requirements, work cycles, and presentation sequences.

The comparison thus does not establish direct influence. Such a claim would require evidence of authorship, citation, professional networks, teacher education, or traceable transmission into curriculum policy. It does, however, establish conceptual legibility: a coherent cluster of Montessori-compatible principles recognized within mainstream Portuguese policy, even though the Montessori Method is not named and institutional genealogy is weak. This is the bounded point at which pedagogical invisibility becomes useful: Historical reception is demonstrable, institutional continuity is limited, and later compatibility is embedded in a wider contemporary early childhood discourse.

Discussion

Locating Pedagogical Invisibility Across Domains

The analysis specifies where invisibility does and does not occur. Montessori education was not invisible in selected historical documents—it was explicit in Alberty's report, present in Republican educational discourse, and publicly promoted in local initiatives. Historical visibility was nevertheless episodic and unevenly connected to durable structures.

The strongest claim concerns the institutional domain. Recognition did not stabilize across policy support, provision, teacher preparation, professional organization, and public-system integration. Political instability, limited early childhood provision, authoritarian restructuring, and dependence on localized private or religious initiatives weakened continuity. A related pattern occurs in policy genealogy: The OCEPE make compatible principles visible but leave their multiple historical lineages largely undifferentiated. This is genealogical opacity, not evidence of deliberate erasure.

No equivalent conclusion can be reached about contemporary teacher education or classroom practice. Establishing visibility in those domains would require analysis of training curricula and syllabi, interviews with educators, mapping of professional networks and schools, and direct observation of practice.

What the Portuguese Case Adds

Portugal complicates binary narratives of adoption and rejection. Early official visibility coexisted with long-term institutional weakness, yet institutional weakness did not necessarily produce conceptual disappearance. The case therefore suggests a third configuration within Montessori historiography: selective reception and fragmented institutionalization followed by broad curricular compatibility without demonstrable direct lineage.

This configuration extends educational-transfer analysis beyond the initial moment of educational borrowing. Traveling ideas may become detached from their organizational carriers, translated into hybrid practices, and later incorporated into shared professional and curricular vocabularies. The result is neither faithful replication nor simple failure, but a pedagogical afterlife shaped by historical sedimentation.

International comparison clarifies the contrast. Dutch Montessori education is publicly legible through established schools, professional continuity, and implementation research, whereas the United States combines organizational density and public-sector growth with continuing marginality and variation (Debs, 2019; de Brouwer et al., 2024, 2026; Whitescarver & Cossentino, 2008). Portugal historically displayed less continuity across those institutional carriers. Pedagogical invisibility should nevertheless remain provisional until tested in other national settings and through post-1974 Portuguese research.

Conclusion

Determining whether Montessori education failed to take root in Portugal depends on what counts as rootedness. Measured through a continuous school network, recognized preparation pathways, stable professional organization, and durable public-system integration, the Portuguese trajectory was limited. Early visibility and local initiatives did not consolidate into a coherent institutional tradition across the 20th century.

The language of failure is less adequate when influence is considered beyond organizational continuity. Montessori education entered Portuguese debate, was selectively endorsed and criticized, and was translated within hybrid practices. The OCEPE later articulated a cluster of compatible principles—agency, observation, environmental intentionality, autonomy, movement, and shared responsibility—without becoming Montessori curricula or proving direct transmission.

Pedagogical invisibility names this bounded coexistence of historical visibility, institutional discontinuity, and genealogical opacity. The Portuguese case shows that a pedagogical tradition may remain intellectually and educationally legible even when organizations, training structures, and public institutions through which it originally circulated fail to achieve lasting consolidation.

Seen in this light, Montessori pedagogy neither fully disappeared from Portuguese education nor became securely institutionalized within it. Its trajectory was one of selective reception, contextual translation, hybridization, and conceptual sedimentation, through which ideas remained available for later recombination as the organizational identity of the movement remained fragile. Recognizing these pedagogical afterlives expands analysis of educational borrowing beyond conventional alternatives of adoption and rejection, drawing attention to multiple ways in which educational traditions may endure beyond institutional form.

References

Alberty, R. R. y. (1918). *Relatório sobre o curso internacional de pedagogia scientifica da Dr.ª Maria Montessori realizado em Barcelona na primavera de 1916*. Separata do Anuário da Casa Pia de Lisboa de 1916–1917.

Bernstein, B. (1975). *Class, codes and control: Vol. 3. Towards a theory of educational transmissions*. Routledge & Kegan Paul.

Bernstein, B. (2000). *Pedagogy, symbolic control and identity: Theory, research, critique* (Rev. ed.). Rowman & Littlefield.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Cardona, M. J. (1997). *Para a história da educação de infância em Portugal: O discurso oficial (1834–1990)*. Porto Editora.

Castanheira, M. L. P. (2006). *Escola infantil de Bragança (1915-1934): Modernidade pedagógica e as primeiras práticas de educação de infância no interior* [Master's thesis, University of Lisbon].

Castanheira, M. L. P. (2013). *Para a história da educação de infância em Portugal: O caso de Bragança (1934–1986)* [Doctoral dissertation, University of Lisbon].

Cowen, R. (2009). The transfer, translation and transformation of educational processes: And their shape-shifting? *Comparative Education, 45*(3), 315–327. https://doi.org/10.1080/03050060903184916

de Brouwer, J., Klaver, L. T., Sins, P. H. M., & van der Zee, S. (2026). Implementation of Montessori education: Validity evidence of Dutch teacher questionnaires for Montessori practices. *Journal of Montessori Research, 12*(1). https://doi.org/10.17161/jomr.v12i1.24724

de Brouwer, J., Morssink-Santing, V., & van der Zee, S. (2024). Validation of the Teacher Questionnaire of Montessori Practice for Early Childhood in the Dutch context. *Journal of Montessori Research, 10*(1). https://doi.org/10.17161/jomr.v10i1.21543

Debs, M. (2019). *Diverse families, desirable schools: Public Montessori in the era of school choice*. Harvard Education Press.

Debs, M., de Brouwer, J., Murray, A. K., Lawrence, L., Tyne, M., & von der Wehl, C. (2022). Global diffusion of Montessori schools: A report from the 2022 Global Montessori Census. *Journal of Montessori Research, 8*(2), 1–15. https://doi.org/10.17161/jomr.v8i2.18675

Gomes-Ferreira, A., Mota, L., & Vilhena, C. (2021). Educação de infância em Portugal: Discursos, projetos e práticas (1834–1974). *Revista Colombiana de Educación, 1*(82), 197–218. https://doi.org/10.17227/rce.num82-10812

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Lillard, A. S. (2017). *Montessori: The science behind the genius* (3rd ed.). Oxford University Press.

Lillard, A. S., & McHugh, V. (2019). Authentic Montessori: The Dottoressa's view at the end of her life, part I: The environment. *Journal of Montessori Research, 5*(1), 1–18. https://doi.org/10.17161/jomr.v5i1.7716

Manique da Silva, C., & Vilhena, C. (2024). Viajar, conhecer e comparar: Ricardo Rosa y Alberty e o curso de Pedagogia Montessori (Barcelona, 1916). *Educação e Pesquisa, 50*, Article e272474. https://doi.org/10.1590/S1678-4634202450272474

Ministério da Educação. (1997). *Orientações curriculares para a educação pré-escolar*. Departamento da Educação Básica, Núcleo de Educação Pré-Escolar.

Montessori, M. (1967). *The Montessori Method* (A. E. George, Trans.). Schocken Books. (Original work published 1912)

Montessori, M. (2012). *The absorbent mind*. Start Publishing. (Original work published 1949)

Murray, A. K., Ahlquist, E.-M. T., McKenna, M. K., & Debs, M. (Eds.). (2023). *The Bloomsbury handbook of Montessori education*. Bloomsbury Academic.

Murray, A. K., Daoust, C. J., & Chen, J. (2019). Developing instruments to measure Montessori instructional practices. *Journal of Montessori Research, 5*(1), 75–87. https://doi.org/10.17161/jomr.v5i1.9797

Phillips, D., & Ochs, K. (Eds.). (2004). *Educational policy borrowing: Historical perspectives*. Symposium Books.

Quarfood, C. (2022). *The Montessori movement in interwar Europe: New perspectives*. Palgrave Macmillan. https://doi.org/10.1007/978-3-031-14072-3

Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). SAGE.

Silva, I. L. da, Marques, L., Mata, L., & Rosa, M. (2016). *Orientações curriculares para a educação pré-escolar* [*Curriculum Guidelines for Pre-Primary Education*]. Ministério da Educação, Direção-Geral da Educação.

Steiner-Khamsi, G. (Ed.). (2004). *The global politics of educational borrowing and lending*. Teachers College Press.

Whitescarver, K., & Cossentino, J. (2008). Montessori and the mainstream: A century of reform on the margins. *Teachers College Record, 110*(12), 2571–2600. https://doi.org/10.1177/016146810811001202

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The Prepared Adult and Trauma-Informed Practice in Montessori Education

Meghan Anson, Brilliant Horizon Montessori Center
https://orcid.org/0009-0003-0532-4936

Keywords: *trauma-informed practice, Montessori education, prepared adult, prepared environment, educator perspectives*

Abstract: Montessori-specific empirical research on trauma-informed practice remains limited, particularly regarding how credentialed educators understand and enact trauma-informed principles within Montessori classrooms. This qualitative analysis draws from a broader exploratory study and focuses on prepared adult practice within the interdependent Montessori system described by educators. Fourteen credentialed Montessori educators with experience serving children ages 3 to 12 participated in one-on-one semi-structured Zoom interviews. Hybrid thematic analysis combined deductive codes informed by the Substance Abuse and Mental Health Services Administration's trauma-informed principles and Montessori concepts with inductive coding grounded in educator accounts. Four findings organized the analysis. Participants described adult preparation as ongoing professional and inner work; observation as the basis for responsive judgment; and dignity-preserving response through regulation support before correction, dependable limits, adaptation, and repair. They also described the Prepared Environment, purposeful materials and activity, child agency, mixed-age community, and school conditions as active parts of the same system. Participants varied substantially in formal trauma-related training, and the study did not assess clinical outcomes or children's experiences. The study contributes an educator-centered account of how adult preparation and response interact with Montessori environments, materials, community practices, and system supports, with implications for Montessori teacher education, professional learning, leadership, and future observational research.

Schools serve children whose learning, regulation, relationships, and participation may be shaped by adversity. The original Adverse Childhood Experiences study identified childhood exposure to abuse, neglect, and household dysfunction as forms of adversity associated with later health and well-being (Felitti et al., 1998). In educational work, adversity is best understood more broadly as potentially harmful, destabilizing, or chronically stressful experience. Trauma is not synonymous with adversity. It refers to experience that is harmful or threatening and has lasting adverse effects on functioning or well-being (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). This distinction helps educators remain attentive to

possible effects of adversity without assuming a particular experience or behavior confirms trauma.

Trauma-informed education uses knowledge about trauma to shape classroom relationships, environments, routines, policies, and responses. SAMHSA's (2014) six principles emphasize safety; trustworthiness and transparency; peer support; collaboration and mutuality; empowerment, voice, and choice; and cultural, historical, and gender issues. Across school literature, trauma-informed practice is described as a whole-school approach rather than a single technique, with particular attention to predictable conditions, relational safety, agency, nonpunitive response, and coordinated support (Thomas et al., 2019).

Montessori education offers a significant context for this inquiry, because its philosophy and pedagogy include many of the abovementioned conditions. Montessori philosophy emphasizes respect for the child, trust in development, independence, and purposeful participation. Montessori pedagogy enacts those commitments through the Prepared Environment, hands-on materials, observation, freedom within limits, mixed-age community, and sustained self-directed activity (Lillard, 2017; Montessori, 1936/1995, 1949/2002). The child's direct engagement with the environment and materials is fundamental. The adult prepares, presents, and then protects the conditions in which children can act with increasing independence.

Montessori-specific trauma-informed scholarship is growing. Phillips et al. (2022) argued from historical accounts that early Montessori schools supported psychological healing among trauma-affected children and that this support was woven throughout materials, educational approaches, teachers, and the whole environment. A contemporary program evaluation involving 11 educators at one Montessori school reported post-program changes in participants' self-reported knowledge, attitudes, beliefs, and professional practice (Phillips, O'Toole, Phillips, & McGilloway, 2025). Phillips's (2026) thematic comparison of Montessori education with the Neurosequential Model in Education emphasizes repetitive activity, a relationally rich environment, mixed-age groups, peer teaching, a nontraditional teacher role, and readiness for reasoning. A current practitioner and teacher-education synthesis develops these historical and contemporary connections across the whole Montessori system (Phillips, O'Toole, McGilloway, & Phillips, 2025). Lewis's (2024) phenomenological study similarly documented naturally embedded trauma-informed practices in public Montessori environments.

Even with these contributions, empirical research remains limited across Montessori levels, credentialing pathways, and school contexts. In particular, less is known about how credentialed Montessori educators describe adult preparation and response in relation to the environment, materials, child agency, peer community, and school conditions. This article draws from a broader qualitative exploratory study (Anson, 2026) and focuses on educators' descriptions of adult preparation, observation, and response within that larger Montessori system. It asks what these contemporary educator accounts contribute to understanding trauma-informed Montessori practice, teacher education, and school support.

Theoretical and Conceptual Framework

The primary conceptual framework pairs SAMHSA's (2014) trauma-informed principles with Montessori philosophy and Montessori pedagogy. SAMHSA's principles supplied the study's primary trauma-informed deductive framework. Montessori concepts supplied a parallel pedagogical framework that included the Prepared Environment, freedom within limits, observation, respect for the child, mixed-age community, purposeful activity, and the teacher as guide. Using these frameworks together supported systematic examination of educator accounts without treating the two traditions as identical.

The distinction between philosophy and pedagogy is important. Montessori philosophy provides the underlying commitments to dignity, independence, developmental potential, and human interdependence. Montessori pedagogy refers to classroom structures and practices through which those commitments are enacted. In the same way, trauma-informed principles are broad commitments, while trauma-informed practices are actions, routines, relational responses, and system decisions through which those principles become visible. This framework allows alignment to be examined at both the level of values and the level of classroom enactment.

Two secondary perspectives sharpen the analysis. The Sense of Safety Theoretical Framework describes safety as a whole-person experience shaped across environment, social climate, relationships, body, inner experience, sense of self, and meaning (Lynch et al., 2025). A sociocultural perspective on trauma-informed

care locates support across environments, communities, agency, consultation, supervision, and organizational conditions as well as individual adult response (Center for Substance Abuse Treatment, 2014). Together, these perspectives situate educator practice within the environmental, relational, communal, and organizational conditions in which it occurs.

Within this layered framework, adult preparation and response operate within an interdependent pedagogical system. Much of the adult's work occurs before or around independent activity: preparing and maintaining the environment, selecting and presenting materials and community practices, modeling respectful interaction, establishing freedom within limits, and protecting concentration and safety. Once access and familiarity are established, children may select work, repeat activity, seek peer connection, and use classroom routines without continuous adult intervention. At other times, access may be disrupted by withdrawal, conflict, unsafe behavior, or overwhelm, necessitating observation, adaptation, and more direct adult support. The analysis therefore attends to both direct child-environment engagement and the adult responsibilities that establish and safeguard meaningful access to it.

Literature Review

The Prepared Adult in Montessori and Trauma-Informed Education

Montessori education assigns the adult a distinctive pedagogical role. Rather than directing all learning, the adult prepares the environment, gives precise presentations, observes, protects concentration, maintains limits, and withdraws when children can proceed independently (Lillard, 2017; Montessori, 1949/2002). Preparation includes technical knowledge and inner discipline of humility, patience, restraint, and willingness to study the child. The adult's role establishes and protects conditions in which auto-education, direct engagement with materials, and increasingly independent activity can occur.

Literature on trauma-informed teaching also identifies adult preparation as professional and relational. Educators need knowledge of trauma's possible effects, awareness of how their own stress and authority shape interaction, and the capacity to maintain safety without humiliation or punitive escalation (Blaustein & Kinniburgh, 2010; Brunzell et al., 2016). Carello and Butler (2015) extend this work into educator preparation by emphasizing predictable learning environments, reflective practice, appropriate boundaries, attention to power, and educator self-care. These contributions support examination of adult regulation and reflection while also locating those capacities within educational environments and systems.

Observation is especially relevant to the intersection of the two traditions: Montessori observation asks the adult to study behavior, development, engagement, and environmental conditions before intervening. Trauma-informed observation adds caution about interpreting behavior only as defiance, refusal, or lack of motivation. It does not authorize educators to diagnose trauma. Rather, it supports educational judgment about readiness, safety, relationship, demand, timing, and access.

Environment, Materials, Agency, and Community

The Prepared Environment is an active pedagogical element, not a neutral setting. Order, accessibility, movement, consistent routines, and self-correcting materials support independence and sustained engagement (Lillard, 2017; Montessori, 1949/2002). Practical Life and Sensorial activities invite purposeful movement, repetition, sequencing, and concentration. A familiar Practical Life activity such as sweeping can offer rhythmic movement, repetition, order, and purposeful engagement. At the same time, Montessori materials do not produce uniform effects apart from the pedagogical context in which they are used. Meaningful access depends on familiarity, developmental readiness, safe and purposeful use, freedom within limits, and an environment prepared to support independent activity. Mixed-age classrooms, Grace and Courtesy, peer modeling, and shared community practices create additional pathways for learning, contribution, and belonging.

Recent Montessori trauma-informed literature foregrounds these pathways. Phillips et al. (2022) interpret historical reports as evidence that early Montessori schools supported psychological healing among trauma-affected children. Their analysis describes healing as woven through materials, educational approaches, teachers, and the whole school environment, and gives particular attention to children's choice and repetition of Practical Life, Sensorial, academic, artistic, and outdoor activity. Phillips (2026) similarly links repetitive activity with regulation while identifying a relationally rich environment that includes teachers, mixed ages, peer teaching, and readiness for reasoning. Together, these accounts locate support across the enacted Montessori system rather than in any single element.

Table 1
Participant Characteristics

Characteristic	Distribution
Participants	14 credentialed Montessori educators
Montessori preparation	AMI, AMS, MACTE, and combined credentialing pathways
Classroom levels	Primary: 6; Elementary: 5; combined Primary and Elementary: 3
Teaching experience	1–5 years: 2; 6–10 years: 2; 11–15 years: 2; 16–20 years: 1; more than 20 years: 7
Educational contexts	Private, public, charter, and training-center settings; urban, suburban, rural, and mixed geographic contexts
Formal trauma-related training	Yes: 3; no: 11
Self-reported trauma familiarity	Very familiar: 1; somewhat familiar: 7; not very familiar: 3; not familiar at all: 3
Current professional roles	Several participants also served in administrator or teacher-education roles while drawing on classroom experience

Note. Counts reflect self-reported demographic survey data. AMI = Association Montessori Internationale; AMS = American Montessori Society; MACTE = Montessori Accreditation Council for Teacher Education.

Current Montessori-specific empirical literature adds educator perspectives but remains narrow. Lewis (2024) studied public Montessori educators' descriptions of naturally embedded practices. Phillips et al. (2025) evaluated a professional-learning program in one school and reported participant-perceived changes in knowledge, attitudes, beliefs, and professional practice. The present study extends this conversation through a varied sample of credentialed educators serving children ages 3 to 12. Its contribution is a focused empirical account of how educators described adult preparation, observation, and response in relation to Montessori environments, materials, agency, community, and contextual conditions.

Method

Research Design and Focus of This Article

This article draws from a qualitative exploratory study of how Montessori educators understood, interpreted, and implemented trauma-informed practices in classrooms serving children ages 3 to 12 (Anson, 2026). The original study asked two neutral research questions: To what extent did Montessori educators report implementing trauma-informed practices? To what extent did they perceive those practices as aligned with Montessori philosophy and Montessori pedagogy? The study centered educator accounts of educational practice and professional judgment rather than trauma diagnosis, clinical treatment, or child outcomes.

The broader analysis generated five themes: intentional adult preparation; responsive adult action; safety, trust, and belonging; Montessori elements supporting trauma-informed practice; and implementation within limits, boundaries, and contextual strain. For this article, the researcher returned to the coded dataset, analytic memos, cross-participant comparisons, and final themes to examine adult preparation and response in relation to the larger Montessori system. Evidence describing direct environmental, material, peer, and child-agency pathways was retained alongside evidence of adult practice so the focused analysis remained connected to the broader study.

Participants and Sampling

Participants were 14 credentialed Montessori educators with current or prior experience in Primary, Elementary, or combined Primary and Elementary classrooms. Eligibility required age 18 or older, a recognized Montessori credential, and experience serving children ages 3 to 12. Formal trauma-informed training was not required. Maximum variation sampling intentionally included educators whose trauma-related preparation ranged from formal training to experience-based familiarity so the study could examine variation rather than presume shared expertise (Patton, 2015). Table 1 summarizes the sample.

Table 2
Core Semi-Structured Interview Questions

No.	Core question
1	How do you understand and implement trauma-informed practices in your Montessori classroom?
2	How would you describe your understanding of trauma and its impact on child development and learning?
3	What do the terms "trauma-informed practice" or "trauma-informed practices" mean to you in the context of your Montessori work?
4	In what ways do you think Montessori philosophy naturally supports children who have experienced trauma?
5	Can you describe a time when you adapted your teaching approach to support a child you suspected had a trauma history?
6	What specific strategies have you used in your classroom to build trust and safety for children who have experienced trauma?
7	To what extent do you feel your trauma-informed practices align with Montessori philosophy and pedagogy?
8	Have you received formal or informal professional development in trauma-informed education?
9	What kinds of support within your school or community help you in working with trauma-affected students?
10	Scenario: Imagine a child in your classroom begins showing signs of emotional dysregulation and refuses to engage in work. You suspect a trauma-related response. How would you manage this situation in the moment?
11	In your experience, what Montessori classroom practices, principles, or lessons help children experience the six SAMHSA trauma-informed principles?
12	What changes would you recommend to Montessori teacher training programs to better prepare educators to support children who have experienced trauma?

Note. All participants were asked the same 12 core questions. Probes were used flexibly to request clarification, examples, or contextual detail. Question 11 was presented with the six SAMHSA principles listed in the interview chat.

Recruitment and Data Collection

Recruitment occurred through a university-based Montessori educator listserv. Approximately 1,152 invitations were delivered, 80 educators completed the demographic survey, and 25 eligible educators were invited to interview. Fourteen completed one individual semi-structured Zoom interview. Interviews ranged from 28 to 86 minutes and averaged approximately 57 minutes. With consent, interviews were recorded, transcribed, checked against the recordings, de-identified, and assigned participant identifiers.

All participants were asked the same 12 core questions in the same general sequence. Flexible probes were used to request clarification, examples, or developmental and contextual detail, consistent with semi-structured qualitative interviewing. The questions addressed classroom practices, trauma understanding, Montessori alignment, adaptation, safety and trust, professional learning, school supports, a classroom scenario, the six SAMHSA principles, and recommendations for teacher education. Table 2 presents the exact core questions.

Data Analysis

Data were analyzed through hybrid thematic analysis that combined deductive and inductive coding (Fereday & Muir-Cochrane, 2006; Saldaña, 2021). Trauma-informed deductive codes reflected SAMHSA's six principles and related educational constructs. Montessori deductive codes included the Prepared Environment, freedom within limits, observation, Practical Life, Sensorial materials, mixed-age community, respect for the child, and teacher as guide. Inductive codes captured participant language and emergent patterns such as adult preparation, dignity preservation, adaptation, relational repair, contextual strain, family partnership, and system-level barriers. Dedoose, a qualitative research tool, was used to organize and compare the data.

Theme development was recursive and involved movement among coded excerpts, full transcripts, analytic memos, cross-participant patterns, and the study's research questions. For this article, quotations were reread in full transcript context and compared with supporting and contrasting accounts. Excerpts were retained only when their wording supported the stated claim. The four findings presented below condense

the broader five-theme analysis without changing participant meaning: adult preparation; observation; dignity-preserving response; and adult practice within an interdependent Montessori system.

Trustworthiness and Ethics

Trustworthiness was supported through maximum variation sampling, two stages of member review, analytic memoing, reflexive journaling, documentation of coding decisions, and a detailed audit trail (Lincoln & Guba, 1985). Participants first reviewed their interview transcripts for accuracy and later reviewed participant-specific thematic summaries so they could confirm, clarify, or expand the researcher's interpretation. The researcher also used memos and reflexive entries to identify moments when professional agreement with Montessori language could carry too much interpretive weight.

The study received institutional review board approval before recruitment. Participation was voluntary, and participants received informed consent information before data collection. Confidentiality was protected through de-identification, participant identifiers, removal of identifying details, and secure storage. Because the study examined educator perspectives rather than children directly, no child trauma histories or clinical records were collected.

Findings

Four findings organize the analysis: Finding 1 describes adult preparation as ongoing professional and inner work. Finding 2 presents observation as the basis for responsive judgment. Finding 3 examines dignity-preserving response in moments of struggle. Finding 4 locates adult practice within an interdependent Montessori system of environment, materials, child agency, peer community, and school conditions. These findings are separated for clarity, although participants often described them as closely connected.

Finding 1: Adult Preparation as Ongoing Professional and Inner Work

Participants described adult preparation as layered, uneven, and continuing across time. Ten participants (PA01, PA03, PA04, PA05, PA07, PA09, PA10, PA12, PA13, PA14) contributed directly to this pattern. Formal preparation included Montessori training and organized learning about trauma, while informal preparation included reading, collegial support, relationships with families, prior work, lived experience, classroom experience, and reflection. Several participants were explicit that their Montessori credential had not included substantial trauma-informed content.

Trauma-related learning sometimes changed how educators interpreted what they were already seeing. PA12, an American Montessori Society (AMS)-credentialed Primary educator with 16 to 20 years of experience, connected knowledge with compassion and reconsideration of classroom expectations:

> I think that understanding the trauma and the potential impacts of trauma, if nothing else, allowed me to be much more compassionate. I have this expectation of how the classroom should run and how I expect students to be responding. And it can be frustrating, especially early on when what I'm expecting does not happen. But understanding trauma, the impacts, and how it might outwardly be manifested gave me a whole lot of compassion and understanding and opened up a lot of space that I may not have previously had.

PA12's account shows how trauma-related knowledge changed the educator's interpretation of unmet expectations and widened the space available for compassion. Similar shifts appeared across participants. PA04, an Association Montessori Internationale (AMI)-credentialed Primary and Elementary educator with more than 20 years of teaching experience, described trauma language as "a different lens." PA13, an AMI-credentialed Primary educator with more than 20 years of teaching experience, connected trauma with learning readiness, emotional regulation, and impulse control. PA14, an AMS-credentialed Elementary educator with 11 to 15 years of experience, described barriers to openness and receiving information. Together, these accounts show how additional knowledge could alter educators' interpretation of what they observed without treating behavior alone as proof of trauma.

Preparation also developed through reflection. PA04 said her understanding had "changed for me over time as I've had more and more years of experience." PA01, an AMS-credentialed Primary educator with one to five years of teaching experience, described revisiting difficult situations by asking, "Was there anything I could have done better?" and then seeking additional information. These accounts presented reflection as active professional learning rather than self-blame.

Participants also described the inner work of remaining available to children. PA03, an AMI-

credentialed Primary educator with six to 10 years of experience, emphasized "the importance of the prepared adult" who supports children during difficulty by demonstrating "kindness, tolerance, grace" and being available to "lend peace when they're not feeling it for themselves." PA04 connected adult self-care with being present for children, while PA05, an AMI-credentialed Elementary educator with more than 20 years of teaching experience, emphasized educators' need for recovery and support. Together, the accounts portrayed the prepared adult as developing rather than flawless. Adult steadiness was a professional capacity cultivated through knowledge, experience, reflection, collegial support, and sustainable working conditions.

Finding 2: Observation as the Basis for Responsive Judgment

Observation was the clearest Montessori practice participants (PA01, PA04, PA06, PA07, PA10, PA13, PA14) connected with responsive judgment. Participants described observation as purposeful noticing that informed decisions about when to present, wait, reduce demand, support, redirect, or intervene more directly. They did not describe behavior as proof of trauma. Instead, observation created a basis for cautious educational interpretation. PA13 described the concrete patterns adults might track:

> I think so much of it goes back to observation. Because behavior is communication. So, what we observe in our students communicates to us whether they are regulated or not. Is a child able to come in and get started in the day? Is a child fixated on food? Is a child distracted? All of these different things that we noticed and track over time.

PA13's account frames behavior as observable information to be tracked over time rather than as evidence of a single hidden cause. Participants named changes in beginning work, attention, food preoccupation, social interest, quietness, retreat, and proximity to adults as information worth noticing. These observations could prompt further inquiry or adjustment, but they could not confirm a trauma history.

PA14 placed the same practice within both frameworks, explaining that Montessori philosophy and pedagogy are "based on observation" and on "meeting the child where they are." The participant added that trauma-informed practice required adults to "listen and watch the child" and attend to comfort, facial expression, and body language. PA04 described retrospective observation by returning to "what happened right before" rather than becoming "wrapped up" in reacting only to the visible behavior.

Across these accounts, observation was both immediate and cumulative. It included noticing the child, the environment, transitions, expectations, relationships, and the adult's own contribution to the moment. Observation did not remove the need for limits or action. It supported more deliberate choices about timing, demand, proximity, space, and the next accessible step.

Finding 3: Dignity-Preserving Response in Moments of Struggle

Participants (PA01, PA02, PA03, PA04, PA05, PA07, PA09, PA11, PA13, PA14) described trauma-informed response as holding safety and boundaries while attending to present capacity, dignity, and continued participation. Three connected patterns were especially visible: regulation support before correction, flexible but dependable limits, and repair that preserved belonging. PA14 described how an adult might respond when a child refused work:

> I would say, I am here to help you. And if you would like to engage in work, I'm here to facilitate that with you and work with you. But nothing is as important right now as where you are and what you need. So, if you need to sit here today and take a moment, that's fine. And we can work on it tomorrow.

The educational expectation remained visible, but it was delayed until the child could access it. Other participants described similar sequencing. PA04 framed a boundary as "firm and kind at the same time," telling a child that screaming was understandable but that the classroom was not the appropriate place. PA13 described temporarily reducing expectations while maintaining safety for the child, other people, and materials.

PA05 offered a detailed example of calm proximity. The educator described crawling under a table and asking, "What's going on and how are you doing?" The child could remain there, and the adult identified another place that might feel more comfortable, adding, "When you're ready, you can go there." Importantly, PA05 did not claim certainty about trauma: "It might have been, and it might not have been." The participant knew only that the child could not regulate in that moment. The example therefore supports responsive presence and uncertainty, not retrospective diagnosis.

Dependable boundaries were part of dignity-preserving response. PA04 explained that children needed to know that adult reactions would be predictable and that they could rely on established boundaries: "Then they can relax once they know all of that is going to be true." Participants described flexibility in pace, task, space, movement, response mode, and entry point, but they did not equate flexibility with the absence of structure.

Dignity involved separating the behavior from the child's worth. PA05 described helping children understand that "their behavior in the moment is separate from their being as a human being." A choice could be unsafe or harmful, while the child remained capable of a different choice and retained a place in the community. The same participant described abandoning an immediate work expectation when forcing compliance would likely create a power struggle, additional pain, or the experience of not being seen or heard.

Repair was described as a community practice rather than a forced adult–child script. PA13 explained that children were not required to say "I'm sorry" or accept an apology with "that's okay." Instead, the class discussed how to repair harm so the injured person felt "genuinely heard," including language such as "What do you need?" and "Can I help you?" PA02, an AMI-credentialed Elementary educator with one to five years of teaching experience, described a weekly routine for compliments, thank-yous, and apologies that became "a pretty restorative thing for everyone." In these accounts, adults taught and protected conditions for repair, while children participated in rebuilding peer connection.

Finding 4: Prepared Adult Practice Within an Interdependent Montessori System

Participants (PA01, PA04, PA05, PA07, PA08, PA09, PA10, PA11, PA12, PA13, PA14) linked adult practice with the Prepared Environment, Practical Life and Sensorial activity, purposeful movement, choice, routine, mixed-age community, peer support, and school conditions. Their accounts described support as distributed across classroom life, with the relative contribution of adults, materials, environment, peers, and child agency changing across activities and moments.

The Prepared Environment was described as a stabilizing and accessible place. PA01 called the Children's House the children's "home" and "their place," where they needed "to be safe," "heard," and "seen." PA04 connected child-sized design with a sense of safety. PA13 described outdoor work, gardening, heavy work, and purposeful activity as meaningful bodily options for children who were struggling. Participants therefore located support in environmental design and in the work itself, not only in adult interpretation.

Participants also emphasized direct child choice and independent use of familiar options. PA05 explained that a child who needed a different place, posture, or way to regulate did not need "special permission" in a Montessori class: "You just go take care of yourself the way you need." The participant also described the adult's earlier role in presenting those choices and making them reliably available. Across accounts, children sometimes used familiar work, movement, routines, and community practices without requesting a new adult intervention, while prior preparation, presentation, maintenance, and protection remained part of the classroom system. PA12 connected this independent activity with Montessori lessons and community:

> One thing that comes to mind is the Silence Game and supporting exercises. While the direct aim of the Silence Game is to experience quiet, there are so many ways that that can help support regulation. I mean, gosh, so many of the lessons particularly support children experiencing stress or trauma. I think just the mixed-age classroom, where the expectation is that they are in community and supporting each other and not relying on adults for feedback on whether or not they are successful, is very important.

PA12's account connects regulation, Montessori lessons, and community. Participants also described children choosing and repeating work, using routine, learning from peers, taking leadership, and contributing to community. PA13 described older children supporting younger children and becoming more capable through that role. PA14 described student expertise and classroom meetings as forms of empowerment. These examples locate children as active participants in the classroom system rather than passive recipients of adult response.

The system also placed limits on what any one adult or classroom could sustain. PA01 said, "Number of adults in the room is a big one." PA13 noted that taking one child out of the environment could put the classroom out of ratio and described the absence of a specialized space. Participants also identified family communication, access to outside support, leadership, time, and the intensity of children's needs as conditions shaping implementation. In one account, PA10, an AMI-credentialed Elementary educator with six to 10 years of teaching experience,

cautioned that in a moment of severe distress, familiar materials such as clay or sewing might not be accessible.

Across these accounts, participants described an interdependent system. Materials, routines, purposeful activity, child choice, and peer community could support children directly and independently. Adults prepared, presented, modeled, observed, protected, and adapted. School and family conditions influenced what remained possible. No single element was sufficient in every moment, and the relative visibility of each element changed with the child, activity, and context.

Discussion

Prepared Adult Practice Within an Interdependent System

The four findings present prepared adult practice as relationally and pedagogically embedded. Adult preparation, observation-based judgment, and dignity-preserving response interacted with the Prepared Environment, materials, purposeful activity, routine, child choice, peer community, and school conditions. The contribution of the adult therefore appeared through both prior preparation and selective response within a classroom system that also supported direct child engagement and increasing independence.

A child may select a familiar Practical Life or Sensorial activity, repeat it, and become more settled without a new adult intervention in that moment. Participant accounts support this form of independent engagement. They also describe prior work through which adults prepared and maintained the environment, presented possibilities, modeled social practices, established dependable limits, and observed whether children could safely and purposefully use those possibilities. When ordinary access was disrupted by withdrawal, conflict, unsafe behavior, or overwhelm, adult observation and adaptation became more visible. Independent engagement and adult preparation therefore functioned as complementary parts of Montessori practice rather than as opposing explanations.

This interdependent interpretation is consistent with Phillips et al.'s (2022) argument that psychological healing in the early Montessori schools was woven through materials, educational approaches, teachers, and the whole environment, as well as with their emphasis on children's selection and repetition of activity. It is also consistent with Phillips's (2026) account of repetitive activity within a relationally rich environment involving a nontraditional teacher, mixed ages, and peer teaching. These sources address historical and theoretical questions about Montessori education's trauma-related potential. The present study addresses a different contemporary question: How do credentialed educators understand and enact trauma-informed practice in their Montessori settings?

Phillips et al.'s (2025) program evaluation adds a different form of evidence. Participants in that single-school study reported increased trauma knowledge, as well as changes in beliefs and professional practice, after explicit learning. The current findings extend that professional-learning conversation across a more varied Montessori sample. Educators described formal preparation as uneven, but they consistently identified knowledge, reflection, observation, and school support as relevant to their judgment.

Theoretical Interpretation

The theoretical framework helps explain why the findings are interdependent. SAMHSA's (2014) principles operate across relationships, environments, community, and organizational practice. The Sense of Safety Theoretical Framework similarly locates safety across environment, social climate, relationships, body, inner experience, identity, and meaning (Lynch et al., 2025). Participants' descriptions of child-sized spaces, predictable routines, purposeful movement, steady adult reactions, belonging, and repair can therefore be understood as different dimensions of a broader safety ecology.

A sociocultural perspective adds an organizational level to this interpretation. Trauma-informed practice is shaped by environments, communities, agency, consultation, supervision, and organizational resources (Center for Substance Abuse Treatment, 2014). Finding 4 reflects this level of analysis through staffing, ratios, family partnership, leadership, and access to specialized support. Adult steadiness and reflection remain professional capacities, while the conditions around educators influence whether those capacities can be sustained in daily practice.

The framework also clarifies the role of observation. Participants used observation to notice patterns and make educational decisions, not to establish trauma diagnoses. Trauma-informed interpretation requires curiosity and restraint. Behavior could suggest that access, safety, demand, relationship, or timing may need reconsideration while the cause remains uncertain. This

distinction supports dignity by allowing educators to respond thoughtfully without reducing the child to either a behavior label or an assumed trauma history.

Implications for Montessori Teacher Education and School Support

The findings point to concrete responsibilities and actions for moving this work forward. Montessori teacher education programs can integrate trauma-informed preparation into existing study of observation, the Prepared Environment, freedom within limits, Practical Life, Sensorial work, Grace and Courtesy, and spiritual preparation of the adult. Candidate learning can include distinctions among adversity, trauma, and behavior; observation without diagnosis; adult self-regulation; regulation support before correction; predictable and non-humiliating limits; repair after harm; and professional boundaries for consultation or referral.

Case-based preparation can make these ideas concrete. Adult learners can examine when children can use familiar materials, movement, routine, and peer community independently; when a presentation or environmental change may restore access; and when a child's distress or safety needs require direct adult support. They can practice describing observations separately from assumptions, choosing language that protects dignity, and preserving Montessori purpose while adjusting pace, space, demand, or entry point. Professional learning should keep the educator's role clearly educational, with established pathways for consultation and referral when clinical assessment or treatment is needed.

Maria Montessori's White Cross proposal offers a historically relevant foundation for this work. Montessori called for interdisciplinary study of affected children, scientific knowledge for educators, observation of psychological phenomena, and special educational preparation for teacher-nurses (Montessori, 1917/2013; Phillips et al., 2022). The proposal did not isolate the teacher from the Montessori Method. It joined preparation of adults with observation, education, environments, and practices available to children. Contemporary teacher education can honor that interdisciplinary intention while maintaining clear educational and clinical boundaries.

School leaders and training organizations also carry responsibility. Participants' accounts point to shared language, realistic staffing and ratios, time for collaborative reflection, family partnership, access to consultation, and coordinated plans when needs exceed one adult or classroom. Implementation research similarly shows that positive intention does not ensure sustained practice when organizational conditions are weak (L'Estrange & Bentley, 2025). Trauma-informed Montessori practice is most sustainable when prepared adults work within prepared systems.

Limitations and Future Research

The study used a small, nonrandom, intentionally varied sample of 14 credentialed Montessori educators. Findings are not statistically generalizable. Participants differed substantially in formal trauma-related training and familiarity. That variation was intentional and means the findings represent educator perspectives formed through various learning pathways rather than a group with one shared level of trauma specialization. Data were self-reported and may reflect memory, interpretation, or social desirability. Several participants held administrative or teacher-education roles at the time of the study, although all drew on Montessori classroom experience.

The study did not include direct classroom observation, children's or families' perspectives, physiological measures, clinical assessment, or child outcomes. It therefore cannot determine whether any reported response, material, activity, or environmental feature produced regulation, learning, recovery, or psychological healing. Historical eyewitness accounts provide detailed descriptions of early Montessori practice, but they answer different questions and require their own methodological appraisal.

Future studies might examine contemporary classroom interaction directly, including moments when children independently select and repeat familiar activity and moments when adult support changes access or participation. Research should include children, families, assistants, school leaders, teacher educators, and mental health consultants; compare Montessori levels and settings; and evaluate teacher-education approaches. Such work can examine how the contributions of adult preparation, environment, materials, child agency, community, and system support vary across children, activities, and contexts.

Conclusion

This study contributes a focused empirical account of prepared adult practice in trauma-informed Montessori

education. Educators described adult preparation as ongoing professional and inner work, observation as a basis for responsive judgment, and dignity-preserving response through regulation support, dependable limits, adaptation, and repair. They also described materials, purposeful activity, routine, child agency, mixed-age community, and school conditions as active parts of the same classroom system.

Prepared adult practice took different forms within this system. Adult work could occur before independent activity through preparing, presenting, modeling, and protecting the conditions for participation. It could become more immediate when children could not access ordinary classroom activity safely or smoothly. The environment, materials, and community could also support children directly, while staffing, leadership, family partnership, and consultation shaped what educators could sustain.

For Montessori research, the contribution is a more precise account of adult preparation and response within an interdependent pedagogy. For teacher education, the findings point toward explicit trauma-informed knowledge, disciplined observation, reflective and dignity-preserving decision-making, purposeful use of Montessori environments and activity, and schoolwide support. These directions position trauma-informed Montessori education as educational work carried through coordinated adult preparation, Montessori environments and materials, child agency, community participation, and school support.

References

Anson, M. J. G. (2026). *Integrating trauma-informed practices in Montessori education: A qualitative exploratory study of educator experience* [Doctoral dissertation, University of Wisconsin–River Falls]. MINDS@UW. https://digital.library.wisc.edu/1793/97739

Blaustein, M. E., & Kinniburgh, K. M. (2010). *Treating traumatic stress in children and adolescents: How to foster resilience through attachment, self-regulation, and competency*. Guilford Press.

Brunzell, T., Stokes, H., & Waters, L. (2016). Trauma-informed positive education: Using positive psychology to strengthen vulnerable students. *Contemporary School Psychology, 20*(1), 63–83. https://doi.org/10.1007/s40688-015-0070-x

Carello, J., & Butler, L. D. (2015). Practicing what we teach: Trauma-informed educational practice. *Journal of Teaching in Social Work, 35*(3), 262–278. https://doi.org/10.1080/08841233.2015.1030059

Center for Substance Abuse Treatment. (2014). *Trauma-informed care in behavioral health services* (Treatment Improvement Protocol Series No. 57). Substance Abuse and Mental Health Services Administration. https://www.ncbi.nlm.nih.gov/books/NBK207201/

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine, 14*(4), 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods, 5*(1), 80–92. https://doi.org/10.1177/160940690600500107

L'Estrange, L., & Bentley, L. (2025). Implementing trauma-informed education: Translating intentions into practice. *Journal of Trauma Studies in Education, 4*(2), 18–40. https://doi.org/10.70085/jtse.v4i2.120

Lewis, M. A. (2024). *A phenomenology of naturally embedded trauma-informed practices within public Montessori classroom environments* [Doctoral dissertation, Liberty University]. Liberty University Digital Commons. https://digitalcommons.liberty.edu/doctoral/5323/

Lillard, A. S. (2017). *Montessori: The science behind the genius* (3rd ed.). Oxford University Press.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.

Lynch, J. M., Stange, K. C., Dowrick, C., Getz, L., Meredith, P. J., Van Driel, M. L., Harris, M. G., Tillack, K., & Tapp, C. (2025). The sense of safety theoretical framework: A trauma-informed and healing-oriented approach for whole person care. *Frontiers in Psychology, 15*, Article 1441493. https://doi.org/10.3389/fpsyg.2024.1441493

Montessori, M. (1995). *The secret of childhood* (9th ed.). Orient Longman. (Original work published 1936)

Montessori, M. (2002). *The absorbent mind* (C. Claremont, Trans.; 12th ed.). Kalakshetra Press. (Original work published 1949)

Montessori, M. (2013). The White Cross. *AMI Journal, 1–2*, 37–41. (Original work published 1917)

Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). SAGE.

Phillips, B. (2026). Does the Montessori approach to healing trauma-affected children align with the Regulate, Relate, and Reason phase of the NME? A thematic analysis. *Journal of Child & Adolescent Trauma, 19*(1), 135–145. https://doi.org/10.1007/s40653-025-00790-2

Phillips, B., O'Toole, C., McGilloway, S., & Phillips, S. (2022). Montessori, the White Cross and trauma-informed practice: Lessons for contemporary education. *Journal of Montessori Research*, *8*(1), 13–28. https://doi.org/10.17161/jomr.v8i1.15767

Phillips, B., O'Toole, C., Phillips, S., & McGilloway, S. (2025). Assessing the perceived effectiveness of a Montessori-influenced trauma-informed practice (TIP) programme for contemporary early childhood teachers. *Irish Educational Studies*. Advance online publication. https://doi.org/10.1080/03323315.2025.2546962

Phillips, B., O'Toole, C., McGilloway, S., & Phillips, S. (2025). *Trauma-informed practice in Montessori classrooms: An essential guide for students and teachers*. Routledge. https://doi.org/10.4324/9781003438021

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE.

Substance Abuse and Mental Health Services Administration. (2014). *SAMHSA's concept of trauma and guidance for a trauma-informed approach* (HHS Publication No. SMA 14-4884). https://coresonline.org/sites/default/files/documents/samhsas_concept_of_trauma_and_guidance_for_a_trauma-informed_approach.pdf

Thomas, M. S., Crosby, S., & Vanderhaar, J. (2019). Trauma-informed practices in schools across two decades: An interdisciplinary review of research. *Review of Research in Education*, *43*(1), 422–452. https://doi.org/10.3102/0091732X18821123

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Stimulating and Developmentally Supportive Practices in Early Childhood Education: A Multiple-Case Study

Matej Slováček, Pavol Jozef Šafárik University in Košice
https://orcid.org/0009-0007-0802-9165

Keywords: *Montessori education, early childhood education, autonomy, executive functions, perceptual-motor development, learning environment, multiple-case study*

Abstract: This study explored possible associations between educational interventions implemented in an environment based on Montessori principles and select cognitive, perceptual-motor, and behavioral manifestations in early childhood. A multiple-case study design was employed, involving four children aged 5 to 6 years. Data collection included pretest and posttest assessment using Controlled Drawing Observation and the T–32 Drawing Copy Test, systematic observation, video recordings, and analysis of children's work products. In between assessments, the participants attended twelve educational intervention sessions designed according to Montessori principles. Findings indicated qualitative changes in attention to detail, organization of drawings, accuracy of reproducing visual models, and selected aspects of visuomotor coordination. Changes were also observed in autonomy, organization of work, use of error control, and reduced reliance on adult reassurance. Some participants continued to experience difficulties in processing more complex instructions. Given the exploratory nature of the study and the small sample size, the findings should not be interpreted as evidence of the effectiveness of Montessori education but rather as indications of possible relationships between educational environments, learning processes, and child development.

In this study, analysis is based on the assumption that not only the educational environment, but also the teacher's educational approach plays a significant role in the learning process (Imai, 2017; Montessori, 2012; Piaget & Inhelder, 2014). Previous research further suggests Montessori pedagogy can foster children's autonomy, concentration, active engagement in learning, and respect for individual development (Denervaud & Slováček, 2025). Therefore, Montessori pedagogy is conceptualized in this study as an educational approach through which learning processes and conditions that may support child development can be examined.

The article's theoretical framework is grounded in the assumption that language acquisition is part of broader cognitive processes and is dually shaped by biological and social factors (Fernández & Smith

Cairns, 2014; Slančová, 2018; Vužňáková, 2015, 2018a, 2018b, 2020a). Language is perceived not only as a communication tool, but also as a means of organizing thought and understanding the world (Vaňková, 2007; Vaňková et al., 2005; Vužňáková et al., 2025). Building on the theoretical framework of Vužňáková (2013), the article assumes an interconnected relationship between cognitive development and language acquisition. Language development, attention, working memory, categorization, executive functions, and perceptual-motor processes are therefore understood as mutually interconnected domains that contribute to organization of the learning process.

The main purpose of the study was to explore possible associations between educational interventions based on Montessori principles and changes in selected cognitive, executive, and perceptual-motor functions, as well as in behavioral manifestations related to work organization, concentration, and independence in preschool-aged children. Concurrently, the study aimed to identify characteristics of the educational environment that may support children's learning, concentration, and independence.

The research question focused on what changes in selected developmental areas could be observed in children after completing educational interventions implemented in an environment guided by Montessori principles—specifically in the domains of cognitive functioning, executive and perceptual-motor functions, and behavioral manifestations related to concentration, independence, and work organization.

The research was designed as an exploratory, qualitative inquiry, using a multiple-case study design. Rather than seeking to generalize the findings to a broader population, the study aimed to gain a deeper understanding of possible associations between educational environment, learning processes, and individual development in preschool children. Importantly, the study was not intended to advocate for a specific educational method, but rather to explore conditions and mechanisms that may support children's learning and development (Gaujard & Denervaud, 2023).

Method

Between 2024 and 2025, I conducted a multiple-case study involving four individual cases of preschool-aged children. The aim of the study was to explore possible changes associated with educational interventions based on Montessori principles. The interventions were designed so the children's work respected use of self-correcting didactic materials, which were developed on the basis of a pilot study carried out as part of broader research with a different group of children.

During preparation, I drew upon the possibilities of using self-correcting materials that stimulate language development and insights into Slovak language acquisition, freedom of choice of activity and uninterrupted work cycles (children were allowed to work according to their personal choice and at their own pace), independent work of children with available teacher support, and creation of individualized workspaces (as the the sole researcher–observer, I was also available to the children as a pedagogue and intervened as needed or upon the children's request). I as the teacher-administrator introduced the materials, and afterward the children engaged in independent work.

I understand these Montessori-based principles as components of an educational environment that can foster child autonomy, active learning, concentration, and respect for individual developmental needs. The Montessori principles created conditions enabling work at one's own pace, repetition of activities, self-correction, and sensory exploration through manipulation of didactic materials.

The research sample consisted of four children aged 5 to 6 years from a single kindergarten classroom in the second largest city in Slovakia (see Table 1). Participants were selected based on availability and recommendations from classroom teachers. Children whose legal guardians provided informed consent for participation in the research were included in the study. The study was conducted in accordance with ethical principles of educational research. I informed legal guardians about the study's objectives, course of interventions, data collection and processing procedures, and the voluntary nature of participation. Participant anonymity was preserved.

All children exhibited typical development and had no diagnosed developmental or health problems. They came from similar middle-class socioeconomic backgrounds in Slovakia. All attended the same kindergarten classroom, had the same teachers, and prior to entering the study, had experienced primarily a traditionally organized educational environment. Prior to the intervention, the educational environment corresponded to the standard, traditionally oriented model of preschool education in Slovakia. In this context, traditional education is understood as time-limited instruction within an age-homogeneous group of children—instruction is teacher-led, planned in

Table 1
Characteristics of Participants

Criterion	Child 1	Child 2	Child 3	Child 4
Average Age	6 years 2 months	6 years 2 months	5 years 11 months	5 years 7 months
Family Background	Second child (sibling aged 15 years), mother with secondary education	Second child (sibling aged 9 years), mother with Master's degree, father with secondary education	First child (sibling aged 2.5 years), both parents with Master's degrees	Second child (sibling aged 12.5 years), both parents with Master's degrees
Kindergarten Attendance	From 3 years of age	From 2 years of age	From 3 years of age	From 3.5 years of age

Note. Values represent the average age of children at pretest and posttest.

advance according to themes, and predominantly externally motivated.

The daily routine in the kindergarten includes organizational forms in which children typically engage simultaneously under the teacher's direction. These primarily involve health exercises and educational activities reflecting the national curriculum:

> Health exercise is carried out every day at a specific time.... It belongs to pre-planned activities.... Educational activities are activities related to the mediation of planned educational content.... They can be implemented as individual, group, or frontal activities of children (National Institute for Education, 2016, pp. 8–9).

Note that frontal, and occasionally group forms, predominated in the kindergarten where the research was conducted. The typical daily kindergarten schedule also includes children's self-selected games and activities, as well as outdoor time. During these periods, children have space for independent choice of toys and self-organization of play according to personal preferences; however, these still occur within time constraints determined by the teacher and daily schedule.

Before research implementation, the studied kindergarten did not possess specialized Montessori materials and had not implemented Montessori-inspired environmental organization. Likewise, teaching staff had not completed professional training or certified courses focused on Montessori pedagogy.

The study was designed as an exploratory qualitative inquiry, using a multiple-case study design. The goal was not to generalize findings to a broader population of young children, but rather to gain a deeper understanding of possible relationships between the nature of the educational environment, learning processes, and individual development in preschool children. This design allowed for more detailed observation of individual cases, children's working styles, and manifestations of learning in specific contexts.

Pretest assessments took place between September 2024 and November 2024, whereas posttest assessments were conducted from March 2025 to April 2025. Between these periods, the children participated in 12 intervention sessions held from December 2024 to March 2025.

Data collection procedures included direct and systematic observations of the children during testing and intervention sessions, video recordings of selected activities, use of standardized tools for individual testing of children, analysis of children's work products—particularly drawings created within the administered tests—and a demographic questionnaire (Miňová, 2023). Observational data and other available records were gathered in relation to the study's objectives and the monitored domains of learning and development.

Data obtained from pretest and posttest assessments were analyzed alongside video recordings, observational notes, and children's work products in relation to the study's objectives. The analysis was based on comparing data collected prior to and after completion of the interventions, as well as on qualitative interpretation of direct observations, video recordings, and children's performances captured in drawing products. The analysis involved tracking changes in task execution, behavioral manifestations, work organization, concentration, and other manifestations relevant to the study's objectives.

I independently carried out observation, test administration, and implementation of the interventions, simultaneously serving as researcher, observer, evaluator,

Table 2
Instructions for the Child: Controlled Drawing Observation

#	Instructions for the Child
Introduction	*"We are going to draw some pictures. You will draw only what I tell you."*
1.	Draw a ball in the middle of the paper.
2.	Draw a line from the ball to one of the corners of the paper.
3.	Draw lines from the ball to the other corners of the paper.
4.	Count how many sections (boxes) you have on your paper.
5.	Draw a line from the ball to the side of the paper.
6.	Draw the remaining lines from the ball to the other sides of the paper.
7.	Let's count again how many sections/boxes we have.
8.	Pick a box/section to start drawing in. Draw three lines that are not the same length.
9.	Draw three triangles so that the middle one is the smallest.
10.	Draw four circles so that two of them are the same size. Now place an X inside the circles that are the same size.
11.	Now draw four squares in a row next to each other so that the last one is the largest, and mark it with an X.
Transition	*"Alright, we are done with lines, triangles, and circles now, and we'll start drawing something completely different."*
12.	Draw a tree—an apple tree with three apples on it and five apples on the ground under the tree.
13.	Put your pencil down now and listen carefully. Draw a house with a door, three windows, and a pointed roof. Draw a chimney with smoke on the roof. Next to the house is a tree, and above the tree is the sun.
14.	Draw a human figure.
15.	Draw a cat (it can also be a dog).

and intervention facilitator. This multiplied role of the researcher represents one limitation of the study, as direct involvement in implementing the interventions could have influenced the observation process and data interpretation. However, in qualitative research, the researcher is not entirely detached from the research process, but is an integral part of it, and their position may influence both data collection and interpretation. Therefore, during research implementation and data analysis, I strove for the most systematic and transparent approach possible, primarily through triangulation of multiple data sources, including direct observations, video recordings, individual testing results, and children's work products.

Individual testing methods included Controlled Drawing Observation and the T–32 Drawing Copy Test. Both instruments are standardized diagnostic tools.

Controlled Drawing Observation (see Table 2), developed by Krogh, is designed to assess school readiness. In Slovakia, the test was adapted by Gajdošová and Herényiová (1996). The instrument provides information on working speed, work style, motor coordination, visual abilities, memory functioning, verbal comprehension of concepts, mathematical understanding, and overall developmental level. For the test, the child is given a blank sheet of white A3 paper and a pencil. The administrator provides instructions according to the manual, and the child completes the tasks by drawing. For the purposes of this study, the test was administered individually to each student. During evaluation, I monitored performance on the worksheet (final product) as well as the children's behavioral manifestations during testing (task completion, concentration, motor calm/restlessness). Results were interpreted qualitatively, with particular emphasis on changes between pretest and posttest evaluations.

The T–32 Drawing Copy Test is used to assess neurological functioning in children, particularly in relation to perceptual-motor difficulties and potential mild cognitive deficits. The test provides information on motor functioning, visual perception, and visuomotor coordination. The instrument, developed by Matějček and Vágnerová (1992), was administered individually and evaluated according to the manual. For this test, the administrator presents the child with 12 A5-format cards featuring various geometric and graphic models one by one. The child's task is to copy each presented model onto paper. In this study, all models were administered and evaluated. In the following text, I present primarily those models in which qualitative changes were recorded

between the pretest and posttest evaluations. Models that did not show any significant qualitative change are not discussed.

Procedure

To facilitate interpretation of findings, I briefly describe activities implemented during the intervention sessions. These observations were part of a broader research project aimed at exploring possibilities of supporting language development through Montessori principles and educational approaches that respect children's developmental needs.

Prior to commencement of the interventions, the children completed a pretest evaluation, and information regarding their developmental and behavioral characteristics was collected. Data collection included Controlled Drawing Observation, the T–32 Drawing Copy Test, speech and language assessment using verbal-visual and verbal-manipulative instruments, teachers' and parents' or legal guardians' evaluations of children's behavioral manifestations, a demographic questionnaire, and direct observation of the children.

Subsequently, the children participated in a 12-session 60-minute intervention protocol conducted in the kindergarten classroom. The interventions were carried out with four children aged 5–6 years. The first six sessions (December 2024–January 2025) focused on becoming familiar with the letters of the Slovak alphabet, and developing initial reading and writing skills. The children worked primarily with Sandpaper Letters, the Movable Alphabet, three-part cards, and activities aimed at identifying initial sounds. Partial mastery of the alphabet established a prerequisite for subsequent work with original didactic materials.

The following six sessions (February 2025–March 2025) were dedicated to working with four original didactic materials developed according to Montessori principles. The materials were created based on data obtained during the pilot phase, principles of Montessori didactic materials, and research findings on child speech and language development (Drozdová, 2020a, 2020b; Liptáková & Vužňáková, 2009; Vužňáková, 2020a, 2020b), as well as insights from cognitive linguistics (Pacovská et al., 2021; Vužňáková, 2015). During the interventions, the children worked with didactic materials designed in accordance with Montessori principles and developmental linguistics insights related to the Slovak language. The materials focused on developing letter recognition, reading, and writing (Slováček & Miňová, 2017), as well as acquiring selected linguistic and communicative phenomena specific to the Slovak language. The activities were intentionally restricted to the domain of language and communication. Work with language materials and speech stimulation in this research served primarily as a content framework for the educational interventions, creating a context in which learning processes and selected manifestations of child development could be observed. The interventions focused primarily on the following:

- diminutives and naming animal offspring
- vocabulary development and lexical categorization
- adjective degree comparison
- understanding prefix meanings and using prefixed verbs

During the educational interventions, the children worked with four original didactic materials designed in accordance with the principles of Montessori (1948): isolation of difficulty, control of error, aesthetics, activity, and limits. In terms of construction, the materials consisted of a system of base frames (templates) and specially shaped inset boards of various sizes and profiles that respected developmental peculiarities of child perception (e.g., differentiating between the meanings of "small" and "young" via board dimensions, or differentiating categorization levels through element shapes). In accordance with Montessori pedagogy, the administrator introduced each material modally. In subsequent sessions, the children worked completely independently and freely according to their personal choices. The actual work with the materials took place through structured placement, comparison, and categorization of visual picture and text stimuli, with children having the opportunity for autonomous self-correction using color-coded dots on the backs of the boards. Findings presented in this study are part of a broader research project focused on language acquisition in preschool age (Slováček, 2025).

Sessions generally followed a two-phase structure: (1) The initial 15 minutes were dedicated to presenting new material, with the administrator demonstrating its use and introducing relevant linguistic phenomena. (2) The following 45 minutes allowed children to work independently with available materials of their choice and at their own pace. While working, they selected, carried, inserted, matched, and paired materials, primarily engaging vision, touch, and movement. They worked in individualized workspaces and could repeatedly return to specific activities. In addition to the newly presented

material, selected materials from previous sessions were also available, with the selection being updated periodically. Two sessions were conducted without presentation of new material, focusing on repetition and independent work with already familiar materials. Given the principle of free choice, the amount of work completed with individual materials was not identical for all children.

It is important to emphasize that tasks required in Controlled Drawing Observation and the T–32 Drawing Copy Test were not explicitly practiced during the interventions. Interventions therefore did not target elements such as following instructions, drawing, paper-and-pencil tasks, quantitative understanding, or other activities typically associated with standardized testing situations. The children's performance on these tests was thus not a direct result of practicing specific test-related tasks.

Following completion of the interventions, the children were reevaluated using the same instruments as at the beginning of the study. During the posttest evaluation of Controlled Drawing Observation and the T–32 Drawing Copy Test, qualitative changes in children's performance were monitored in comparison to the pretest evaluation. Interpretation of these changes was also grounded in observations of the children during testing and intervention sessions. Special attention was paid to task execution style, work organization, concentration, independence, responses to instructions, and other behavioral manifestations relevant to the study's objectives.

This structured procedure makes it possible to distinguish the content of the language interventions from the domains monitored through subsequent testing. Changes recorded in the tests are therefore interpreted as exploratory findings within individual cases, rather than unambiguous proof of effectiveness of interventions or of Montessori pedagogy.

Results

As noted in the preceding section, certain changes in performance and execution of administered tasks were recorded in all four participants over the course of the monitored period, although their nature and extent varied among individual participants. Given the qualitative nature of the study and its small sample size, I interpret these changes as individually observed manifestations rather than evidence of a causal effect of the interventions. Alongside changes in performance on test tasks, I also observed changes in independence, concentration, work organization, and the way participants approached errors and task completion.

Controlled Drawing Observation

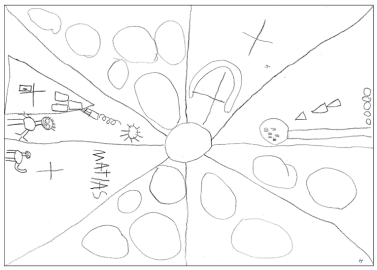
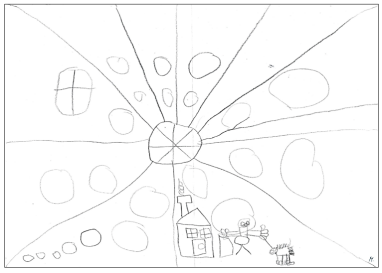
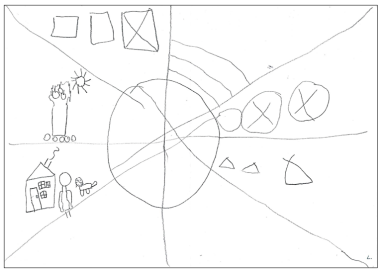
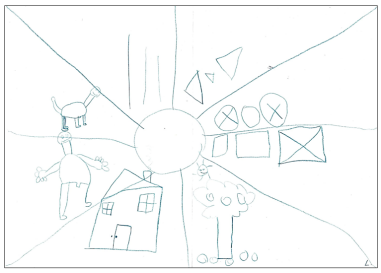
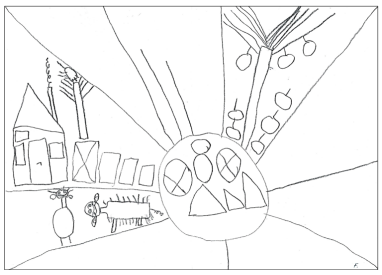
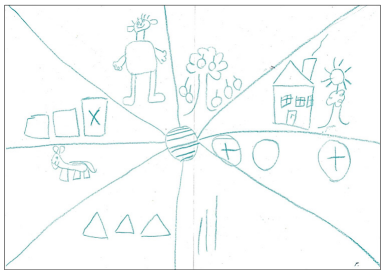
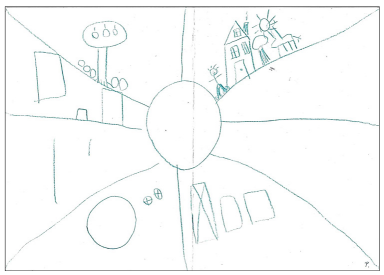
In the analysis of performance on Controlled Drawing Observation (see Table 3), I focused primarily on understanding and carrying out instructions, spatial orientation, perception and differentiation of details, numerical and geometric concepts, drawing organization, and behavioral manifestations during testing.

For Participant 1, an active and calm manner of working was observed during initial and final diagnostics. During the initial assessment, however, the participant repeatedly sought reassurance from the administrator, whereas during the final assessment, this need did not manifest as the participant worked independently. In both assessments, the participant demonstrated understanding of basic spatial concepts—such as center, corner, and side of the paper—as well as numerical concepts. The final assessment showed no definitive change in overall performance level; however, qualitative changes were observable in execution of certain drawing tasks and in the drawing process in general. Instruction was executed more precisely in drawing a house with a pointed roof and placing a ball in the center of the sheet. The drawings of a human figure and an animal exhibited more details, such as prominently drawn fingers and a more detailed depiction of the animal, including fur and the ends of limbs. Difficulties persisted in tasks requiring differentiation of geometric shapes, size relationships, or retaining longer instructions. These areas were not subject to specific practice during the interventions.

For Participant 2, an active, calm, and independent manner of working was observed during both diagnostic assessments, though initially with a tendency toward an overly rapid pace. The participant mastered discriminating the center, corners, and sides of the paper, knew basic geometric shapes, and was able to create groups with the requested number of elements. Difficulties arose mainly with longer instructions and tasks requiring simultaneous application of multiple criteria—such as quantity and size—limited by developing working memory. During the final assessment, higher-quality execution of certain tasks and greater attention to detail were observed. Direct observation of drawing and copying revealed a marked reduction in impulsivity, as Participant 2 slowed her working pace, focused more on the visual model, and centered her attention on detail. For instance, fingers appeared on the human figure, animal limbs were

Table 3

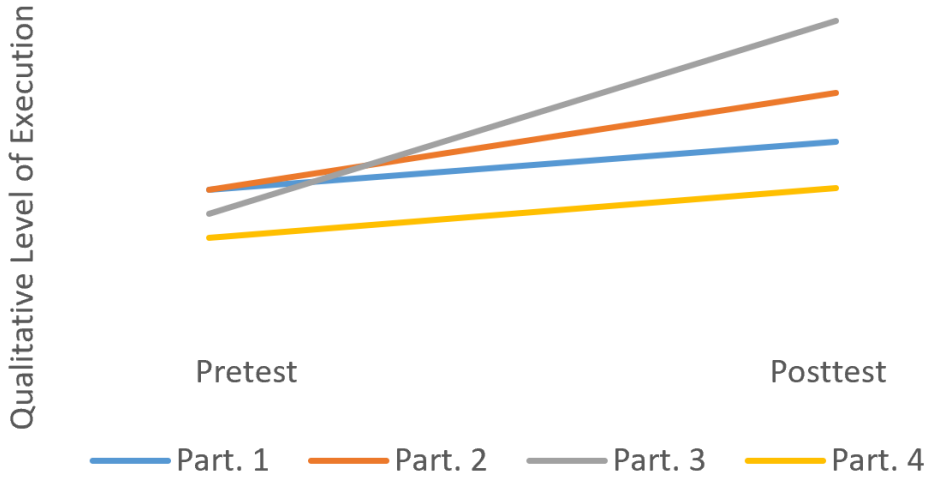
Controlled Drawing Observation

Participant	Pretest	Posttest
P1		
P2		
P3		
P4		

depicted in greater detail, and a chimney was added to the house. In the task requiring ordering of three triangles by size, the participant correctly placed the smallest triangle in the middle. However, difficulties in processing longer information containing multiple conditions continued to persist. In this case, the observed changes cannot be interpreted as a general improvement in understanding complex instructions.

For Participant 3, an active, calm, and independent manner of working was observed during the initial assessment. The participant mastered basic spatial and geometric concepts, numerical concepts, and most of the simpler drawing tasks. However, in some initial tasks, he was unable to fully observe all conditions of the assignment: hands and a visible torso were missing from the drawing of a human figure, required sizes were not correctly arranged in the square size task, and the participant failed to distribute individual subtest tasks into designated fields around the central ball. During the final assessment, a significant qualitative change

Figure 1.
Individual Trajectories of Change Between Pretest and Posttest



occurred. The test was executed in a more organized manner, and Participant 3 precisely partitioned individual assignments into separate spaces around the ball. A qualitative change was also observable in the detail execution—for example, placement and hatching and filling of the ball, house details (windows), and the drawing of animals. The drawing of a tree underwent an unequivocal transformation, acquiring the characteristic shape of a deciduous tree the participant had encountered in the intervention didactic material. In the task requiring arrangement of squares by size, the requirement was fulfilled more accurately in the final assessment (the last square was the largest). However, as with other participants, deviations occurred in adhering to the exact number of requested geometric shapes.

For Participant 4, an active, independent, and concentrated manner of working was observed during the initial assessment, accompanied by a strong tendency to verbally comment on everything. The participant mastered basic spatial concepts (drawing lines to corners and sides of the paper based on heard prepositions), numerical concepts, and size and geometric shape differentiation. The human figure drawing was simpler during the initial assessment. Following the interventions, a qualitative change was observed in overall execution of the test. Drawings appeared more refined, and the participant demonstrated a greater understanding of the required tasks. However, deviations in the exact number of requested geometric shapes continued to appear (drawing three elements instead of four). In the square arrangement task, a difference in the opposite direction was recorded: During the initial assessment the participant correctly marked the largest square last according to the instructions, but during the final assessment drew the largest square first. This case illustrates individual variability of performance and underscores the need to interpret with caution changes between individual measurements.

Across the individual cases, the most prominent qualitative change was observed in processing detail. Changes were noted in drawings of the human figure, animals, house, tree, ball, and other elements. However, difficulties with longer or multilevel instructions, and with precisely capturing the required number of elements, persisted in some participants. The observed changes therefore did not represent a uniform shift across all monitored areas.

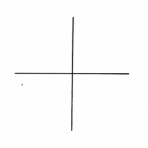
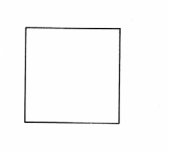
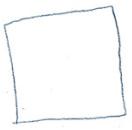
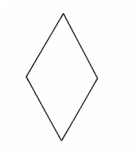
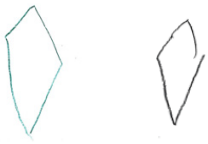
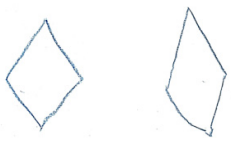
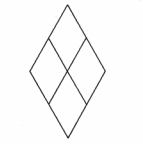
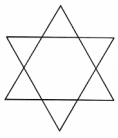
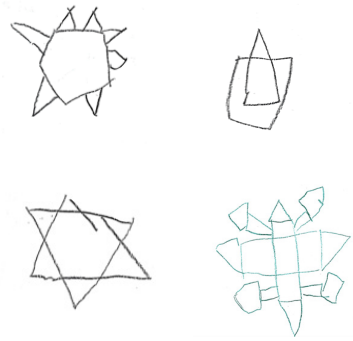
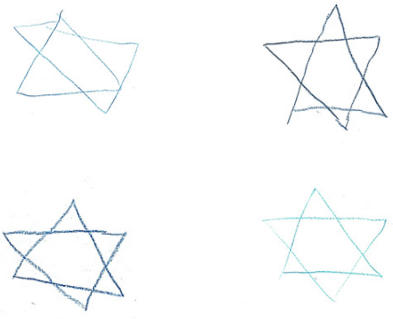
T–32 Drawing Copy Test

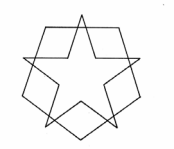
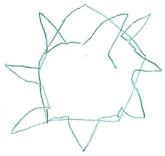
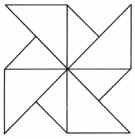
In the T–32 Drawing Copy Test, I focused primarily on the accuracy of copying the model, capturing its individual elements, spatial organization, visuomotor coordination, and the qualitative level of the drawings. Graphical representations are used to present the direction and nature of individual change between the pretest and posttest (see Figure 1). Individual lines represent developmental trajectories of individual participants. This form of representation makes it possible to track individual progress while simultaneously highlighting differences in developmental trajectories among participants.

Overall performance metrics and progress across assessment stages are detailed in Table 4. For Participant

Table 4.

T–32 Drawing Copy Test

Target Image	Pretest	Posttest
		
		
		
		
		

Target Image	Pretest	Posttest
	 	 
		

1, qualitative changes were manifested primarily in more complex shapes, such as the six-pointed star and the pinwheel, which were reproduced more accurately and with a greater number of captured details during the final assessment.

For Participant 2, changes were observable even in simpler items, such as the cross, in which the arms were approximately equal in length during the final assessment. In other items, a change in the quality of reproduction was evident, with a more pronounced difference observed in the six-pointed star and the five-pointed star in a pentagon. These drawings were more detailed during the final assessment and appeared graphically more refined compared to the initial assessment, reflecting the ability to slow down impulsive movements and focus on the visual model.

For Participant 3, qualitative changes were more pronounced in the rhombus, the rhombus with a cross, the six-pointed star, and the five-pointed star in a pentagon. The final drawings exhibited a more precise capture of the visual model, better representation of its individual parts, self-correction of lines, joining of angles, and a more detailed graphical execution.

For Participant 4, changes were observed in the square, rhombus, and six-pointed star, which were reproduced with greater precision and detail during the final assessment.

The qualitative analysis of the T–32 Drawing Copy Test thus suggests that changes did not appear uniformly across all items, but were most prominent in more complex figures requiring capture of multiple interrelated elements. Across cases, greater accuracy, detail, and organization of reproduction appeared repeatedly in final assessments. Given the nature of the research, however, I interpret these observations as individual qualitative changes rather than evidence of a general improvement in visuomotor skills.

Observed changes in processing detail were also interesting, given the nature of the intervention materials. Detail represented one component of working with language material, such as in lexical categorization, prefixed verbs, naming young animals, and forming diminutives. It is therefore possible to consider that systematic work with the materials created opportunities to pay attention to individual characteristics and differences between objects. However, given the study design, such an explanation cannot be considered a proven mechanism of observed changes.

Changes in Behavior, Independence, and Work Organization

Alongside results of the standardized assessments, changes in independence, work organization, the need for adult support, and the approach to error were observed during intervention sessions. Individual participants varied in these areas as well.

For Participant 1, the principle of error control and self-regulatory processes manifested very distinctly. During the fourth session, while working with prefixed verbs, the participant noticed an incorrect match after turning a card over, based on the control dot. Gradually, he internalized this method of checking to such an extent

that he even cautioned another child not to rely right away on the control dots, but to first think independently. When working with Sandpaper Letters, he independently identified a limitation of the material, noting that he could not spell all words using a single-set alphabet. Upon completing the task, he spontaneously expressed verbal satisfaction with his performance ("I am clever"). Over time, reduced need to seek contact with adults or other children was observed, and his activity assumed the integrated form of a structured work cycle: working with material → checking → returning material to its initial state → placing material back in its designated spot.

For Participant 2, a similar trajectory was observed regarding use of self-corrective material and development of internal autonomy. Early on in the interventions, when working with the alphabet, she used control markers directly during task completion. Following guidance, she transitioned to checking only after completing the work (initially using the picture). Gradually, she mastered fully independent verification of the results, and after finishing an activity, she spontaneously expressed quiet satisfaction ("yes") and without prompting put the material away in its designated spot. She also fully mastered working on the rug as her dedicated workspace. Her legal guardian's observations pointed to longer task persistence, improved ability to complete initiated tasks, and greater independence during play and activities without adult supervision.

For Participant 3, a recurring need for adult reassurance and questions regarding correctness of the activity being performed ("Am I doing it right?"), along with a frequent need for praise, were observed early on in the interventions. Over the course of the interventions, this pattern of work changed substantially: The participant began to fully utilize available self-corrective mechanisms of the materials, independently identified incorrect solutions, and made corrections autonomously without requiring external validation from an adult. Toward the end of the course of interventions, he worked independently, and his work followed the same structured work scheme as that of Participant 1: working with material → checking → returning material to its initial state → placing material back in its designated spot. Parents' and teachers' evaluations simultaneously pointed to a shift toward personal autonomy and reduced need to seek adult contact.

For Participant 4, independence during work and quick adaptation to working on the rug as a defined work area were evident from the start. However, a characteristic feature was frequent verbal commentary on the situation, increased interest in others, and strong verbal output that required guidance. Although the participant quickly mastered the principle of working on the rug and worked independently toward the end of the course of interventions, the ability to sustain attention and persist with a single activity remained less stable. Unlike the other participants, he did not fully internalize the principle of completing the entire work cycle—more frequently leaving work incomplete, putting the material away, and not resuming. Nevertheless, teachers' evaluations indicated shifts toward higher independence and reduced need for verbal reassurance during play or activity.

Thus, across cases, common yet not entirely uniform tendencies emerged in this area. The most prominent repeating patterns were gradual adoption of self-corrective materials, reduction in need for immediate adult reassurance, and internalization of the work cycle that consists of selecting material, working, checking, and subsequently returning the material. Ability to finish initiated activities, sustain attention, and adapt to work structures varied among participants.

The individual differences are significant, given the qualitative nature of the study. Observed changes cannot be separated from individual characteristics of the participants, their prior experiences, and the manner in which they responded to the prepared environment. Furthermore, based on these four cases, it is not possible to determine to what extent the observed changes were linked to the interventions and to what extent they may have been related to natural development, kindergarten experiences, or other factors outside the research interventions.

Overall, the results suggest potential qualitative changes across several monitored areas—most notably in detail processing, drawing organization, model reproduction accuracy, independence, use of error control, and work organization. However, given the small sample size, exploratory nature of the study, and inability to control for other developmental and environmental influences, these findings primarily represent avenues for further investigation.

Discussion

Findings of this study suggest the observed changes cannot be interpreted in isolation from the broader

context of child development. Children's individual characteristics, prior experiences, family and educational environments, as well as individual biological and developmental predispositions, enter into learning and developmental processes. The need to reflect on educational paradigms is therefore also related to findings from neuroscience and cognitive science, which highlight the importance of individual differences in learning and development processes.

In addition, the findings point to the potential significance of educational environments that support autonomy, concentration, and active learning. The extent and nature of the observed changes varied among individual participants, and the initial performance level alone did not determine the pattern of subsequent changes. Given the small research sample, however, these observations cannot be interpreted as evidence of the effect of the Montessori environment. Rather, they may suggest that an educational environment respecting individual pace and providing opportunities for repetition, self-correction, and working at one's own pace can create conditions under which diverse individual developmental trajectories may manifest.

These findings can be contextualized with the review study by Long et al. (2022), which suggests Montessori schools in the United States educating children aged 3 to 6 years enroll a slightly higher proportion of children with learning disabilities than do traditional schools. Given that Montessori pedagogy respects individual learning paces and does not focus primarily on uniform performance standards, it can be assumed that such an environment may create conditions suitable for children with diverse developmental needs. In this context, Afshan et al. (2022) reported changes in cognition, independence, self-care, and communication in children with intellectual disabilities educated in a Montessori environment compared to children educated through traditional approaches.

Similar findings are presented by Dogru (2015), who found that 5- to 6-year-old children with ADHD demonstrated greater changes in attention following an intervention in a Montessori environment than did children educated under traditional conditions. Dogru connects this difference to the nature of the didactic materials, which engage movement, sensory perception, and hand–eye coordination, as well as to work organization allowing for longer uninterrupted work periods.

During the interventions, children had access to only one instance of each didactic material, reflecting the organization of a Montessori environment. Such an arrangement can support behavioral regulation, delay of gratification, and planning of subsequent activities (Tiryaki et al., 2021). During situations in which a material was not immediately available, children spontaneously organized alternative activities or later returned to the material. These situations can be viewed as context in which certain components of executive functions—particularly planning, inhibition, working memory, and cognitive flexibility—could be exercised (Kovalčíková et al., 2015). Given the study design, however, it cannot be determined to what extent these manifestations were directly related to the interventions.

The observed changes in selected areas can also be interpreted in connection with systematic work focused on details, categorization, and precise processing of stimuli during the interventions. In Controlled Drawing Observation, for example, more detailed drawings of a human figure and an animal appeared in the posttest for some participants, including more clearly rendered fingers, limbs, fur details, or limb terminations. Additional elements also appeared, such as a chimney on the house. For some participants, a more precise execution of specific instructions was observable—for example, in the request to draw a house with a pointed roof, placing a ball in the center of the sheet, or organizing individual parts of the drawing in designated areas of the workspace.

However, these changes cannot be directly attributed to the implemented interventions, as drawing and the aforementioned test tasks were not subject to specific practice. One can only consider repeated work with materials requiring perception, discrimination, and processing of details created a context in which these manifestations could emerge. Such an interpretation therefore remains hypothetical.

The nature of the language materials, which were based on perceptually salient and prototypical phenomena, may also have played an important role (Bloom, 2015; Vužňáková, 2018a, 2018b, 2020a). Language is therefore not understood in isolation in this research, but as part of broader cognitive processes related to attention, categorization, working memory, and organization of experience. Work with language material and speech stimulation served primarily as a means to create educational situations in which learning processes and selected developmental manifestations could be observed.

I assume some of the observed changes in the T–32 Drawing Copy Test may have been related also to the

manner of working with didactic materials, particularly through practical manipulation, selecting, matching, inserting, and rearranging individual elements. In the posttest drawings, a more accurate reproduction of certain more complex shapes appeared across multiple participants, particularly of the six-pointed star, the five-pointed star in a pentagon, the rhombus, the rhombus with a cross, or the pinwheel. Drawings in these cases appeared more detailed, precise, and systematically organized. Such changes may point to a shift in mode of visual processing of the model and its graphomotor reproduction; however, their origins cannot be unequivocally determined given the nature of the research.

Similar findings are reported by Bhatia et al. (2015), who found 5-year-old children in a Montessori group demonstrated greater accuracy and speed, and more consistent hand dominance, after eight months of intervention compared to children in a traditional group. Further research suggests hand motor activity can support thinking, problem-solving, and working memory, especially when concurrent with cognitive activity (Vallée-Tourangeau et al., 2015).

Observations indicated that changes concerned not only the products of children's activities but also the manner of work and behavioral manifestations during interventions. For several participants, the need to repeatedly seek verbal reassurance from an adult—such as asking whether they were performing the task correctly—gradually decreased. The children progressively learned to utilize error control mechanisms built into the materials. In some participants, this process manifested in the ability to independently check their own work upon task completion, identify an error, and subsequently correct it without direct adult intervention.

A concrete example was the gradual adoption of the work cycle: working with material → checking → returning the material to its initial state → placing the material back in its designated spot. One participant understood the principle of error control at an earlier stage of the interventions than did the others and was later able to apply it independently. Another participant, who initially required repeated adult reassurance, gradually began using the material's control mechanisms as tools for subsequent self-checking. These individual differences show adaptation to the principles of independent work did not proceed at the same pace for all children.

The observations can be cautiously interpreted in relation to the principles of Montessori pedagogy, in which error is part of the learning process and error control can gradually shift evaluation of performance from external adult control to the child's self-evaluation. In this sample, spontaneous manifestations of greater confidence in one's performance and less need for ongoing reassurance emerged. However, such manifestations cannot be considered universal outcome of intervention, as the extent and mode of expression varied among individual participants.

Despite observed changes, some children continued to experience difficulties processing longer and more complex instructions. This phenomenon appeared primarily in tasks requiring simultaneous processing of multiple criteria—such as a specified number of geometric figures combined with their size or spatial arrangement. For example, participants were able to independently draw the requested number of triangles, circles, or squares; however, in combined instructions such as "draw three triangles so that the middle one is the smallest" or "draw four circles so that two of them are the same size," errors occurred in counting or in simultaneous application of all requested characteristics. Similarly, difficulties with retaining and subsequently executing longer instructions persisted in some participants.

The findings are also important because the aforementioned abilities were not explicit targets of the implemented interventions. Persisting difficulties support a cautious interpretation of the results and do not allow for claims of general improvement in cognitive functioning. Rather, they highlight the uneven nature of the observed changes, by which certain manifestations altered as others remained relatively stable or manifested ambiguously. This finding corresponds to the individual nature of cognitive development and language acquisition. Vužňáková (2018a) emphasized that individual innate predispositions influence the pace of development and the functioning of the central nervous system and cognition.

Similar individual variability was observable in the adaptation to work organization. My observations suggest that even children previously educated predominantly in traditionally organized educational environments were able to gradually adapt to certain principles of Montessori pedagogy. For several participants, more independent utilization of their workspace, longer task persistence, independent work verification, and internalization of the work cycle gradually emerged. However, one participant continued to exhibit difficulties sustaining attention on a single activity and completing every initiated task even at the conclusion of the course of interventions. This case highlights that simple exposure to a new

educational environment may not lead to the same mode of adaptation in all children, underscoring need for an individualized approach in education.

The pace and extent of adaptation likely depend on multiple factors, including prior experiences, duration of exposure to the given environment, intensity of educational practice, and children's individual characteristics. Observed differences among participants support the need to interpret educational interventions not as a uniform factor acting equally on all children, but within the context of each child's individual development.

Limitations of the Study

Several limitations of this research must be noted. A primary limitation is the temporal duration of the study and limited number of intervention sessions, which did not provide sufficient scope to evaluate the long-term trajectory of monitored manifestations. The sample selection was opportunistic, consisting of only four children from a single kindergarten classroom. Consequently, the sample was not representative of the broader population of preschool-aged children, and findings obtained cannot be generalized statistically or conceptually.

Another limitation stems from the fact that observation, test administration, and intervention implementation were conducted by a single researcher acting simultaneously as observer, assessor, and intervention facilitator. The multiple roles may have influenced the observation process and data interpretation, representing a potential source of interpretive bias. To mitigate this, I strove for maximum transparency and systematicity during analysis, primarily by triangulating multiple data sources—direct observations, video recordings, individual testing results, products of child activity, and available behavioral evaluations from parents and teachers.

I acknowledge the observed changes may have been partially influenced by children's natural maturation, their experiences in kindergarten, the family environment, or other factors outside the implemented interventions. Because the study was designed as an exploratory qualitative investigation using a multiple-case study approach, its objective was neither to isolate the effect of a single variable nor to demonstrate a causal relationship between the interventions and observed changes.

Therefore, I do not generalize the results to the wider population; rather, I view them as highlighting certain individual tendencies and potential connections between characteristics of the educational environment, learning processes, and selected manifestations of cognitive, perceptuomotor, and behavioral development in preschool age. Specific instances—such as more precise adherence to the instruction to draw a house with a pointed roof, better placement of the ball in the center of the sheet, more detailed depictions of the figure and animal, or more accurate reproduction of certain complex shapes—represent individual examples of observed changes that must be interpreted within the context of the overall case analysis. Similarly, the reduced need for ongoing adult reassurance, gradual adoption of error control, and more autonomous organization of the work cycle represent observed behavioral manifestations rather than evidence of a universal effect of the Montessori intervention.

Despite the limitations, the findings underscore the need for further investigation into the relationship between the nature of the educational environment and children's learning and developmental processes. Future research could track these phenomena across larger and more diverse samples, over longer time frames, and utilizing research designs that better distinguish natural developmental progression from intervention-related changes. Additionally, there is a clear need to more thoroughly examine the mechanisms through which specific features of an educational environment may relate to learning, autonomy, concentration, and other developmental manifestations in children. Further exploration of these phenomena is well justified, particularly in the context of ongoing educational reforms and growing insights into learning processes.

The results of this study point to specific individual changes and tendencies that can serve as foundational for future research into conditions supporting learning and development in preschool-aged children.

Conclusion

This study examined potential connections between an educational environment based on the principles of Montessori pedagogy and selected manifestations of cognitive, perceptuomotor, and behavioral development in preschool-aged children. Particular attention was devoted to task comprehension and execution, work organization, attention, independence, self-monitoring of performance, error handling, detail processing, and visuomotor reproduction.

Throughout the monitored period, individual changes in task execution modes and work organization were observed across activities of all four participants.

In some cases, greater independence, reduced reliance on immediate adult reassurance, gradual utilization of error control mechanisms, and more systematic work organization emerged. In testing situations, multiple participants demonstrated qualitative changes regarding detail processing, spatial drawing organization, and accuracy of reproducing specific models. However, these changes were not uniform across all monitored domains or in all children.

I consider it particularly significant that observed changes manifested even in areas that were not direct instructional targets of the interventions. Intervention activities focused primarily on selected language and communication phenomena, and the materials utilized simultaneously created conditions for manipulation, categorization, independent self-checking, task repetition, and personal work organization. The results thus support the study's baseline premise that language, cognitive, perceptuomotor, and behavioral processes cannot be fully separated within natural learning processes.

Findings demonstrated individual variability in the course and extent of observed changes. Certain difficulties—particularly in processing longer and more complex instructions or applying multiple conditions simultaneously within a single task—persisted post-intervention. This suggests individual developmental domains may not shift at identical rates and that a child's response to an educational environment may be linked to their unique characteristics and prior experiences.

Consequently, I do not interpret the results as evidence of a causal effect of Montessori interventions or as proof of general effectiveness of Montessori pedagogy. Observed changes may have been related not only to the nature of the implemented interventions, but also to children's natural maturation, prior experiences, school and family environments, repeated exposure to assessment contexts, and other factors that could not be controlled within this research design.

Interpretation must also take into account the study's limitations. The investigation was conducted on a small, nonrepresentative sample of four children, the duration of interventions was limited, and the researcher concurrently served as observer, assessment administrator, and intervention facilitator. Furthermore, given their integration into a broader research project, the intervention content targeted only select language-communication phenomena. For these reasons, I do not generalize the results to a broader population, but understand them as individual observations and indications of certain tendencies that require further verification.

Despite its limitations, the study highlights the importance of investigating educational conditions that allow children to autonomously organize their activity, work at their own pace, repeat tasks, utilize performance self-checking, and actively participate in the learning process. The findings simultaneously support the need to comprehensively examine educational environments, accounting for the interrelationships among language, cognition, motor skills, and behavior.

Future research should track these phenomena across larger and more diverse child samples, over extended time frames, and through a combination of qualitative and quantitative methods capable of more precisely distinguishing individual developmental changes from shifts related to the nature of the educational environment. Such investigation remains highly relevant within the context of contemporary educational reform and expanding insights into children's learning processes.

The overall contribution of this study thus lies not in confirming the efficacy of a single educational method, but in identifying specific manifestations of learning and development that altered within the observed educational environment, representing a well-justified focus for future research.

References

Afshan, A., Mushtaq, A., Rehna, T., Sabih, F., & Najmussaqib, A. (2022). Effectiveness of Montessori sensorial training program for children with mild intellectual disabilities in Pakistan: A randomized control trial. *International Journal of Disability, Development and Education*, 1–11. https://doi.org/10.1080/1034912X.2021.2016657

Bhatia, P., Davis, A., & Shamas-Brandt, E. (2015). Educational gymnastics: The effectiveness of Montessori practical life activities in developing fine motor skills in kindergartners. *Early Education and Development*, *26*(4), 594–607. https://doi.org/10.1080/10409289.2015.995454

Bloom, P. (2015). *Jak se děti učí významu slov* [How children learn word meanings]. Karolinum.

Denervaud, S., & Slováček, M. (2025). From information delivery to brain-based learning. *Institutio Infantium, 2*(2), 70–81. https://doi.org/10.5281/zenodo.17428818

Dogru, S. S. Y. (2015). Efficacy of Montessori education in attention gathering skill of children. *Educational Research and Reviews, 10*(6), 733–738. https://doi.org/10.5897/ERR2015.2080

Drozdová, K. (2020a). Osvojovanie si slovotvorby v predškolskom veku [Acquisition of word formation in preschool age]. *O dieťati, jazyku, literatúre, 8*(2), 66–81. https://www.unipo.sk/public/media/21334/2020-odjl-02.pdf

Drozdová, K. (2020b). *Osvojovanie si a stimulácia slovotvornej stránky detskej reči v predprimárnej edukácii* [Acquisition and stimulation of the word-formation aspect of children's language in pre-primary education] (Doctoral dissertation). Prešovská univerzita v Prešove, Pedagogická fakulta.

Fernández, E. M., & Smith Cairns, H. (2014). *Základy psycholingvistiky* [Foundations of psycholinguistics]. Karolinum.

Gajdošová, E., & Herényiová, G. (1996). *Kresebný test školskej spôsobilosti* [Controlled Drawing Observation]. Psycho-insight.

Gaujard, M., & Denervaud, S. (2023). See beyond behavioral comparisons: Neuroscientific perspectives on the Montessori pedagogy. In M. Miňová & M. Slováček (Eds.), *Dieťa a materská škola* [The child and kindergarten] (pp. 51–52). Slovenský výbor Svetovej organizácie pre predškolskú výchovu.

Imai, M. (2017). *Jazyk a myšlení* [Language and thinking]. Univerzita Karlova.

Kovalčíková, I., Bobáková, M., Filičková, M., Ropovik, I., & Slavkovská, M. (2015). *Terminologické minimum kognitívnej edukácie* [Terminological minimum of cognitive education]. Vydavateľstvo Prešovskej univerzity.

Liptáková, Ľ., & Vužňáková, K. (2009). *Dieťa a slovotvorba* [The child and word formation]. Prešovská univerzita v Prešove, Pedagogická fakulta.

Long, T., Westerman, C., & Ferranti, N. (2022). Children with disabilities attending Montessori programs in the United States. *Journal of Montessori Research, 8*(2), Article 2. https://doi.org/10.17161/jomr.v8i2.18639

Matějček, Z., & Vágnerová, M. (1992). T – 32 *Test obkreslování: Příručka pro administraci, vyhodnocení a interpretaci* [T–32 Drawing Copy Test: Handbook for administration, evaluation and interpretation]. Psychodiagnostika.

Miňová, M. (2023). Pedagogické diagnostikovanie v materskej škole [Pedagogical diagnostics in kindergarten] (2nd expanded ed.). Rokus.

Montessori, M. (1948). *The discovery of the child* (M. A. Johnstone, Trans.). Kalakshetra Publications.

Montessori, M. (2012). *Tajuplné dětství* [The secret of childhood]. Triton. (Original work published 1936)

National Institute for Education. (2016). *Štátny vzdelávací program pre predprimárne vzdelávanie v materských školách* [National Educational Programme for Preschool Education in Kindergartens]. Dr. Jozef Raabe Slovensko.

Pacovská, J., Vaňková, I., Rörich, A., & Nebeská, I. (2021). *Škola jako místo radosti z přemýšlení o jazyce* [School as a place of joy in thinking about language]. Akropolis.

Piaget, J., & Inhelderová, B. (2014). *Psychologie dítěte* [The psychology of the child]. Portál.

Slančová, D. (Ed.). (2018). *Desať štúdií o detskej reči* [Ten studies on children's language]. VEDA & Prešovská univerzita v Prešove, Filozofická fakulta.

Slováček, M. (2025). *Rozvoj reči v predškolskom veku v kontexte Montessori pedagogiky a súčasného výskumu rečového vývinu na Slovensku* [Language acquisition in preschool age in the context of Montessori pedagogy and contemporary research on language acquisition in Slovakia] (Doctoral dissertation, Prešov University, Faculty of Education).

Slováček, M., & Miňová, M. (2017). *Pedagogika Márie Montessori pre každého* [Montessori pedagogy for everyone]. Rokus.

Tiryaki, A. Y., Findik, E., Çetin Sultanoğlu, S., Beker, E., Biçakçi, M. Y., Aral, N., & Özdoğan Özbal, E. (2021). A study on the effect of Montessori education on self-regulation skills in preschoolers. *Early Child Development and Care, 191*(7–8), 1219–1229. https://doi.org/10.1080/03004430.2021.1928107

Vallée-Tourangeau, G., Abadie, M., & Vallée-Tourangeau, F. (2015). Interactivity fosters Bayesian reasoning without instruction. *Journal of Experimental Psychology: General, 144*(3), 581–603. https://doi.org/10.1037/a0039161

Vaňková, I. (2007). *Nádoba plná řeči* [A vessel full of language]. Univerzita Karlova.

Vaňková, I., Nebeská, I., Saicová Římalová, L., & Šlédrová, J. (2005). *Co na srdci, to na jazyku: Kapitoly z kognitivní lingvistiky* [What is in the heart is on the tongue: Chapters from cognitive linguistics]. Karolinum.

Vužňáková, K. (2013). Rozvoj jazykovo-komunikačnej a literárnej kompetencie v predprimárnom vzdelávaní [Development of language-communication and literary competence in pre-primary education].

In M. Miňová (Ed.), *Predprimárne vzdelávanie v kontexte súčasných zmien* [Pre-primary education in the context of current changes] (pp. 146–170). Prešovská univerzita v Prešove, Pedagogická fakulta.

Vužňáková, K. (2015). Ontogenéza detskej reči na pozadí vzťahu kognície, jazyka a reči [Ontogenesis of children's language in the context of cognition, language, and language]. *O dieťati, jazyku, literatúre*, *3*(2). https://www.unipo.sk/public/media/21334/2015-odjl-02.pdf

Vužňáková, K. (2018a). Slovotvorba v ranej ontogenéze reči [Word formation in early language ontogenesis]. In D. Slančová (Ed.), *Desať štúdií o detskej reči: Lexika – Gramatika – Pragmatika* [Ten studies on children's language: Lexicon – Grammar – Pragmatics]. VEDA & Filozofická fakulta Prešovskej univerzity v Prešove.

Vužňáková, K. (2018b). Teoreticko-metodologické východiská skúmania osvojovania si významov slov [Theoretical-methodological foundations of studying word meaning acquisition]. *O dieťati, jazyku, literatúre*, *6*(1), 6–28. https://www.unipo.sk/public/media/21334/2018-odjl-01.pdf

Vužňáková, K. (2020a). Kategorizácia a význam lexikálnych jednotiek v ontogenéze reči [Categorization and meaning of lexical units in language ontogenesis]. *O dieťati, jazyku, literatúre*, *8*(2), 43–65. https://www.unipo.sk/public/media/21334/2020-odjl-02.pdf

Vužňáková, K. (2020b). Znalosti lexikálnej kategorizácie [Knowledge of lexical categorization]. In M. Klimovič, M. Kopčiková, Ľ. Liptáková, & K. Vužňáková (Eds.), *Implicitné jazykové znalosti dieťaťa* [Implicit language knowledge of the child] (pp. 109–192). Vydavateľstvo Prešovskej univerzity v Prešove.

Vužňáková, K., Brestovičová, A., Gáborová, M., & Mikušová, Z. (2025). *Kompozitá v slovenčine 2: Od slov ku konceptom sveta* [Compounds in Slovak 2: From words to concepts of the world]. Vydavateľstvo Prešovskej univerzity v Prešove.

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Teacher Evaluation in Public Montessori Education: A Selected Literature Review

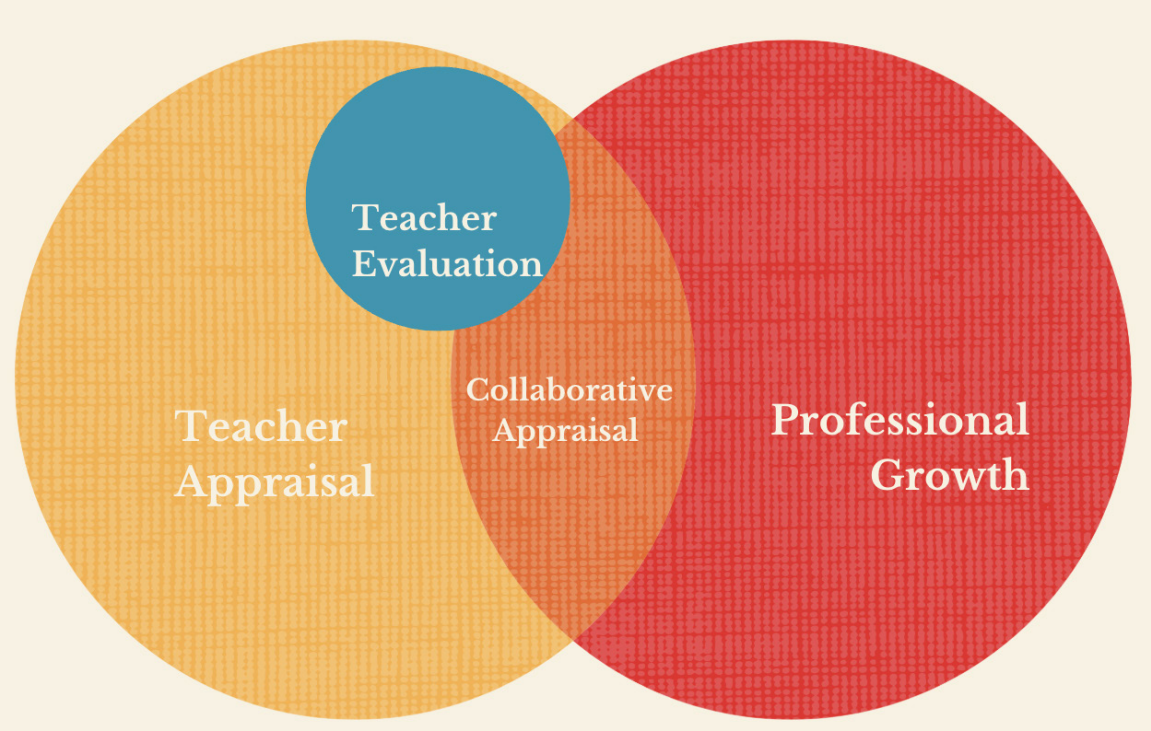
Caroline E. Robbins, University of Wisconsin-River Falls
https://orcid.org/0009-0006-9091-7163

Keywords: *public Montessori education, self-determination theory, teacher evaluation*

Abstract: Public school districts in the United States are increasingly adopting the Montessori approach to boost student achievement, diversify student populations, and attract families. As the number of public Montessori schools in the United States grows (Fleming et al., 2024), so does the number of Montessori educators who are assessed in conventional teacher evaluation frameworks that may not fully align with Montessori pedagogy. In this article, I discuss research with relevance to teacher evaluation for public Montessori teachers in the United States. I used the lens of self-determination theory (SDT) to conduct a literature review of recent peer-reviewed studies, to explore insights related to public Montessori teacher appraisal. The bulk of the selected articles employed qualitative methods and SDT-adjacent frameworks. Based on research from general education settings, Montessori contexts, and emerging scholarship on public Montessori teacher evaluation, I suggest a twofold consideration: (1) that the general education field notes some concern with summative, compliance-oriented, and quantitative teacher evaluation systems, and (2) that these systems present an additional concern of pedagogical alignment in public Montessori settings. As a result, I suggest applying the SDT constructs of *autonomy*, *competence*, and *relatedness* to draw implications for future study and practice, including considerations for greater pedagogical alignment of Montessori teacher evaluation systems with Montessori practice.

Since the 1970s, school districts in the United States have increasingly adopted Montessori programs (Fleming et al., 2024), often in hopes of boosting enrollment, raising test scores, and diversifying schools (Jor'dan, 2018). Recent figures estimate approximately 600 public Montessori programs currently exist across the United States (Lillard et al., 2025), and this number is increasing (Fleming et al., 2024). As the number of public Montessori teachers in the United States continues to grow, so does the number of teachers who are evaluated in mandated teacher evaluation systems. This may lead to pedagogical misalignment, as state-adopted teacher evaluation systems tend to prioritize instructional strategies of conventional education (The Danielson Group, 2022), whereas public Montessori teachers implement an alternative pedagogy based on

Figure 1.
Appraisal Model



Note. Collaborative appraisal is located at the nexus of teacher appraisal and professional growth.

developmental stages (Fleming et al., 2024). Commonly used teacher evaluation systems in the United States, such as the Danielson Framework for Teaching (The Danielson Group, 2022) and the Marzano Focused Teacher Evaluation Model (Marzano Evaluation Center, 2023), may not explicitly address core components of Montessori pedagogy, which include integrated subjects, multiage class compositions, and individualized or small-group instructional models (Gerker, 2023).

In response to this identified need for greater pedagogical alignment in public Montessori teacher evaluation (Robbins, 2025), I surveyed recent scholarship with relevance to teacher evaluation in public Montessori settings. Using the theoretical framework of self-determination theory (SDT), I pursued the following question: What insights from research can inform future research and practice in public Montessori teacher appraisal? I analyzed studies from three main strands of research: the broader educational field, Montessori settings, and emerging research in public Montessori education. Ultimately, I sought to explore potential directions for further study and practice to strengthen pedagogical alignment in public Montessori teacher evaluation.

Defining Constructs Through the Literature

For this review, I focused on five main constructs: *public Montessori education*, *teacher evaluation*, *professional growth*, *teacher appraisal*, and *collaborative appraisal*, as defined in research literature. In this review, *public Montessori education* refers to the system of district, magnet, and charter schools that receive public funding and implement the developmental Montessori approach (Smith et al., 2024). Second, *teacher evaluation* tends to refer to a specific type of formal feedback for teachers, with a quantitative, often summative rating given by an administrator, that may have high-accountability measures (Close et al., 2020; Flores & Derrington, 2018). Next, *professional growth* is generally defined as experiences with workplace learning, both within and outside of formal evaluation systems (Pata et al., 2025). In contrast to quantitative evaluation, *teacher appraisal* refers to a broad spectrum of teacher feedback tools, which may incorporate evaluation or may take on the form of more qualitative goal setting (Frenzel et al., 2020). Finally, *collaborative appraisal* refers to a feedback approach for teachers that involves growth-oriented dialogue about self-selected goals, as well as supports needed to achieve those goals (Hulme et al., 2024). In recent scholarship,

researchers have suggested collaborative appraisal measures, such as peer observation and co-reflection, may offer strong supports for teacher professional growth (Robbins, 2026; Even-Zahav et al., 2022; Murphy et al., 2020; Visone et al., 2022).

Figure 1 represents a model of how constructs of teacher appraisal, teacher evaluation, professional growth, and collaborative appraisal overlap and diverge in relevant literature. As shown, collaborative appraisal is located at the nexus of teacher appraisal and professional growth, with teacher evaluation occupying a portion of teacher appraisal and partially overlapping with professional growth. As I discuss in this literature review, three strands of research provide evidence for recommendations related to teacher evaluation and appraisal: research in general education, the small collection of available research on professional growth for Montessori educators, and emerging research on teacher evaluation in public Montessori education. This emerging research in Montessori settings offers context as to why collaborative appraisal may offer particular pedagogical alignment for public Montessori educators (Robbins, 2026). However, further research is needed to more fully consider these implications.

Theoretical Framework

For this review, I applied the theoretical framework of self-determination theory (SDT), as developed by Ryan and Deci (2017). According to SDT, humans share three psychological needs which serve as motivating factors in the development of well-being: "autonomy" (p. 3), or choice and agency; "competence" (p. 3), or a sense of self-efficacy and ability; and "relatedness" (p. 3), or connection with others. SDT suggests, in organizations that offer more opportunities for autonomy, competence, and relatedness, employees seem to hold more intrinsic motivation to perform well. Thus, in settings with high levels of autonomy, competence, and relatedness, employees may reap a cycle of benefits, feeling intrinsically motivated to perform well, and in turn, experiencing well-being (Deci et al., 2017). Some researchers have likened the well-being associated with autonomy, competence, and relatedness to Csikszentmihalyi's concept of *flow* (Tse et al., 2022).

Methods for the Literature Review

For this literature review, I consulted mainly peer-reviewed, empirical articles from academic journals, supplemented by a few government publications and published dissertations, from within the previous eight years. Using the funnel method for topical inquiry, I explored studies from general education contexts, moved gradually to research in Montessori settings, and then focused on emerging research in public Montessori education. Using SDT as the main lens for analysis, I gave special consideration to studies with SDT-adjacent frameworks, and intentionally sought credible, qualitative research. The criteria for credibility in this review drew from Stahl and King's (2020) description of "coherence" (p. 26), which emphasizes triangulation methods. As such, this review highlighted studies with multiple sources of evidence.

Research Studies

SDT Studies

Recently, several researchers have applied SDT to study workplace satisfaction and performance, mainly with quantitative methods (Nunes et al., 2024). Yet some recent, qualitative studies have used SDT to explore teacher professional growth and well-being within conventional educational settings (Cheon et al., 2020; Even-Zahav et al., 2022; Murphy et al., 2020). As one example, Even-Zahav et al. examined autonomy, competence, and relatedness in teachers' responses to professional development and found that training initiatives were often misaligned with teachers' needs regarding professional well-being (2022). Similarly, Murphy et al. (2020) noted that teachers' experiences of "pedagogical well-being" (p. 533) were limited in cultures of high-stakes performativity.

Teacher Evaluation Policies

Other current research has examined the large-scale trends and effects of teacher evaluation systems, generally with quantitative methods. For example, Rubin et al. (2023) examined self-reported educator satisfaction ratings from the National Teacher and Principal Survey, in relation to teacher evaluation systems. The researchers found teachers whose evaluation ratings emphasized standardized testing scores reported lower job satisfaction and a higher intention to quit than did teachers whose evaluations did not emphasize that data. This study addressed a potentially critical relationship between high-stakes teacher evaluation and teacher well-being, but this relationship has not been fully explored.

Other recent research has tracked trends in the use of high-accountability measures in teacher evaluation systems, in relation to U.S. federal policy. Close et al. (2020) studied the prevalence of value-added models

(VAMs) that linked student growth on standardized tests to teacher performance within teacher evaluation. As Race to the Top federal grant program initiatives of the 2010s included incentives for teacher evaluation system overhaul, many states developed systems with a greater emphasis on VAMs and also faced more federal oversight of high-stakes metrics in teacher evaluation. However, with the 2015 Every Student Succeeds Act, individual states regained autonomy over teacher evaluation, and many states readapted their systems to allow districts greater flexibility in selecting evaluation systems. During the late 2010s, many new evaluation systems de-emphasized standardized testing data and offered alternative measures of teacher performance, such as formative administrator feedback (Close et al., 2020; Satrain & Morris, 2024). Though high-stakes VAMs have become less of the norm in recent years (Close et al., 2020), quantitative and summative measures are still prevalent among teacher evaluation models (e.g., The Danielson Group, 2022; Marzano Evaluation Center, 2023).

Recently, some researchers have expressed skepticism toward the validity of quantitative teacher evaluation measures. In a study of observational ratings from the Danielson Framework for Teaching, Garrett and Steinberg (2015) cautioned against high-impact applications of the framework, concluding that research on the effectiveness of the Danielson rubric remained incomplete. In a related study, Sartain and Morris (2024) observed teachers self-reported greater satisfaction with appraisal models that valued continuous growth over summative assessments. Based on these findings, Sartain and Morris surmised that teachers with higher satisfaction with their evaluation frameworks would likely feel more inclined to use feedback as a tool for growth. Finally, Reid (2020) identified substantial subjectivity and variability in administrators' interpretations of their state's evaluation models and expressed concern over the high-accountability application of these measures. More research is needed into the impacts of teacher evaluation policies on teacher performance and growth.

Teachers' Professional Growth

Some recent, qualitative studies have examined teachers' experiences with professional growth in conventional education settings, often with SDT-adjacent lenses. In one study, Taylor (2020) applied complexity theory to develop a model for teacher professional growth as continuous, adaptive, and recursive. In this model, Taylor conceptualized teacher professional growth as characterized by collaborative change and hindered by external accountability pressures and performativity. Conversely, Voelkel et al. (2024) found that principal-teacher interactions based on relationship-building, trust, collaboration, empowerment, and respectful feedback positively influenced teachers' sense of collective efficacy. Together, these researchers have offered that teachers' professional growth may flourish in contexts with greater teacher agency and collaboration.

Professional Growth and Teacher Evaluation

A small collection of qualitative research has explored the interplay between teachers' professional growth and teacher evaluation in conventional settings (Pallas, 2023; Visone et al., 2022). Pallas suggested that teachers' resistance to the performance labels in their evaluation system seemed to undermine their motivation to improve. Likewise, Visone observed that teachers reported feeling less inclined to collaborate with colleagues when evaluated with highly individualistic goals. In other recent studies, Tanner et al. (2021) argued that the quantitative measures of high-stakes evaluations limited the "possibilities for emergent, improvisational teaching" (p. 1876), and Benson et al. (2020) proposed that Black educators' negative experiences with teacher evaluation might contribute to their sense of not belonging in the system. In these studies, participants often suggested that summative teacher evaluation models had an insignificant or even negative impact on their professional growth.

Not all recent findings from qualitative research on teacher evaluation and professional growth have been pessimistic. Following a yearlong ethnography, Lane (2020) suggested that teacher evaluation offered limited—but not negligible—potential for teacher learning and professional growth. Lane proposed that teacher evaluation could potentially have a positive impact on teacher performance when combined with in-house supports, like coaching, training, and mentorship. Still, contemporary, qualitative research on the intersection of teacher evaluation and professional growth remains incomplete.

Need and Availability in the Teaching Profession

Other recent research has examined factors for teacher shortages and turnover in the United States. Drawing from a large-scale survey, Taie and Lewis (2023) noted that 60% of surveyed teachers who had left the profession reported that they found more autonomy in their new field. In other studies, resigning teachers

cited high accountability measures and a lack of agency (Sutcher et al., 2019), depersonalization (Madigan & Kim, 2021), perceived lack of control (Marx et al., 2023), and perceived lack of support (Chambers Mack et al., 2019) as key factors in their decisions to quit. In contrast, Zhang et al. (2024) found that teachers' meaningful work seemed to have a moderating effect on external "hindrance stressors" (p. 2) and teacher turnover, and Shuls and Flores (2020) found districts promoting higher levels of teacher voice and agency experienced greater teacher retention. Collectively, these findings suggest teacher autonomy in general education settings may correspond with greater teacher satisfaction and retention.

Implications for Public Montessori Education

As a whole, researchers suggested that compliance-oriented teacher evaluation systems were insufficient in producing meaningful educator professional growth (Pallas, 2023; Taie and Lewis, 2023; Visone et al., 2022). As noted, the referenced studies did not address teacher evaluation and professional growth in Montessori settings, and they did not explicitly explore Montessori teachers' reception to teacher evaluation. Collectively, however, this research from general education suggests a broad mistrust of quantitative, summative, and high-stakes teacher evaluation among teachers as a whole. In addition, emerging research suggests Montessori teachers may experience evaluation similarly to teachers in conventional settings (Robbins, 2026). The recent findings also suggest autonomy, competence, and relatedness represent salient needs for public Montessori educators' professional growth (Robbins, 2026). As research gaps remain regarding teacher evaluation in public Montessori settings, relevant and emerging research from Montessori settings is discussed in the following sections.

Professional Growth for Montessori Teachers

Limited research has explored professional growth for Montessori teachers, most often within private settings. Damore and Rieckhoff (2021) interviewed Montessori school leaders on a Montessori coaching tool and suggested that collaborative feedback sessions could offer potential for Montessori teachers' professional growth. Likewise, Postlewaite et al. (2024) found that Montessori educators seemed to hold unique needs regarding professional development, and Saylor et al. (2018) proposed that teacher-centered mentorship and reflective practices could strengthen Montessori professional development. These studies added value to the conversation of Montessori teacher appraisal and professional growth, but they focused mainly on private settings. To date, most available research on Montessori professional growth has been conducted outside of public schools.

Montessori Teacher Identity

Relatively few studies have examined Montessori teacher identity, without a direct focus on teacher evaluation. Gerker (2023) explored how public Montessori teachers' identities might shape their reactions to educational policy. Similarly, Archer (2024) examined Montessori teacher formation as a pathway of resistance to conventional educational policies, and Christensen (2019) explored literature addressing Montessori teacher identity and antibias, antiracist practices. The studies explored Montessori teacher identity as fuel for social change, but they did not concentrate on intersections of public Montessori teacher identity with teacher evaluation.

Need and Availability for Montessori Educators

Some emerging research has examined recruitment, retention, and attrition among Montessori educators, mainly with quantitative methods. In one recent study, Benson et al. (2024) found that teachers' autonomy seemed to have a mitigating effect on burnout rates among public teachers, in both conventional and Montessori settings. This particular study represents a bridge between two strands of research: that on teacher evaluation in conventional settings, and that on professional growth among Montessori teachers. However, more research is warranted regarding the need and availability of public Montessori teachers, particularly with in-depth analysis qualitative methods afford.

Teacher Evaluation and Professional Growth in Public Montessori Education

Some emerging research has specifically addressed teacher evaluation in public Montessori education, but further scholarship is needed. In a recent study, I examined public Montessori educators' perceptions of teacher evaluation and professional growth within a relatively small case study (Robbins, 2026). The findings suggested that, although summative and standardized teacher evaluation systems presented some limitations for educators as a whole, the systems held particular gaps relating to Montessori practice. More research is needed in this field across a broader population to explore

the relationship of criteria such as teaching level, years of experience, and school type on public Montessori educators' reception to teacher evaluation.

Synthesis

Collectively, the three strands of research—studies on teacher evaluation in the broad educational landscape, studies from the Montessori field, and emerging research on public Montessori teacher evaluation—provide layers of evidence for this inquiry. None of the strands independently suffice to establish a model for public Montessori teacher appraisal. Taken together, however, the strands offer possible directions for further research and preliminary recommendations for practice.

First, general education research suggests broad patterns of reception related to teacher evaluation. Both qualitative (e.g., Pallas, 2023) and quantitative studies (e.g., Sartain & Morris, 2024) have suggested teachers may respond to dialogic and formative appraisal measures as supportive of their professional growth and pedagogical well-being. Conversely, studies have also shown that high-stakes and high-accountability teacher evaluation measures may not have a desirably significant impact on teachers' performance (Rubin et al., 2023). This pattern emerged in studies across educational settings that were not Montessori-specific. However, findings suggest resistance and skepticism toward compliance-oriented, summative teacher evaluation systems among the general teaching population may limit these systems' potential impact on professional growth (Taie and Lewis, 2023; Visone et al., 2022).

Second, Montessori-specific research provides context for considering professional growth needs for Montessori educators. Recent qualitative studies from within Montessori settings have suggested Montessori educators particularly favor qualitative appraisal measures, like reflective coaching and mentorship (Damore & Rieckhoff, 2021). Qualitative appraisal measures may connect to Montessori teachers' specialized needs for professional development (Postlewaite et al., 2024) and strong sense of Montessori teacher identity (Gerker, 2023). Overall, this strand of Montessori research suggests Montessori teachers may particularly value qualitative appraisal measures that align with Montessori practice (Damore & Rieckhoff, 2021).

Finally, emerging research in public Montessori education offers preliminary insight into how public Montessori educators respond to teacher evaluation. This emerging research has offered that granting agency to public Montessori teachers to help shape school policies and procedures, like appraisal processes, may benefit Montessori pedagogical well-being (Benson et al., 2024; Robbins, 2026). As noted, in a recent case study, teachers and administrators both expressed a desire to revise traditional teacher evaluation models for Montessori education, with not only qualitative measures, but also collaborative appraisal measures (Robbins, 2026). In this study, participants observed components of collaborative appraisal—including peer observation, co-reflection, and mutual feedback opportunities—could begin to bring evaluation frameworks into better alignment with Montessori pedagogical principles. Participants suggested these types of collaborative appraisal could reflect Montessori education's emphasis on both authentic assessment and noncompetitive learning, as characterized by autonomy, competence, and relatedness.

Taken together, these three strands of research offer a twofold consideration: first, that the broad field of education notes some concern with summative, compliance-oriented, and quantitative teacher evaluation systems (Pallas, 2023), and second, that these systems present an additional concern of pedagogical alignment in public Montessori settings (Robbins, 2026). Moreover, the collection of research suggests autonomy, competence, and relatedness may represent particularly salient components of collaborative appraisal for public Montessori teachers. Specifically, the research suggests collaborative appraisal with an emphasis on autonomy, competence, and relatedness may offer potential for aligning appraisal with Montessori pedagogy. The collective findings warrant consideration for preliminary recommendations for research and practice.

Recommendations

Based on the salient themes from the three identified strands of research, I propose further research into the effectiveness of teacher evaluation in public Montessori settings. Specifically, future research could include analyses of modifications to teacher evaluation systems toward greater alignment with Montessori pedagogy, case studies of schools piloting adaptations to teacher evaluation, and in-depth examinations of different factors in relation to teachers' reception to evaluation. In addition, though the issue of public Montessori teacher evaluation warrants further exploration, this literature review leads to preliminary recommendations for practice. The salient findings from this literature review can be interpreted as a starting point to purposefully design teacher appraisal models to balance accountability

with alignment to Montessori pedagogy. Notably, recurring themes from collective research center around autonomy, competence, and relatedness as potential areas of focus for Montessori teacher appraisal.

First, throughout the reviewed studies, autonomy and choice appear as potentially beneficial components of teacher appraisal processes. In the collective studies in this review, researchers linked teacher agency with teacher well-being in broad educational settings (Shuls & Flores, 2020). In addition, emerging Montessori research has suggested that public Montessori teachers may especially value autonomy in selecting goals and strategies for professional growth in their teacher evaluations (Robbins, 2026). If Montessori teachers particularly value autonomy, this pattern may mirror Montessori pedagogy, which privileges choice (Lillard et al., 2025) and intrinsic motivation over external rewards and punishments (Denervaud et al., 2019).

Second, the collective research highlights potential of qualitative growth measures for development of teacher competence, including in public Montessori settings. Because public education requires certain quantitative accountability metrics, it appears that moderating quantitative measures with qualitative, formative, and growth-oriented feedback conversations may contribute to meaningful teacher professional growth (Lane, 2020). Qualitative growth measures seem to offer potential within the field of education in general; however, emerging research also suggests Montessori educators may place particular value on measures of continuous growth (Robbins, 2026). Again, if Montessori educators tend to prefer qualitative appraisal, this may reflect Montessori pedagogy for its emphasis on holistic assessment (Fleming et al., 2024), intrinsic motivation, and process-orientation among learners (del Agua et al., 2026).

Finally, the research as a whole offers that appraisal models for public Montessori teachers may benefit from collaborative measures to support relatedness. In various studies from both within and outside of Montessori education, collaborative measures, such as peer observation, co-reflection, and dialogic feedback, emerged as potentially beneficial components of teacher evaluation (Damore & Rieckhoff, 2021; Lane, 2020). This need for relatedness is not unique to Montessori educators; however, a growing collection of research on Montessori teacher identity suggests some educators may choose the Montessori pedagogical approach for reasons related to aspiration for relationality in their work (Gerker, 2023). Emerging research suggests networks of support, including mentoring and coaching relationships, shared goal setting, and reflective dialogue, may help address the needs for relatedness among public Montessori educators (Robbins, 2026).

As shown, a growing body of research exists relating to teacher evaluation in public Montessori education, combining studies from the broad educational landscape, studies in Montessori settings, and emerging research on public Montessori teacher evaluation. More research is needed into how teacher evaluation systems in the United States can be adapted to best serve professional growth of public Montessori educators. Some emerging research has begun to address this gap.

Overall, literature from this review suggests that considering the SDT constructs of autonomy, competence, and relatedness may offer particular potential for more pedagogically aligned teacher evaluation in public Montessori settings. Specifically, autonomy (through choice in the appraisal process), competence (through emphasis on continuous growth), and relatedness (through collaborative appraisal practices) warrant consideration as particularly beneficial components of Montessori teacher appraisal, because of their alignment with Montessori pedagogy. However, the preliminary suggestions regarding autonomy, competence, and relatedness should be understood as guidance for further research—rather than solid characteristics—unique to Montessori teachers.

As noted, limitations of standardized teacher evaluation are not unique to Montessori education, but they present unique concerns within Montessori settings. This literature review, therefore, warrants a twofold consideration. First, the limitations of summative, compliance-oriented, and heavily quantitative teacher evaluation seem to span the broader education field (Marx et al., 2023). Second, public Montessori educators appear to experience an additional limitation: that of a lack of pedagogical alignment (Robbins, 2026). As noted, commonly used evaluation frameworks may not explicitly address core practices of Montessori education (e.g., The Danielson Group, 2022).

From the synthesis of the findings, I propose new questions for future research, including the following: How might teacher evaluation systems be intentionally designed to foster autonomy, competence, and relatedness for public Montessori educators in the United States? How might collaborative appraisal measures create better pedagogical alignment for public Montessori education? These questions have not yet been fully examined in scholarship. Further research is needed to

develop comprehensive models for teacher appraisal in public Montessori schools.

References

Archer, N. (2024). Walking a desire track: Montessori pedagogy as resistance to normative pathways. *Pedagogy, Culture & Society*, *32*(4), 1079–1097. https://doi.org/10.1080/14681366.2024.2355097

Benson, J. R., Perry, A. R., & Napoli, A. R. (2024). Autonomy, transformational leadership, and burnout in Montessori and traditional public elementary teachers. *North American Journal of Psychology*, *26*(3), 527–550.

Benson, T. A., Salas, S., & Siefert, B. (2020). Irreconcilable differences: Black teachers' lives and K–12 schools. *The Urban Review*, *53*(4), 659–680. https://doi.org/10.1007/s11256-020-00591-x

Chambers Mack, J., Johnson, A., Jones-Rincon, A., Tsatenawa, V., & Howard, K. (2019). Why do teachers leave? A comprehensive occupational health study evaluating intent-to-quit in public school teachers. *Journal of Applied Biobehavioral Research*, *24*(1), Article e12160. https://doi.org/10.1111/jabr.12160

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education*, *90*, Article 103004. https://doi.org/10.1016/j.tate.2019.103004

Christensen, O. T. (2019). Montessori identity in dialogue: A selected review of literature on teacher identity. *Journal of Montessori Research*, *5*(2), 45–56. https://doi.org/10.17161/jomr.v5i2.8183

Close, K., Amrein-Beardsley, A., & Collins, C. (2020). Putting teacher evaluation systems on the map: An overview of states' teacher evaluation systems post-Every Student Succeeds Act. *Education Policy Analysis Archives*, *28*(58). https://doi.org/10.14507/epaa.28.5252

Damore, S., & Rieckhoff, B. (2021). Leading reflective practices in Montessori schools. *Journal of Montessori Research*, *7*(1), 51–65. https://doi.org/10.17161/jomr.v7i1.14832

The Danielson Group (2022). *The Framework for Teaching: At a glance*. Retrieved February 11, 2026, from https://danielsongroup.org/resources/fft-at-a-glance/

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*(1), 19–43. https://doi.org/10.1146/annurev-orgpsych-032516-113108

del Agua, E., Escrichs, A., Sanz Perl, Y., Kringelbach, M. L., Diamond, A., Denervaud, S., & Deco, G. (2026). Schooling trajectories and the development of brain dynamics: A comparative study of Montessori and traditional education. *Advanced Science*, Article e24343. https://doi.org/10.1002/advs.202524343

Denervaud, S., Knebel, J.-F., Hagmann, P., & Gentaz, E. (2019). Beyond executive functions, creativity skills benefit academic outcomes: Insights from Montessori education. *PloS One*, *14*(11), Article 0225319. https://doi.org/10.1371/journal.pone.0225319

Even-Zahav, A., Widder, M., & Hazzan, O. (2022). From teacher professional
development to teacher personal-professional growth: The case of expert STEM teachers. *Teacher Development*, *26*(3), 299–316. https://doi.org/10.1080/13540602.2021.1913403

Fleming, D. J., Culclasure, B. T., Warren, H., & Riga, G. (2024). The challenges and opportunities of implementing Montessori education in the public sector. *Journal of Montessori Research*, *10*. https://doi.org/10.17161/jomr.v10i2.22574

Flores, M. A., & Derrington, M. L. (2018). Improving teacher evaluation: Key issues for
appraisers in a globalised era. *Teachers and Teaching*, *24*(3), 203–208. https://doi.org/10.1080/13540602.2018.1427017

Frenzel, A. C., Fiedler, D., Marx, A. K. G., Reck, C., & Pekrun, R. (2020). Who enjoys teaching, and when? Between- and within-person evidence on teachers' appraisal-emotion links. *Frontiers in Psychology*, *11*, Article 1092. https://doi.org/10.3389/fpsyg.2020.01092

Gerker, H. E. (2023). Making sense of Montessori teacher identity, Montessori pedagogy, and educational policies in public schools. *Journal of Montessori Research*, *9*(1). https://doi.org/10.17161/jomr.v9i1.18861

Hulme, M., Comber, A., Jones, E., Grant, J., & Baumber, J. (2024). Reclaiming accountability through collaborative curriculum enquiry: New directions in teacher evaluation. *The Curriculum Journal*, *35*(4), 673–689. https://doi.org/10.1002/curj.272

Jor'dan, J. R. (2018). Predominantly Black institutions and public Montessori schools:
Reclaiming the "genius" in African American children. *Teaching and Learning, 13*(1), 1–7. https://doi.org/10.1515/mlt-2017-0007
Lane, J. L. (2020). Maintaining the frame: Using frame analysis to explain teacher evaluation policy implementation. *American Educational Research Journal, 57*(1), 5–42. https://doi.org/10.3102/0002831219848689
Lillard, A. S., Loeb, D., Berg, J., Escueta, M., Manship, K., Hauser, A., & Daggett, E. D. (2025). A national randomized controlled trial of the impact of public Montessori preschool at the end of kindergarten. *Proceedings of the National Academy of Sciences, 122*(43), Article e2506130122. https://doi.org/10.1073/pnas.2506130122
Madigan, D. J., & Kim, L. E. (2021). Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. *Teaching and Teacher Education, 105*, Article 103425. https://doi.org/10.1016/j.tate.2021.103425
Marx, S., Lavigne, A. L., Braden, S., Hawkman, A., Andersen, J., Gailey, S., Geddes, G., Jones, I., Si, S., & Washburn, K. (2023). "I didn't quit. The system quit me." Examining why teachers of color leave teaching. *International Journal of Leadership in Education*, 1–24. https://doi.org/10.1080/13603124.2023.2218113
Marzano Evaluation Center (2023). *The Marzano Focused Teacher Evaluation Model*. Retrieved February 11, 2026, from https://marzanoevaluationcenter.com/portfolio/the-marzano-focused-teacher-evaluation-model/
Murphy, T. R. N., Masterson, M., Mannix-McNamara, P., Tally, P., & McLaughlin, E. (2020). The being of a teacher: Teacher pedagogical well-being and teacher self-care. *Teachers and Teaching, 26*(7-8), 588–601. https://doi.org/10.1080/13540602.2021.1913403
Nunes, P. M., Proença, T., & Carozzo-Todaro, M. E. (2024). A systematic review on well-being and ill-being in working contexts: Contributions of self-determination theory. *Personnel Review, 53*(2), 375–419. https://doi.org/10.1108/PR-11-2021-0812
Pallas, A. M. (2023). The rhetoric of teacher evaluation: New York City teachers' responses to performance labels. *Educational Policy, 37*(3), 769–799. https://doi.org/10.1177/08959048211049432
Pata, K., Jõgi, A.-L., Rannala, I.-E., & Jõgi, L. (2025). The role of attending workplace learning practices in career paths of career specialists. *Vocations and Learning, 18*(1), Article 7. https://doi.org/10.1007/s12186-025-09358-5
Postlewaite, E., Avello, D., Massie, C., & Sabater, A. (2024). Implementing the Ages and Stages Questionnaires in a Montessori setting. *Journal of Montessori Research, 10*(2). https://doi.org/10.17161/jomr.v10i2.22478
Reid, D. B. (2020). Making sense of teacher evaluation policies and systems based on principals' experience. *Leadership and Policy in Schools, 19*(2), 304–318. https://doi.org/10.1080/15700763.2018.1554158
Robbins, C. E. (2025, Fall). Fundamental needs of public Montessorians. *Montessori Public, 10*(1), 10–11. https://www.montessoripublic.org/2025/10/fundamental-needs-of-public-montessorians/
Robbins, C. E. (2026). *Public Montessorians' perceptions of teacher evaluation: A qualitative case study* (Publication No. 32735625) [Doctoral dissertation, University of Wisconsin-River Falls]. ProQuest Dissertations & Theses Global.
Rubin, E., Roch, C., & Roch, S. (2023). Grading teacher performance appraisal systems: Understanding the implications of student test scores and performance information use. *Public Performance & Management Review, 46*(2), 257–284. https://doi.org/10.1080/15309576.2022.2118798
Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* The Guilford Press. https://doi.org/10.1521/978.14625/28806
Sartain, L., & Morris, W. T. (2024). Are teachers satisfied with their evaluations? The importance of teaching context and trends over time. *AERA Open, 10*. https://doi.org/10.1177/23328584231221539
Saylor, L. L., McKenzie, G., & Sacco, C. C. (2018). Teacher-centered mentorship as meaningful professional development. *Journal of Montessori Research, 4*(2), 10–32. https://doi.org/10.17161/jomr.v4i2.6923
Shuls, J. V., & Flores, J. M. (2020). Improving teacher retention through support and development. *Journal of Educational Leadership and Policy Studies, 4*(1). Retrieved February 11, 2026, from https://files.eric.ed.gov/fulltext/EJ1282763.pdf
Smith, S. L., Dawson-Amoah, M., Tong, T., Pardo, N., Alonso-Morris, E. A., & Kho, A. (2024). Public school choice options in the United States. *Encyclopedia, 4*(1), 60–78. https://doi.org/10.3390/encyclopedia4010006

Stahl, N. A., & King, J. R. (2020). Expanding approaches for research: Understanding and using trustworthiness in qualitative research. *Journal of Developmental Education*, *44*(1), 26–28.

Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding teacher shortages: An analysis of teacher supply and demand in the United States. *Education Policy Analysis Archives*, *27*(35). https://doi.org/10.14507/epaa.27.3696

Taie, S., & Lewis, L. (2023). *Teacher attrition and mobility: Results from the 2021-22 Teacher Follow-up Survey to the National Teacher and Principal Survey* (NCES 2024-039). U.S. Department of Education, National Center for Education Statistics. Retrieved February 11, 2026, from https://nces.ed.gov/pubs2024/2024039M.pdf

Tanner, S., McCloskey, A., & Miller, E. (2021). Destructive domains: Rethinking teacher evaluation in the age of Charlotte Danielson. *International Journal of Qualitative Studies in Education*, *36*(9), 1876–1890. https://doi.org/10.1080/09518398.2021.1956621

Taylor, P. (2020). The complexity of teacher professional growth: Unravelling threads of purpose, opportunity and response. *Professional Development in Education*, *49*(1), 16–29. https://doi.org/10.1080/19415257.2020.1747106

Tse, D. C. K., Nakamura, J., & Csikszentmihalyi, M. (2022). Flow experiences across adulthood: Preliminary findings on the continuity hypothesis. *Journal of Happiness Studies*, *23*(6), 2517–2540. https://doi.org/10.1007/s10902-022-00514-5

Visone, J. D., Mongillo, M. B., & Liu, Y. (2022). Teachers' perceptions of collaboration within an evolving teacher evaluation context. *Journal of Educational Change*, *23*(4), 421–450. https://doi.org/10.1007/s10833-021-09424-4

Voelkel, R. H., Prusak, K. J., & Van Tassell, F. (2024). Effective principal leadership behaviors that enhance teacher collective efficacy. *Education Sciences*, *14*(4), 431. https://doi.org/10.3390/educsci14040431

Zhang, J., Chen, Y., Xu, Y., & Li, Y. (2024). Hindrance stressors and turnover intentions among preschool teachers: The mediating role of work engagement and the moderating effect of meaningful work. *Heliyon*, *10*(15), Article e35366. https://doi.org/10.1016/j.heliyon.2024.e35366