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Montessori Adaptations: Case Studies of Application and Access

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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.

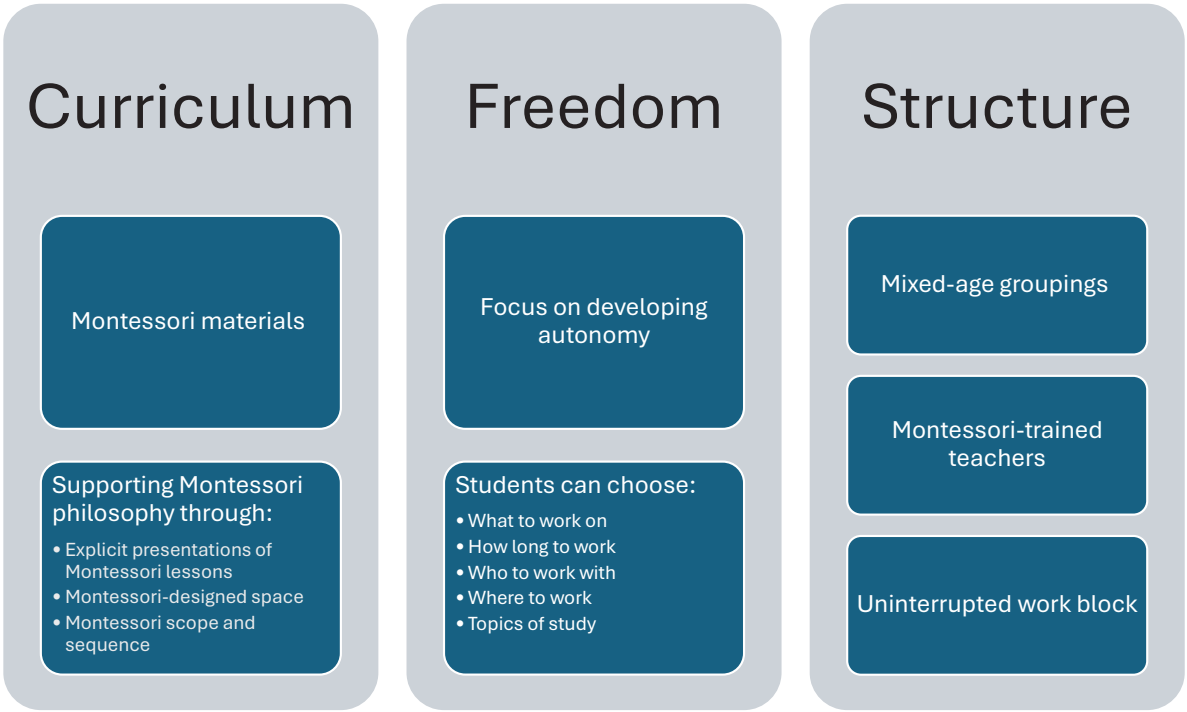
Theoretical Framework

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

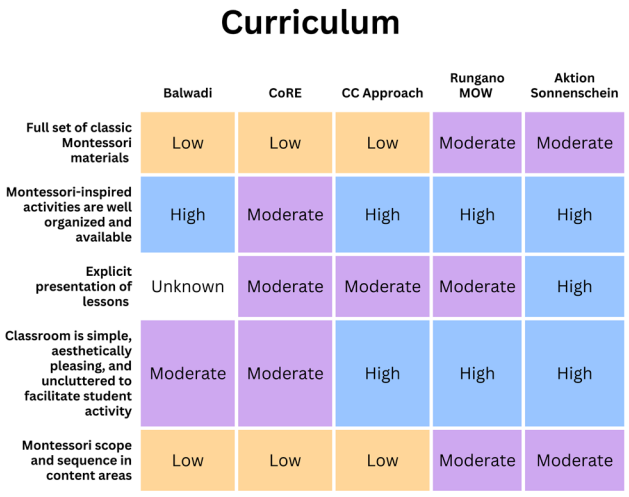


Figure 9b

Adaptation Case Studies Categorized by Levels of Implementation: Freedom

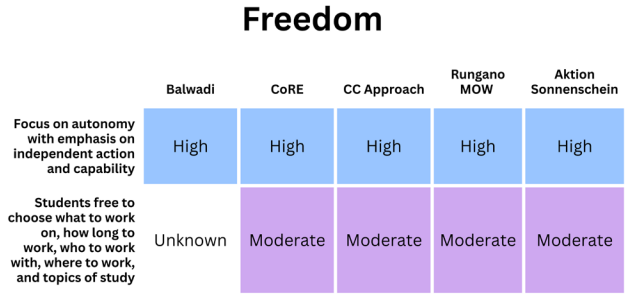
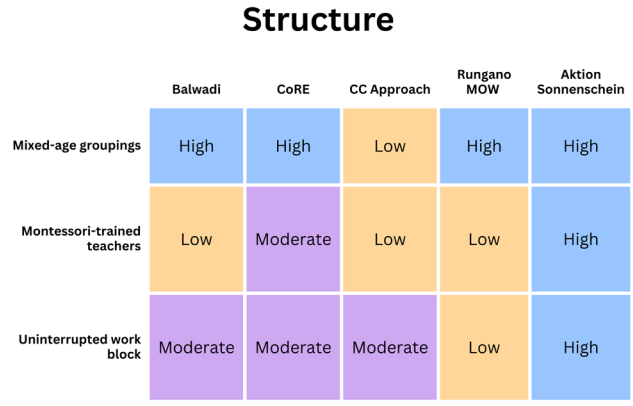


Figure 9c

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.

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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.)

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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?