Montessori Education at a Distance, Part 1: A Survey of Montessori Educators' Response to a Global Pandemic

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Abstract: The transition to distance learning in the spring of 2020 caused by COVID-19 was particularly challenging for Montessori educators and students because key elements of the Method were not directly transferable to this new and hastily designed format. Hands-on learning with Montessori materials and learning in a community, as well as careful teacher observation, could not be easily replicated when children were learning from home. To understand how educators applied Montessori principles to serve children and families in these highly unusual circumstances, we surveyed Early Childhood and Elementary Montessori teachers about how they translated core elements of Montessori education to a distance-learning environment. The overall results suggest that Montessori distance-learning arrangements balanced live videoconference experiences for children with offline hands-on activities, while also relying on parents' and caregivers' involvement. Teachers reported that they largely designed learning experiences themselves, without significant support or guidance from school leaders. Still, teachers reported that they were able to uphold Montessori principles to only a moderate degree under the circumstances. While teachers understandably hunger for support, professional connections, and a return to the classroom experiences that drew them to the field of Montessori education, this study highlights factors that may affect the transition back to school for teachers, parents and caregivers, and students when face-to-face instruction resumes for all children.

The COVID-19 pandemic created an abrupt transition for children throughout the United States. This transition presented unique challenges for educators, parents and caregivers, and children involved in Montessori education because of the approach's unique design involving specific resources, actions, and goals. With a history of more than 100 years since its inception, Montessori education represents the largest alternative pedagogy available in the country today (Debs & Brown, 2017). According to the Montessori Census, maintained by the National Center for Montessori in the Public Sector (NCMPS) to "provide complete and accurate information about the state of Montessori in the United States," an estimated 2,700 Montessori schools exist in the United States, with roughly 500 of these in publicly funded schools (NCMPS, n.d.). We wondered how teachers across these schools could provide parents and caregivers with effective but reasonable Montessori-based activities for children to do at home when key elements were not directly transferable and parents and caregivers had varying degrees of capacity for implementing the Method.

Theoretical Framework

While the literature regarding educational changes in response to a global pandemic is only now being written, key elements of Montessori practice are documented in a Montessori logic model published in 2019 (Culclasure et al., 2019). The model organizes key inputs, programming, and outputs of Montessori education. It also expands the programming section by providing details of resources, actions, and goals across age levels. This model provides a useful structure for considering the key elements of the Montessori Method that were affected by distance-learning set-ups that were hastily formed as families were required to social distance and follow stay-at-home orders across the country. Our focus was on the program-implementation portion of the logic model because it forms the core of the model, which helps to "consider and prioritize" the most critical program aspects (W. K. Kellogg Foundation, 2004, p. 5). The resources, actions, and goals that comprise the programming component of the logic model are shown in Figure 1.

First, we focused on the *resources* necessary for an authentic Montessori environment, which include the ordered environment teachers create for exposing children to the broad, interrelated Montessori curriculum.

Figure 1

Excerpt from Montessori Logic Model (Culclasure et al., 2019)

Programming Across Levels		
Resources	**Actions**	**Goals**
Ordered environments	Choose activities of interest	Purposeful activity
Broad, interrelated curriculum	Use real-life and manipulative materials	Sustained focus
Individualized instruction	Assist and collaborate with peers	Self-discipline and knowledge
Positive emotional climate	Resolve disagreements	Compassion for others
Clear expectations	Express self artistically	Positive attitude toward school
Experiences with nature	Move freely in classroom	Confidence and initiative
Adaptation for atypical development	Help maintain the environment	Contributing member of society

Teachers emphasize instruction individualized to the level and needs of each child while providing a positive emotional climate with clear expectations. Opportunities for experiences with nature, as well as accommodations for atypical development, round out the necessary resources providing the foundation for children's activity in the Montessori Method. *Actions* that Montessori children engage in are based on choosing activities of interest largely with real-life and manipulative materials. While moving freely in the classroom and engaging in these activities, children assist one another, collaborate with their peers, and are empowered to resolve disagreements largely on their own. Children also express themselves artistically and help maintain the classroom environment. As a result of providing children with appropriate resources and opportunities to engage in the described actions, Montessori educators anticipate that children will achieve a number of specific *goals*. These goals include children sustaining focus while pursuing purposeful activities that they expect to result in self-discipline and knowledge, as well as confidence, initiative, and a positive attitude toward school. Other important goals revolve around interpersonal outcomes, such as compassion for others and becoming a contributing member of the classroom community and society at large (Culclasure et al., 2019).

Our focus for this study was on educators serving children at the Early Childhood (EC; i.e., ages 2½ to 6) and Elementary (El; i.e., ages 6 to 12) levels in the United States because the vast majority of Montessori classrooms serve children in these age groups (NCMPS, n.d.). While many of the principles of Montessori education apply across age levels, the Montessori logic model highlights elements that differ in approach or emphasis

between groups (Culclasure et al., 2019). For example, the EC level emphasizes one-on-one instruction, precise presentations, repetition, and exploring the environment. In contrast, the El level focuses on increased freedom and greater responsibility along with interactive small-group lessons and children planning and tracking their own activities.

Technology in Montessori classrooms was a topic of increasing debate even before the COVID-19 pandemic. Montessori professionals tended to agree that screens did not belong in EC classrooms and referenced support from the American Academy of Pediatrics guidelines (MacDonald, 2016). However, Greg MacDonald (2016), a director of Elementary training for the Association Montessori Internationale (AMI), noted,

> From the Elementary years on, we are probably on the safest ground when we treat digital devices as potential tools for self-construction, and when we refrain from introducing them until sensorial avenues have been explored by the children, and exhausted. These devices should be "materials" in the classroom, and they should fully conform to Montessori philosophy and practice. (p. 105)

With the tremendous emphasis on technology for delivering distance learning, Montessori education's resistance to digital devices for young children and only reluctant acceptance for El students further complicated the situation created by the school closures during the pandemic.

The unprecedented and rapid response to the COVID-19 pandemic in the spring of 2020 led us to wonder how, and if, the resources, actions, and goals outlined in the logic model, which are fundamental to Montessori education, could be effectively translated to a distance-learning setting. The questions arise because much of the rich history and philosophy of Montessori education is place-based and grounded in interpersonal interactions and physical activity in the environment. Therefore, the overarching objective of this study was to understand how Montessori schools and educators interpreted and applied Montessori principles to serve children and families in these highly unusual circumstances, given that key elements—primarily hands-on learning with Montessori materials, learning in a community, and direct teacher observation—were

missing. To achieve this objective, we identified four specific research questions:

1. What was the teaching situation for Montessori EC and El educators during the distance learning necessitated by the COVID-19 pandemic?
2. What strategies did educators incorporate to provide a Montessori educational experience for children while they were learning from home?
3. How did teachers feel about their ability to accomplish the expected goals of a Montessori educational experience?
4. What did Montessori educators perceive to be the successes and challenges of families, as key partners in the distance-learning process, in supporting effective Montessori implementation?

Methods

To address our research questions, we designed a survey research study with EC and El Montessori educators. The details of the study design and methods are provided in the sections that follow.

Data Source

Data for this study came from a 15-minute, anonymous, online survey distributed via email and social media to Montessori educators. The survey, which is available in the appendix, was framed around the Montessori logic model, programmed in Qualtrics, and pretested by an expert panel of eight experienced Montessori educators before data collection began (Culclasure et al., 2019). The survey included closed-ended questions about specific practices employed as well as Likert-scale items and open-ended questions about teachers' perceptions of various aspects of the experience. The open-ended questions allowed participants to provide unstructured and unanticipated answers as well as further explanation of quantitative responses (Walston et al., 2017). In particular, although ordered environments, student choice, and freedom within limits are core Montessori principles, their application in a distance-learning format is new. Therefore, we chose to capture the various ways teachers implemented these strategies through open-ended questions rather than developing a preestablished list of possibilities from which teachers could choose.

A few of the logic-model items were modified or eliminated from the survey according to relevance. For example, we adjusted the item related to "moving freely in the classroom" to the more general term "independence" since students were not in classrooms. Other modifications to the logic-model framework were necessary when teachers were asked about parent success and challenges related to supporting the resources and actions necessary for Montessori education. One of the resources, "broad, interrelated curriculum," was not included because the curriculum itself was not viewed as a parent or caregiver responsibility. Similarly, "conflict resolution" was not included in the list of parent and caregiver successes and challenges because of limited opportunities for conflict in such isolated circumstances. Finally, we added "sustained focus" (an item from the Goals section) to the list of items for gauging teachers' perceptions of parent or caregiver capacity to provide necessary resources and facilitate children's activity.

Invitations to participate in the survey were distributed via email to 638 members of the Montessori teacher research panel, managed by the American Montessori Society (AMS), which includes teachers who have agreed to participate in online surveys. An announcement for the survey was also included in a weekly distribution of 32,213 emails from AMS, which generated 32 unique clicks. In addition, the survey was posted in multiple social-media outlets popular with Montessori educators (i.e., NCMPS, University of Kansas Center for Montessori Research, Global Montessori Network). Participants were encouraged to share the link with colleagues to expand the pool of participants. Data collection occurred between July 16, 2020, and August 12, 2020. Approval for this study was obtained from the University of Kansas Human Research Protection Program.

Participants

A total of 130 EC teachers and 92 El teachers initially responded to the survey. Of these, 122 EC and 90 El teachers reported using some form of distance learning in the spring of 2020, which was a requirement for participation. A very small number of those who started the survey did not complete it, and most of those who did not complete the survey answered less than half the questions (31 of 37 incomplete EC surveys contained responses to less than half the questions, and 13 of 15 incomplete El surveys contained responses to less than

half the questions). So, we included data only from those teachers who completed the entire survey. Finally, we excluded the small number of international teachers who responded (seven EC, seven El), leaving a final survey sample of 78 teachers at the EC level and 68 teachers at the El level.

The median age of educators who participated in the survey was roughly 45, with 46% of the EC teachers and 50% of the El teachers younger than 45. Some of the key characteristics of the survey sample, described below, are in Tables 1–3. The vast majority of teachers (87% for EC, 93% for El) identified as White, but this lack of diversity is not surprising given that previous research has highlighted the lack of teachers of color as a challenge for the field (Debs & Brown, 2017). At both levels, more than half the teachers had completed an AMS-affiliated training program for the level they taught, with another one-fourth having completed an AMI-affiliated program. EC teachers were largely employed at independent schools, while El teachers were more evenly split between public and independent schools. Finally, regardless of level, schools were fairly evenly divided between large cities, midsize cities, and suburban areas. The remaining portion were in small cities or rural areas.

Analysis

Analysis of the survey data primarily involved descriptive statistics where we provided the means and standard deviations of measured scale variables and the frequency distribution in percentages for nominal variables. We reported the results separately for the EC and El levels because the relative emphasis of logic-model components and how they are expressed differ for EC and El classrooms, as noted previously. Because our primary goal was not to compare the two age levels, direct comparisons involving tests of statistical significance were not employed. However, we will posit explanations for the differences of note.

For the open-ended questions, we initially used a provisional coding approach to identify tentative codes, followed by focused coding to determine categories that emerged with relatively high consistency (Saldaña, 2009). To understand the frequency with which a code emerged, we converted the item counts to percentages of the total number of responding teachers. When reporting percentages, then, these numbers indicate the percentage of all responding teachers (78 EC; 68 El) whose comments reflected a given code.

Table 1
Type of Teacher Training, by Level Taught

	Early Childhood (%)	Elementary (%)
Completed AMS-affiliated training program	56	54
Completed an AMI-affiliated training program	26	22
Completed other training or in process	13	22
No formal training	5	1

Table 2
Type of School, by Level Taught

	Early Childhood (%)	Elementary (%)
Public	21	41
Independent	72	56
Something else	8	3

Table 3
School Location, by Level Taught

	Early Childhood (%)	Elementary (%)
In a large city	27	25
In a midsize city	26	28
In a small city	18	13
In a suburb of a city	26	24
In a rural area	4	10

Results

The overall picture that emerged from the survey suggests that Montessori teachers designed distance-learning arrangements that balanced virtual and hands-on experiences for children with little input from school administration. We first discuss details of the remote-instruction situation teachers faced, followed by a breakdown of their strategies related to the resources and actions involved in Montessori distance learning. We conclude by examining how educators felt about their ability to uphold Montessori principles, as well as their perceptions of families' successes and challenges while navigating Montessori education from home.

Distance-Learning Situation for Teachers

Before examining specific components of Montessori practices as outlined in the logic model, we first provide further details on the situation for educators in the spring of 2020. According to responding teachers, participation

in distance learning was relatively high. More than three-quarters of participants reported that 60% or more of their students participated in remote learning. Specifically, teachers reported roughly three-quarters of El students ($M = 77.78\%$, $SD = 24.97$) and two-thirds of EC students participated ($M = 66.27\%$, $SD = 22.76$) in the spring of 2020. Even with high levels of participation, teachers recognized that families faced considerable challenges. Qualitative responses about collaborating with families suggested that educators understood and took into account these distance-learning challenges as they developed strategies for their students. One teacher articulated the challenges:

> I got the feeling parents and caregivers were overwhelmed with so many things going on, they hardly took time to read the information I sent. And the community I work with are devoted parents and caregivers, but I think the situation was bigger than their energy.

Teachers reported receiving varying levels of input from their schools regarding distance-learning strategies,

including both guidance to help them understand which strategies they were expected to employ and support in developing specific distance-learning strategies. Only one in five respondents at both levels reported receiving a great deal or a moderate amount of guidance about which strategies they were expected to employ for distance learning. However, El educators were less likely to say they received a great deal of guidance (see Figure 2). Patterns were similar when asked about the level of support educators received from administration for developing distance-learning strategies, with El teachers less likely to say they received a great deal or a moderate amount of support in developing distance-learning strategies (see Figure 3).

Figure 2
Amount of Guidance From School's Administration Regarding Expected Distance-Learning Strategies
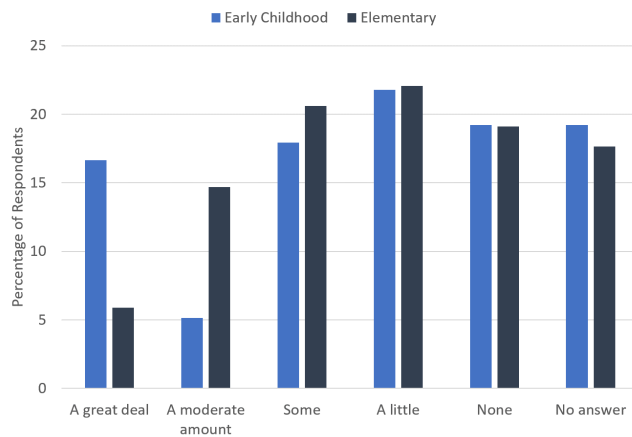
Figure 3
Amount of Support From School's Administration for Developing Distance-Learning Strategies
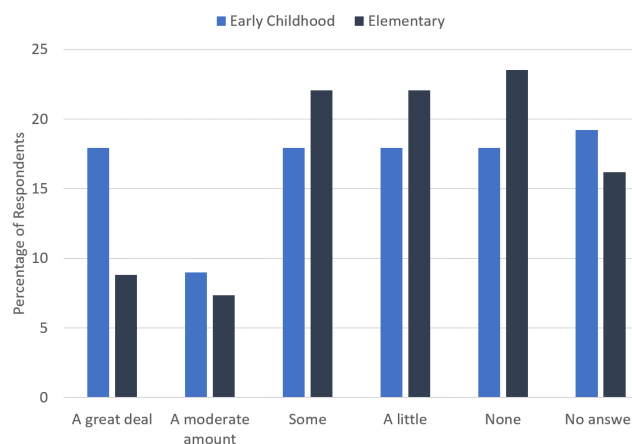
Educators reported that their distance-learning approach resulted in students dividing their time between screen-based activities (e.g., Zoom meetings, iPad apps) and hands-on activities (e.g., Practical Life activities like cleaning or preparing food, work with manipulatives), with hands-on activities representing just over half of students' work time ($M = 55.54\%$, $SD = 23.58$ for EC; $M = 54.04\%$, $SD = 19.33$ for El). A smaller portion of time was dedicated to screen-based activities ($M = 37.91\%$, $SD = 23.66$ for EC; $M = 42.28\%$, $SD = 18.87$ for El). Because it is possible for students to be engaged in work that might not be clearly considered either a hands-on or a screen-based activity, the sum of the two percentages does not necessarily equate to 100%.

In terms of the distance-learning strategies employed by Montessori teachers at both the EC and El levels, the vast majority engaged in live videoconferencing with students (see Table 4). Videoconference interactions with families were also common at both levels, with about two-thirds of teachers reporting they had used this strategy. Additionally, about half of teachers reported they had live-streamed read-alouds. El teachers were twice as likely as their EC counterparts to have distributed digital devices or other technologies to families, and El teachers were almost twice as likely to report using an electronic learning management system like Google Classroom. El teachers were also somewhat more likely to send physical materials or packets home for families. In summary, teachers were primarily responsible for designing the distance-learning arrangements for their students, with most teachers relying on live videoconference experiences without substantial support from school administration. Teachers believed that most families' involvement reflected their individual capacity under the circumstances to support their students' experiences with a combination of online and hands-on activities. With a better understanding of the basic structure of distance learning from the perspective of Montessori teachers, we now consider how specific elements of the logic model (i.e., resources, actions, and goals) were represented.

Teachers' Application of Montessori Principles During Distance Learning
The Montessori logic model outlines the resources necessary for Montessori implementation, appropriate actions of children in Montessori classrooms, and the desired goals that would result. We used resources and actions from the model as the foundation for examining

Table 4

Strategies Employed for Distance Learning, by Level Taught

	Early Childhood (%)	Elementary (%)
Zoom or video interactions with students	88	97
Zoom or video interactions with families	65	66
Physical materials & packets for families	60	74
Read-aloud livestream	53	51
Electronic learning management systems	42	79
Digital devices or other technology provided to families	23	46
Other (please specify)	24	18

Table 5

Strategies for Preparing the Environment, by Level Taught

	Early Childhood (%)	Elementary (%)
Involving parents & caregivers	51	24
Providing alternatives to Montessori manipulatives	33	44
Preparing lessons	28	35
Preparing for video conferencing with students	26	9
Preparing the teachers themselves	21	13
Providing technology & online resources	14	28
Creating videos	14	10
Creating work packets	10	6
Establishing a schedule	6	7
Providing hands-on materials	4	10
Providing supplies	3	7
Facilitating student choice	3	9
Facilitating independence	3	4
Encouraging creation of a work space	1	3

Montessori teachers' application of Montessori principles during distance learning, as described in the sections that follow.

Resources

The Montessori logic model outlines seven important resources as the foundation for Montessori education. Teachers reported employing a range of strategies to provide students with the necessary resources while learning from home.

Ordered Environments

Diverging strategies emerged by age level when we examined the open-ended data on how teachers described preparing the virtual learning environment as illustrated in Table 5. Not surprisingly, the EC group relied heavily on parent involvement, followed by providing learning materials in lieu of Montessori hands-on manipulatives, preparing lessons, and preparing for videoconferencing interactions with students. At the El level, involving parents and caregivers had a smaller but still substantial role, but providing learning materials in lieu of Montessori hands-on manipulatives and preparing lessons were still prevalent. Providing technological resources was a much larger focus at the El level.

In their contextualized responses, many teachers provided details about the role of parents and caregivers in preparing the environment. One EC teacher noted, "It's dependent on the family and their involvement in helping with their child's prepared environment at home." Another added, "I hope we don't have to continue having to work like this. It's difficult to prepare an environment at [a] distance. I explained to the parents the importance of letting the child do [the work] themselves, but it was

almost impossible." In terms of providing hands-on materials, one El teacher noted teachers had to "prepare hands-on activities (experiments, sewing projects, etc.) and other materials to add to the packets for children to do at home." Technology at the El level is evident in this teacher's comment: "I need to make sure the technology fits what [the children] are doing and that they understand how to use it. I keep in mind how much time is spent on- and offline."

Broad, Interrelated Curriculum

Teachers reported coverage of a full range of curricular subjects in distance learning, as illustrated in Table 6. Not surprisingly, Language and Math made up the largest proportion of instructional time, accounting for roughly half the time for both EC and El levels. Science/Social Studies and Cultural Subjects followed closely behind Language and Math. Practical Life and Sensorial areas (for EC) made up the smallest proportion of time in distance learning. Qualitative data from the survey also suggest teachers made an effort to create

connections among various parts of the curriculum: "We also focused strongly on Practical Life, applied science and experimentation, and connected these elements naturally to LA [language arts] and Mathematics."

Individualized Instruction

Table 7 outlines the strategies teachers used for individualizing instruction, generally showing greater individualization of instruction at the El level than at EC. A similar proportion of El and EC educators—close to half—reported giving personalized assignments, materials, and lesson plans. However, a third of EC educators indicated that all children in their classes received the same lessons, materials, and assignments; only half as many El participants said the same. El educators also appeared more likely than EC educators to differentiate assignments by grade level and to meet one-on-one with each child regularly. Considering the limited developmental capacity of EC students to navigate the technology often employed in personalizing assignments, these results do not seem surprising.

Table 6
Percentage of Teaching Time Devoted to Each Area of the Curriculum, by Level Taught

	Early Childhood		Elementary	
	M (%)	*SD*	*M (%)*	*SD*
Language	26.99	12.01	25.47	8.94
Math	18.94	9.55	26.65	9.53
Science and Social Studies	16.09	11.49	20.75	8.60
Cultural (music, movement, art)	14.25	9.97	13.79	8.60
Practical Life	12.14	8.19	8.39	8.36
Sensorial	8.60	6.30	N/A	N/A
Other	2.99	5.92	4.96	9.25

Table 7
Individualization Strategies, by Level Taught

	Early Childhood (%)	Elementary (%)
Each child received personalized assignments, materials, and lesson plans.	42	49
Children received assignments, materials, and lesson plans according to their grade level (e.g., one plan for grade 1, one plan for grade 2, etc.).	40	60
All the children in my class received the same lessons, materials, and assignments.	32	16
I met one-on-one with each child regularly.	31	43
Other	23	26

Traditionally, Montessori educators closely observe children at work to inform how to individualize and deliver instruction. We asked survey participants how they approached observation during distance learning, when they could not simply walk up to children and look over their shoulders as they worked. As shown in Table 8, three-quarters of EC educators relied on data reported by parents or caregivers, including narrative and photos, to take the place of in-person observation. While almost two-thirds of El participants also used parent or caregiver reports, the majority of these educators analyzed students' work products themselves. Close to half of respondents at both levels used videoconferencing to observe students at work.

Positive Emotional Climate

Overall, most participating Montessorians indicated that they were able to provide the resources for a positive emotional climate for learning, with more than three-quarters indicating that they did this *moderately well* (38% for both EC and El), *very well* (35% for EC, 38% for El), or *extremely well* (6% for EC, 7% for El) Another 19% of

EC educators and 15% of El educators reported that they did this *slightly well*. Only 1% believed they did not do this well at all. This suggests that, despite the challenging circumstances presented by distance learning, Montessori educators continued to feel reasonably effective in providing a positive emotional climate for their students.

Clear Expectations and Freedom Within Limits

We offered an open-ended question to help us understand how teachers provided limits, given that typical limits established in the classroom may not be effective when children work from home. Once again, the picture was quite different for EC teachers and El teachers, as evident in Table 9. Both groups relied heavily on collaboration and communication with parents and caregivers, as well as on online etiquette lessons for children, while a sizable portion of both groups reported that they simply were unable to set limits or were unsuccessful at setting limits during this time. Beyond these strategies, El teachers reported implementing a larger number of additional approaches for establishing boundaries for children than did EC teachers. At

Table 8
Observation Approaches, by Level Taught

	Early Childhood (%)	Elementary (%)
Used parent-reported data, including narrative, photos, etc.	75	63
Analyzed students' work product	38	89
Observed students working via videoconference	41	44
Other (please specify)	16	16
None of these	13	6

Table 9
Strategies for Creating Limits, by Level Taught

	Early Childhood (%)	Elementary (%)
Collaborating & communicating with parents and caregivers	33	28
Failing to set limits or not successfully setting limits	24	18
Encouraging online etiquette	23	31
Providing Grace and Courtesy lessons	12	1
Clarifying expectations for lessons and work	12	29
Relying on parents and caregivers for setting limits	9	3
Leveraging schedules, work plans, work records	9	31
Following child by offering flexibility or choice	9	21
Managing parent interference	6	0
Discussing and communicating issues with students	6	3
Checking in with students one-on-one	5	19
Relying on classroom strategies	5	9

the Elementary level, teachers relied on children's engagement with the work itself, along with schedules, work plans, and work records, to provide structure and limits for children. El teachers also employed flexibility and student choice, as well as regular one-on-one check-ins with students.

Because teachers could not directly monitor children's activities or model desired behavior as they would in the classroom, they could only provide parents and caregivers with resources to understand appropriate expectations and had to rely on them to follow through on expectations because children were at home. Both EC and El teachers indicated that placing responsibility for follow through on parents and caregivers was difficult for many families. One EC teacher reported, "I am working to educate parents to set limits at home. I am also helping children understand that I am not physically there, but school [behavior] is still my expectation. Honestly, this part is very hard with primary-age [EC] children." Another similarly commented, "The challenge is that many parents don't have training or mental space/energy to develop the art of giving choice while inspiring and guiding the child to activities that will provide challenge and develop growth." El teachers reported similar challenges, with one saying, "It was a lot of struggling through working with parents. Parameters around live meetings were VERY successful, including setting rules together, but helping children accomplish work asynchronously was difficult." Another El participant added, "[Setting limits] is impossible to do without

parent support. Additionally, not all children participated. Because the district did not require children to turn in or complete assignments, [enforcing expectations] was nearly impossible without parents."

Experiences With Nature

Teachers relied heavily on families to facilitate experiences with nature; over 80% of respondents at both levels encouraged parents and caregivers to spend time with children outside (90% for EC, 85% for El), while more than three-quarters designed outdoor activities for children (76% for EC, 83% for El). Providing electronic resources about the natural world was a strategy widely employed by all teachers surveyed, and El educators were even more likely to do so (86% for El, 69% for EC). The previously discussed attitudes about the appropriateness of technology in Montessori classrooms likely helps explain the relatively lower level of reliance on nature-oriented electronic resources for EC teachers.

Adaptation for Atypical Development

When asked how they were adapting lessons and activities for children with disabilities, participants were most likely to say that they provided additional one-on-one contacts via phone or web meetings and increased support for family members who were caring for the learner (see Table 10). Just over half of respondents at both levels indicated they employed these strategies. A substantial portion of teachers reported consulting with special educators to better serve children with disabilities

Table 10
Adaptations for Children with Disabilities, by Level Taught

	Early Childhood (%)	Elementary (%)
Additional support for family members caring for learner	60	51
Provided additional one-on-one contacts via phone or web meetings (more than other students)	55	59
Consulted with special educators to provide appropriate learning services online	35	46
Consulted with service providers (e.g., occupational therapists, speech language pathologists, or physical therapists) to help carry over specific goals into academic lessons online	30	21
Provided physical materials	25	30
Revisions to learner's IFSP, IEP, or BIP	5	21
Other (please specify)	13	11
Not applicable	49	7

Note. IFSP = individualized family service plan; IEP = individualized education plan; BIP = behavior intervention plan.

through providing appropriate learning services online; a slightly smaller contingent reported consulting with service providers like occupational therapists and speech language pathologists. In describing work with special educators, one survey respondent said, "As we do in the classroom we adapt our approach to meet each child's needs. We adapted on-the-go to individual students." Adaptations reflect an attempt to honor the Montessori credo of "follow the child" even within the remote-learning context (Montessori, 2012, p. 7). Less than a third of participants at either level reported supplying children with physical materials as an adaptation. Approximately one-fifth of El respondents said they had revised children's individualized education plans (IEPs), while only 5% of EC respondents said they had done so.

Actions

The Montessori logic model describes key actions that children should engage in when the appropriate resources are available. Teachers in our survey described their approaches for facilitating these actions for their students.

Choice

We relied on open-ended responses to allow for wide-ranging responses regarding how teachers incorporated the crucial Montessori concept of giving children choices in their learning. Table 11 illustrates the percentages for each of the choice strategies mentioned. It shows that teachers at the El level incorporated a wider variety of choice strategies for their children than EC teachers did, with verbatim comments suggesting that significant choice was simply difficult to implement for the youngest children. At the El level, though, roughly half of teachers allowed students to choose which work to do in general, or at least in select areas. A smaller but still sizable number of El teachers also leveraged technology to facilitate student choice.

When we examined the verbatim responses, additional details emerged. Specifically, many teachers mentioned that children could choose the order in which to complete assignments, when to take breaks, and when to work during the day. Some teachers reported that children could opt in or out of participating in some

Table 11

Strategies for Allowing Student Choice, by Level Taught

	Early Childhood (%)	Elementary (%)
Allowing students to choose which work to do	37	46
Making work optional	14	13
Leveraging technology	14	21
Involving parents & caregivers	14	6
Allowing students to choose the time to do their work	10	15
Offering a variety of work to choose from	10	12
Offering choice in select areas (enrichment, cultural, research, follow-up)	6	57
Incorporating little or no student choice	6	1
Allowing choice of books & reading materials	5	7
Allowing choice in how to demonstrate learning	5	12
Choosing the order for completing work	3	3
Offering flexibility to meet individual needs	3	0
Incorporating unstructured time	3	1
Leveraging choice tools (bingo, choice boards, menus, etc.)	3	15
Scheduling opportunities for children to show & tell	3	0
Allowing students to use materials available at home	1	0
Requiring or assigning some work	1	10
Grading not provided	0	3
Leveraging work plans	0	7

activities. Even so, teachers were often unable to offer as much choice in distance learning as they could in the classroom. An EC teacher commented:

> This was the biggest change in distance learning. In order to plan lessons or activities with multiple children, there was very little choice involved. There were some choices that children [were] able to make in their work at home: which three-part cards they used or which story prompt they wrote from, etc.

An El teacher had similar sentiments:

> Without access to the full spectrum of materials we have in our classroom, I found it difficult to provide children with as much choice as they typically have, but they could still decide which works (from a narrower range of options) they wanted to complete and when.

Real-Life and Manipulative Materials

The use of hands-on didactic materials is one of the hallmarks of the Montessori Method; Montessorians have long eschewed digital resources in favor of analog materials. The experience of distance learning in spring 2020 seems to reflect this preference. When asked how they were using Montessori materials in distance learning, the most common response was that they were providing instructions and templates for families to replicate Montessori materials at home. More than three-quarters of EC respondents (i.e., 77%) and almost two-thirds of El respondents (i.e., 65%) indicated they had done this. Nonetheless, a substantial proportion of respondents reported they used digital versions of Montessori materials for children to manipulate electronically. Not surprisingly, this response was more common among El participants (60%) than EC participants (49%). Less than a quarter of respondents at either level reported allowing children to borrow materials from school to use at home (17% for EC, 20% for El).

Some teachers reported using online apps to organize lessons and schedules, including Google Classroom, Microsoft Teams, ClassDojo, Seesaw, WhatsApp, Skype, and brightwheel. However, teachers reported that these programs sometimes presented challenges for families because they required access to printers and ink, as well as sufficient Internet speed at home for staff and families. Survey respondents indicated some sensitivity to families' limited capacity to prepare manipulative materials, with one participant noting, "We had many activities using

materials they would have around the house, but tried to avoid work that required parent preparation or cost."

Overall, this experience does not seem to have had much of an impact on participants' attitudes toward technology; more than half of participants at both levels reported that their feelings about the use of technology in Montessori classrooms remained about the same as before the pandemic (58% EC, 53% El). Other EC educators were fairly evenly split: 24% were less favorable toward technology and 18% were more favorable as a result of distance learning. Conversely, almost a third (31%) of El educators reported developing a more favorable attitude toward technology, with just about half as many (16%) describing their attitudes toward technology as less favorable as a result of distance learning. These results seem consistent with differences in views on technology evident before the pandemic when comparing EC and El levels.

Collaboration and Peer Teaching

As Table 12 shows, teachers at both the EC and El levels were highly likely to report that they provided virtual social time, like having lunch together with children over Zoom, as a way for children to interact with their classmates; almost two-thirds of EC participants and more than three-quarters of El participants reported utilizing this strategy. The majority of respondents also held circle time virtually, though this was a little more common at the EC level. About one-third of El participants said they provided group projects; not surprisingly, this was less common at the EC level. Online discussion boards were not widely used at either level. El teachers also reported holding book groups and readers theater, which involves reading a script adapted from a book. One El teacher had group meetings in Minecraft. Teachers at both levels reported using Flipgrid and encouraging parents and caregivers to have virtual playdates.

Distance learning created obstacles to the Montessori traditions of collaboration and peer teaching, which may be why so much emphasis was placed on social connections rather than academic collaboration. As one survey participant put it, "They have no peers to work with!" Another stated, "One of my biggest frustrations in remote learning was that classroom norms around peer teaching and helping disappeared, so students came to me, their teacher, with problems, rather than seeking out a peer first."

Table 12

Opportunities Provided for Children to Collaborate

	Early Childhood (%)	Elementary (%)
Circle time	69	54
Virtual social time (e.g., having lunch together over Zoom)	64	79
Group projects	16	36
Discussion boards	9	16
Other (please specify)	17	31
None of these	11	11

Conflict Resolution

Teachers reported that support for conflict resolution was not widespread during distance learning. Less than one-fifth of respondents at either level (14% EC, 19% El) reported providing access to a virtual Peace table or other designated venue for students to resolve conflicts. Almost one-third of EC respondents (31%) indicated that this support was not needed because children were not gathering; only 16% of El respondents indicated the same.

Artistic Self-Expression

Generally, the experience of distance learning appears not to have had a tremendous impact on children's access to artistic self-expression. A little more than half of survey respondents at both levels (51% EC, 56% El) indicated that children had about the same number of opportunities to express themselves artistically as they did before the pandemic. The remaining respondents were fairly evenly split about whether the situation created more or less opportunity for artistic self-expression than when students were in school (19% EC and 21% El said more; 21% EC and 24% El said less).

Freedom of Movement in Classroom

Although freedom of movement is an important activity in Montessori classrooms, distance-learning arrangements were not conducive to teachers facilitating it. Thus, for the purposes of this survey, as previously noted, the concept was expanded to the broader notion of independence when inquiring about the degree to which families supported such activities. Many teachers of older children intentionally planned for work that children could accomplish independently; one said, "Everything I assigned as work was intended to be independent work, and did not rely on adults for the work to be understood and completed."

Clearly, variety exists across teachers' experiences and children's age levels. One teacher commented that "it was really us trying to convince parents to let the children be independent." Many comments related to strategies for helping parents and caregivers encourage independence in their children, with one saying, "My goal is to give every parent a mini Montessori training to empower them in their homes." Teachers believed that families needed to be reminded to "allow for mistakes and self-correction" and only "provide guidance when needed."

Maintaining the Environment

Generally, teachers seemed to feel that children had fewer opportunities to participate in caring for their learning environment during distance learning than they had when physically attending school. This trend was especially pronounced at the EC level. When asked if children had more, fewer, or about the same number of opportunities to maintain the environment at home during distance learning as they had at school, more than half of EC participants said children had fewer opportunities to maintain the environment (18% said more, 28% said the same, 54% said less). Conversely, El participants were about evenly split among the three choices (32% more, 31% same, 37% less). Although we did not explore the reasons for limited involvement of children in maintaining the environment in detail, one possible explanation suggested by the qualitative analysis that follows may be that caregivers were less equipped to provide real opportunities for the younger children to have responsibilities around the home during distance learning. Creating such opportunities requires significant patience, as well as appropriate tools, both of which may have been in short supply while families sheltered at home.

Nonetheless, qualitative survey data indicate that many teachers believed they did what they could to provide support for families in this area: "In my weekly emails to parents I tried to suggest ways the students could help around the house. I included 'chores/helping'

in their weekly planning grid, so they had a space to check each day." It is worth noting that survey responses reflect only educators' perceptions of what was or was not happening at home and may or may not provide an accurate picture of what families were doing with regard to care of the environment. EC teachers reported providing support for parents and caregivers in setting up their homes; one participant said, "I had sent out suggested physical setup at home of a number of Practical Life works to be rotated. I also would email helpful articles to assist parents, as they worked through this unusual time." Others expressed understanding for parent and caregiver stress.

Goals

Based on the children's actions when given appropriate resources, the Montessori logic model outlines anticipated outcomes of Montessori education. Overall, teachers' feelings about their ability to uphold Montessori principles during distance learning were mixed. The largest group (47% for EC, 44% for El) felt they had done so moderately well, but the next-largest group (32% for EC, 28% for El) felt they had done only slightly well. A relatively small proportion (14% for EC, 22% for El) said they had done very well or extremely well upholding Montessori principles.

In terms of specific goals, participants rated their perceived effectiveness in working toward each outcome on a scale of 1 (*not effective at all*) to 5 (*very effective*; see Table 13). They reported feeling moderately effective in working toward the seven Montessori outcomes identified in the logic model: self-discipline, purposeful activity, sustained focus, compassion for others, positive attitude toward school, confidence and initiative, and becoming a contributing member of society. For teachers in both age groups, participants appeared to

feel that, of these seven Montessori outcomes, fostering a positive learning environment was where they were most successful, while fostering sustained focus was most challenging. According to the ratings provided, these results suggest that, overall, survey participants felt moderately effective in achieving the goals of Montessori education via distance learning. In their open-ended responses throughout the survey, participants provided further insights into their feelings about their effectiveness in achieving expected goals. We provide perspectives related to the top four goals in the sections that follow.

Positive Attitude Toward School

While educators felt most positive about their ability to foster their students' positive attitude toward school, this was no easy task. One teacher reflected on how much parents and caregivers contribute to accomplishing the desired outcomes of Montessori education during distance learning: "They have to oversee the moment-to-moment learning, help students maintain focus, make appropriate choices, help with work, and maintain a positive attitude. [That is] a lot."

Purposeful Activity

Qualitative survey data regarding purposeful activity, the second strongest outcome, revolved around children having meaningful opportunities to contribute to home life. Teachers provided parents with suggestions for ways to help around the house and for setting up a dedicated workspace. Children were encouraged to help in the kitchen, to water plants, and to be responsible for their own self-care as needed—in other words, to engage in activities of daily life. One participant reported that "many of the children would cook meals for the family, independently."

Table 13
Perceived Effectiveness on Child Outcomes, by Level Taught

	Early Childhood		Elementary	
	M	SD	M	SD
Positive attitude toward school	3.62	0.86	3.44	0.82
Purposeful activity	3.23	0.84	3.37	0.73
Confidence and initiative	3.09	0.89	3.21	0.72
Compassion for others	3.09	1.02	3.16	0.97
Contributing member of society	2.96	0.89	3.03	0.95
Self-discipline and knowledge	2.86	0.86	2.96	0.80
Sustained focus	2.73	0.92	2.75	0.84

Confidence and Initiative

In the area of confidence and initiative, teachers emphasized talking about positive choices with children, developed and suggested lessons that were self-correcting, and talked with families about the connection between confidence and independence. One teacher reported fostering confidence by giving children opportunities to share their work with their peers on Zoom: "This gives a sense of pride when they are able to say 'I did this by myself.'" Another teacher focused on initiative, "encouraging self-made projects, asking them how they could solve the problems of online learning, scaffolding to their independence level when needed." Many of the responses to the survey's open-ended question about independence connected to the idea of confidence and initiative and described strategies teachers employed in this regard. To set children up for success, teachers helped students in "making plans for getting work done and different strategies." As one teacher described it, "We offered ideas for the child to wrestle with and figure out on their own, ex: exploration of six feet social distance: [children were to] make a line of objects six feet long and send teacher a picture." One teacher even explained that they were "at times sending home work that erred on the side of below level so students could build independence and confidence," and another teacher was sometimes "reminding [students] of their skills and abilities."

Self-Discipline

Teachers expressed that they needed to maintain flexibility and empathy in their commitment to promoting self-discipline for children during distance learning. Responses to open-ended survey questions reflected a balancing act between providing support for families in this area and recognizing that expectations at home might have to be different from expectations at school. Many teachers reported providing parents and caregivers with emails, videos, or Zoom training on how to support independence and self-discipline. Teachers would encourage parents and caregivers to remind children that "parents had their own work to do." Nonetheless, in many cases, the social-emotional needs of the family took precedence:

> We found that we needed to be more understanding of the parents' need to maintain their household in the way that their emotions (as impacted by the pandemic) would allow them. We observed many parents doing

> things for the children that the children were totally capable of doing, but we realized it was the parent's need to maintain some control and order over this situation, so we usually had to let it be.

As another teacher put it, "We learned quickly that school at home could never be a one-size-fits-all experience in terms of independence."

Perceived Parent Impact on Self-Discipline, Initiative, and Confidence

Several teachers commented on how families influenced their children's self-discipline, initiative, and confidence, often unintentionally interfering with these goals. One said she "reminded parents of the independent nature of Montessori and that children should be able to independently do all these lessons as well as choose the work they were interested in." In providing examples of the challenges, one teacher commented that "other parents were less inclined with independence." Another said,

> Fostering [independence] in a remote-learning format, however, was challenging, because some parents felt they needed to "take charge" and tell children exactly what to do when. In addition, I think it was hard for some children to get into "work mode" when they were not in an environment specifically prepared to engage them in developmentally appropriate work. Not having the positive support of peer learners was also a challenge for some children.

Teacher Perspectives on Parent and Caregiver Successes and Challenges

Because caregivers were an integral part of the distance-learning process as children learned from home, we explored teachers' perspectives about parents' and caregivers' successes and struggles with 13 Montessori resources and actions included in the logic model. Table 14 breaks down the percentage of teachers who listed each of these items as one of the top three elements families were most successful in implementing at home during distance learning, while Table 15 shows the percentage of teachers who listed each of these items as one of the top three elements families needed the most support with during distance learning. Teachers believed the top successes for both the EC and EI parents and caregivers included experiences with nature, use of

Table 14

Top Three Elements of Montessori Education in Which Families Were Most Successful, by Level Taught

	Early Childhood (%)	Elementary (%)
Experiences with nature	61	45
Artistic self-expression	45	29
Use of real-life and hands-on materials	42	37
Positive emotional climate	39	32
Choice	27	34
Delivering individualized instruction	18	32
Adaptation for atypical development	16	13
Care of the learning environment	13	8
Independence	12	31
Clear expectations/freedom within limits	9	15
Sustained focus	4	8
Ordered environments	3	5
Collaboration with peers	3	6
Conflict resolution	0	0
None of these	1	9

Table 15

Top Three Elements of Montessori Education for Which Families Required the Most Support, by Level Taught

	Early Childhood (%)	Elementary (%)
Clear expectations/freedom within limits	49	55
Sustained focus	46	52
Independence	38	34
Delivering individualized instruction	28	28
Ordered environments	27	27
Use of real-life and hands-on materials	26	22
Positive emotional climate	19	18
Collaboration with peers	14	22
Adaptation for atypical development	12	21
Conflict resolution	9	0
Care of the learning environment	9	4
Experiences with nature	8	1
Choice	8	10
Artistic self-expression	4	3
None of these	0	1

real-life and hands-on materials, and positive emotional climate. EC teachers also included artistic self-expression as a successful element for parents and caregivers, while El teachers considered offering choice and engaging in individualized instruction as top parent and caregiver successes. In terms of challenges, teachers at both age levels responded similarly; the largest proportion of both groups indicated parents and caregivers needed the most support with establishing clear expectations and freedom within limits, enabling sustained focus, and fostering independence.

Discussion

This study provides insight into many aspects of the experience of Montessori educators during the pandemic, including their teaching situations, their interpretation and application of Montessori principles, their assessment of their own effectiveness in achieving the desired outcomes of Montessori education, and their perceptions of the successes and challenges of families and children. While much of the shift to distance learning focused on technology, these results reinforce

the importance of human connections for teachers in maintaining relationships with families, sustaining vibrant classroom communities, and connecting with school leaders. Teachers' implementation of hands-on activities surpassed digital ones, despite the emphasis on Zoom and video content. Teachers found ways to add personalization and individualization, even though the use of grade-level or whole-class lessons was necessary more often than teachers desired. Teachers connected with students and students to one another through one-on-one meetings, virtual circle time, and social time. Teachers connected with parents and caregivers to help them create and maintain an effective learning environment for their children, albeit with reportedly mixed results caused by the realities of families' day-to-day circumstances. Nature became a widely embraced balm, according to teachers, providing an outlet for families to spend time together outside and for children to enjoy outdoor activities on their own. Without much support from their schools, teachers tried to incorporate as much of the Montessori experience as possible. Still, they felt that they were able to uphold Montessori principles to only a moderate degree under the circumstances. Clearly, the experience of distance learning resulted in challenges, frustrations, and compromises for teachers, families, and students.

This study suggests implications for Montessori educators and school leaders as they prepare for all children to return to face-to-face instruction. First, parents and caregivers have forged new relationships with educators during the pandemic. While returning to a clearer delineation between school and home may be welcome for many families, parents' and caregivers' responses to the shift may range from a desire to continue to feel more connected to their children's educational experiences to a desire to reduce the responsibility they have shouldered on top of their own commitments during this time. Anticipating and accommodating these varying attitudes can lay the groundwork for continued strong relationships between teachers and parents or caregivers.

Second, children are likely to present unique challenges for educators when returning to the classroom after such an extended absence. As they worked from home, children's distance-learning experiences often allowed less choice and independence than they enjoyed in their classrooms at school, so students' responses to regaining these opportunities will likely require patience and understanding. Some children may embrace a return to independent work; others, to be able to thrive with less adult involvement, may need to gradually relearn to trust their own choices within the Montessori structure. In addition, with families relying so much on technology and having access to fewer opportunities for activity outside of the home during the pandemic, teachers may find that their students' physical capabilities and stamina have suffered, making it more difficult for them to sustain the energy necessary to complete a full work cycle and outdoor play. Children also have lacked access to the specially designed Montessori materials while they have been away from the classroom, so the careful handling that is an integral part of the Montessori experience may need to be relearned, even among older children. Given the varying degree of engagement reported by teachers, it is also likely that children will return to the classroom with a wide range of readiness to progress academically, requiring educators to incorporate an even greater degree of accommodation for variability in their classrooms which, fortunately, are well equipped for these differences.

Finally, teachers will understandably find that the distance-learning experience affects them directly as they return to the classroom. Limited opportunities for direct, extended observation and individualization while children were learning from home may leave them feeling less attuned to the unique needs of the children in their classrooms. Assessing the developmental progress of each child when they come back to school will require teachers to renew their observation skills and be patient as they rebuild rapport with their students. As many teachers felt less able to implement limits on student freedom during distance learning, they may have to consider additional strategies for reestablishing the highly functioning classroom dynamic as students adjust. Understandably, the challenges of teaching children who are learning from home might have taken a toll on teacher morale and energy, even as teachers face yet another challenging transition returning to the classroom. In the end, as human connections have suffered for many people during distance learning, Montessori educators will likely hunger for support, professional connections, and a return to the rich classroom experiences that drew them to the field of Montessori education in the first place. School leaders will need to employ tangible strategies to support teachers transitioning back to the classroom and to demonstrate how much teachers are valued in order to retain experienced educators after they have endured the hardships of the COVID-19 pandemic.

Limitations

Although resource constraints and the urgency of the topic dictated the scope of this study, it would have been more robust with a larger and more diverse survey sample. Even so, these study results provide unique insights into Montessori educators' response to the unprecedented distance-learning experience in the spring of 2020 and suggest potential considerations as schools prepare for all children to return to face-to-face learning.

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Appendix
Survey Instrument

Montessori Education's Response to COVID-19 Distance Learning

Q1 Thank you for helping the National Center for Montessori in the Public Sector and the University of Kansas Center for Montessori Research by participating in a research study to understand how Montessori educators have been interpreting and applying Montessori principles to serve children and families during the pandemic. We are using this unique time to understand Montessori adaptation and implementation during distance learning. Use the link below to participate in an anonymous online survey and share it with colleagues who may wish to participate.

You can contact akmurray@ku.edu for more information. This study should take 15 minutes to complete and should not produce any risk or discomforts beyond those encountered in everyday life. This study provides no direct benefit to participants. The next page will outline basic information about the study so that you can make an informed decision about participating. Please review the information statement and click "NEXT" if you consent to participate.

Q2 Montessori Education's Response to COVID-19 Distance-Learning Requirements

Teacher Survey Information Statement

KEY INFORMATION This project is studying how Montessori educators are interpreting and applying Montessori principles to serve children and families. Your participation in this research project is completely voluntary. Your participation will take approximately 15 minutes. You will be asked to complete an online survey. Detailed information on procedures can be found below. This study should not produce any risk or discomforts beyond those encountered in everyday life. We hope that this study will provide insight on Montessori practices as they are translated to a distance-learning environment. This study provides no direct benefit to participants. Your alternative to participating in this research study is not to participate.

INTRODUCTION

The Center for Montessori Research at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty.

We are conducting this study to better understand how Montessori educators are interpreting and applying Montessori principles to serve children and families. This will entail your completion of an online survey. Your participation is expected to take approximately 15 minutes to complete. The content of the survey should cause no more discomfort than you would experience in your everyday life.

Although participation may not benefit you directly, we believe that the information obtained from this study will help us gain a better understanding of Montessori practices as they are translated to a distance-learning environment. Your participation is solicited, although strictly voluntary. Your name will not be associated in any way with the research findings. Since this is an anonymous online survey hosted by Qualtrics, your identifiable information will not be associated with your responses. It is possible, however, with internet communications, that through intent or accident someone other than the intended recipient may see your response.

If you would like additional information concerning this study before or after it is completed, please feel free to contact us by phone or mail.

Completion of the survey indicates your willingness to take part in this study and that you are at least 18 years old. If you have any additional questions about your rights as a research participant, you may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, email irb@ku.edu.

Sincerely,
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Q3 What was your role in the spring of 2020?

- ○ Teacher (1)
- ○ School leader (2)
- ○ Classroom assistant (3)
- ○ Support staff (4)
- ○ Para educator (5)
- ○ Other (please specify): (6) _____

Q4 What age level of children did you work with in the spring of 2020?

- ○ Primary (ages 2 1/2–6) (1)
- ○ Elementary (ages 6–12) (2)
- ○ Other (4) - Terminate

Q5 [If not Primary or Elementary] Thank you for your interest in this survey. At this time, we are only asking teachers of children ages 2 1/2 through adolescence to provide input. [Go to end of survey]

Q6 Montessori teachers and schools have responded in a variety of ways to the unprecedented challenges of distance learning presented by COVID-19. We need to understand the realities of your world and assure you that there are absolutely no right or wrong answers. We appreciate your open and honest responses and remind you that your name will not be associated in any way with the research findings. Since this is an anonymous online survey hosted by Qualtrics, your identifiable information will not be associated with your responses.

For the remainder of the survey please think about the spring of 2020 when asked about your approach to distance learning.

Q7 To the best of your ability, please focus on distance-learning activities in your school overall across classrooms.

Q8 In the spring of 2020, did you use any distance-learning strategies with your students?

- ○ Yes (1)
- ○ No (2) - Terminate

Q9 Please let us know about your situation and how COVID-19 impacted your Montessori program in the spring of 2020.

Open End

Q10 How much **guidance**, if any, did you get from your school's administration regarding what strategies you were expected to employ for distance learning?

- ○ A great deal (5)
- ○ A moderate amount (4)
- ○ Some (3)
- ○ A little (2)
- ○ None (1)
- ○ Not applicable

Q11 How much **<u>support</u>**, if any, did you get from your school's administration in developing strategies for distance learning?

- ○ A great deal (5)
- ○ A moderate amount (4)
- ○ Some (3)
- ○ A little (2)
- ○ None (1)
- ○ Not applicable

Q12 Which of the following strategies, if any, did you employ for distance learning? Select all that apply:

- ▫ Zoom/video interactions with students (1)
- ▫ Zoom/video interactions with families (2)
- ▫ Read aloud livestream (3)
- ▫ Physical materials/packets for families (4)
- ▫ Electronic learning management systems (i.e., Google Classroom, etc.) (5)
- ▫ Digital devices/other technology provided to families (6)
- ▫ Other (please specify) (7) _____

Q13 What proportion of your students' work time was spent on... (Please slide the indicator to the appropriate percentage.)

Screen-based activities (Zoom meetings, iPad apps, etc) ()

Hands-on activities (Practical Life, reading physical books,

working with manipulatives, etc.) ()

Q14 How has this experience of distance learning impacted your attitude toward the use of technology in Montessori classrooms? Would you say that your feelings about technology in Montessori classrooms is now...

○　　　More favorable (1)

○　　　About the same (2)

○　　　Less favorable (3)

Q15 In distance learning, what does it mean to you to "prepare the environment"?

Open End

Q16 What percentage of teaching time during distance learning was devoted to each of the following areas of the curriculum? (Please enter values so that the total will sum to 100%)

Language : _____ (1)
Math : _____ (2)
Sensorial : _____ (3)
Cultural (music, movement, and art) : _____ (4)
Science and social studies : _____ (5)
Practical Life : _____ (6)
Other : _____ (7)
Total : _____

Q17 What was the role of classroom assistant(s) during distance learning, if applicable? Select all that apply.

▢　　　Created video content. (1)

▢　　　Hosted live video interactions (e.g., Zoom). (7)

▢　　　Prepared materials for live video, packets or online programs (e.g., Seesaw). (2)

▢　　　Participated in communication with families or children. (3)

▢　　　Conducted 1:1 check-ins with children. (4)

▢　　　Other (please specify): (5) _____

▢　　　Not applicable (6)

Q18 Which of these instructional approaches, if any, did you employ with students in distance learning? Select all that apply.

▫ Each child received personalized assignments, materials, and lesson plans (1)

▫ Children received assignments, materials, and lesson plans according to their grade level (e.g, one plan for 1st grade, one plan for 2nd grade, etc.) (2)

▫ All the children in my class received the same lessons, materials, and assignments (3)

▫ I met one-on-one with each child regularly (4)

▫ Other (please specify): (5) _____

▫ None of these (6)

Q19 How well do you feel you were able to create a positive emotional climate for learning in a distance-learning environment?

○ Extremely well (5)

○ Very well (4)

○ Moderately well (3)

○ Slightly well (2)

○ Not well at all (1)

○ Not applicable

Q20 Freedom within limits is a key element of Montessori education. How, if at all, did you set limits for children when you were not physically with them?

Open End

Q21 How, if at all, did you facilitate experiences with nature? Select all that apply:

▫ Provided electronic resources about the natural world (e.g., National Geographic videos, websites, etc.) (1)

▫ Designed outdoor activities for children (2)

▫ Encouraged parents to spend time with children outside (3)

▫ Other (please specify): (5) _____

▫ Did not facilitate experiences with nature (4)

Q22 If applicable, how did you adapt lessons and activities for children with disabilities? Select all that apply:

▫ Revisions to learner's IFSP (individualized family service plan), IEP (individualized education plan), or BIP (behavior intervention plan) (1)

▫ Provided additional one-on-one contacts via phone or web meetings (more than other students) (2)

▫ Additional support for family members who were caring for learner (3)

□ Consulted with special educators to provide appropriate learning services online (4)

□ Consulted with service providers (eg, occupational therapists, speech language pathologists, or physical therapists) to help carry over specific goals into academic lessons online (5)

□ Provided physical materials (6)

□ Other (please specify): (7) _____

□ Not applicable (8)

Q23 How, if at all, did the experience of distance learning change your understanding of the role of a teacher?

Open End

Q24 How, if at all, did you provide children with choice during distance learning?

Open End

Q25 How, if at all, did you use Montessori materials in distance learning? Select all that apply:

□ Children borrowed materials from school to use at home (1)

□ We provided digital versions of Montessori materials for children to manipulate electronically (eg, through an app or website) (2)

□ We provided instructions and templates for parents to replicate Montessori materials at home using common household objects and materials (3)

□ Other (please specify): (5) _____

□ Did not use Montessori materials (4)

Q26 How, if at all, did you provide opportunities for children to collaborate? Select all that apply:

□ Group projects (1)

□ Discussion boards (2)

□ Circle time (3)

□ Virtual social time (eg, having lunch together over Zoom) (4)

□ Other (please specify): (6)

□ Did not provide opportunities for collaboration (5)

Q27 Did you continue to provide support for conflict resolution between students in your distance-learning environment (e.g., with a virtual peace table)?

○ Yes (1)

○ No (2)

○ Children are not gathering (3)

Q28 How, if at all, did you approach observation during distance learning? Select all that apply:

- ▫ Analyzed students' work product (1)
- ▫ Observed students working via videoconference (2)
- ▫ Used parent-reported data, including narrative, photos, etc. (3)
- ▫ Other (please specify): (5) _____
- ▫ Did not engage in observation (4)

Q29 To what extent did you provide opportunities for children to express themselves artistically?

- ○ More than when children were physically at school (1)
- ○ About the same as when children were physically at school (2)
- ○ Less than when children were physically at school (3)

Q30 In your estimation, how much opportunity did children have to help maintain the environment at home during distance learning?

- ○ More than when children were physically at school (1)
- ○ About the same as when children were physically at school (2)
- ○ Less than when children were physically at school (3)

Q31 How, if at all, did you try to foster independence in distance learning?

Open End
Q32 How well do you feel you were able to uphold Montessori principles and values during distance learning?

- ○ Extremely well (5)
- ○ Very well (4)
- ○ Moderately well (3)
- ○ Slightly well (2)
- ○ Not well at all (1)
- ○ Not applicable (6)

Q33 To what extent do you feel you were able to effectively work toward these outcomes for children in a distance-learning environment?

	Extremely effective (5)	Very effective (4)	Moderately effective (3)	Slightly effective (2)	Not effective at all (1)
Self-discipline and knowledge (1)					
Purposeful activity (2)					
Sustained focus (3)					

Compassion for others (4)

Positive attitude toward school (5)

Confidence and initiative (6)

Contributing member of society (7)

Q34 About what percentage of your families are... (Please slide the indicator to the appropriate percentage.)

<div align="right">0   10   20   30   40   50   60   70   80   90   100</div>

Engaged in distance learning ()

Q35 How, if at all, did you support families in preparing the environment at home for learning?

Open End

Q36 Of these key elements of Montessori education, which are the top 3 that families were most successful in implementing at home during distance learning? (Please select three items)

- Ordered environments (1)
- Delivering individualized instruction (2)
- Positive emotional climate (3)
- Clear expectations/freedom within limits (4)
- Experiences with nature (5)
- Adaptation for atypical development (6)
- Choice (7)
- Use of real-life and hands-on materials (8)
- Collaboration with peers (9)
- Conflict resolution (10)
- Artistic self-expression (11)
- Care of the learning environment (12)
- Independence (13)
- Sustained focus (14)
- None of these (15)

Q37 Of these key elements of Montessori, which are the top 3 where families needed the most support during distance learning? (Please select three items)

- Ordered environments (1)
- Delivering individualized instruction (2)
- Positive emotional climate (3)
- Clear expectations/freedom within limits (4)
- Experiences with nature (5)
- Adaptation for atypical development (6)
- Choice (7)
- Use of real-life and hands-on materials (8)
- Collaboration with peers (9)
- Conflict resolution (10)
- Artistic self-expression (11)

- ☐ Care of the learning environment (12)
- ☐ Independence (13)
- ☐ Sustained focus (14)
- ☐ None of these (15)

Q38 In your view, what is the role of families in Montessori distance learning if any?

Open End

Q39 How, if at all, has your approach to family engagement changed as a result of distance learning?

- ○ I am interested in engaging families more in the future (1)

- ○ In the future, I plan to engage families at about same level as I did before the pandemic (3)

- ○ I am interested in engaging families less in the future (2)

Q40 **The next few questions are for classification purposes only. Remember that your name will not be associated with any of your responses. We only use this information to group responses of similar individuals together.**

Q41 Which of the following best describes your Montessori training, if any?

- ○ I do not have any formal Montessori training (1)

- ○ I am currently taking my Montessori training (2)

- ○ I completed an AMS-affiliated training program (3)

- ○ I completed an AMI-affiliated training program (4)

- ○ I completed a MACTE-accredited training program not affiliated with AMS or AMI (5)

- ○ I completed a training program not affiliated with MACTE, AMS or AMI (6)

Q42 Is your school:

- ○ Public (1)

- ○ Independent (2)

- ○ My school is a public school, but I work in a tuition-based primary or infant/toddler program (3)

- ○ Something else (please specify) (4) _____

Q43 Approximately what percentage of your school's students... (Please slide the indicator to the appropriate percentage.)

	0	10	20	30	40	50	60	70	80	90	100
Would qualify for free and reduced lunch ()											

Q44 Approximately what percentage of your school's students... (Please slide the indicator to the appropriate percentage.)

0 10 20 30 40 50 60 70 80 90 100

Are eligible for tuition assistance? ()

Q45 Is your school Montessori accredited or recognized?

- ○ Yes (1)
- ○ No (2)

Q46 Please identity your school's affiliation:

- ○ AMS (1)
- ○ AMI (2)
- ○ MEPI (3)
- ○ Other (4) _____

Q47 In which country is your school located?

Q48 In which state is your school located?

Q49 Is your school located...
- ○ In a large city (1)
- ○ In a midsize city (2)
- ○ In a small city (3)
- ○ In a suburb of a city (4)
- ○ In a rural area (5)

Q50 Which of the following ranges includes your age?
- ○ 18–24 (1)
- ○ 25–34 (2)
- ○ 35–44 (3)
- ○ 45–54 (4)
- ○ 55–64 (5)
- ○ 65 or older (6)
- ○ Prefer not to say (7)

Q51 Are you Spanish, Hispanic, or Latino or none of these?

- ○ Yes (1)
- ○ None of these (2)
- ○ Prefer not to say (3)

Q52 With which one or more of the following racial categories do you identify?
- ▫ White (1)
- ▫ Black or African American (2)
- ▫ American Indian or Alaska Native (3)
- ▫ Asian (4)
- ▫ Native Hawaiian or Pacific Islander (5)
- ▫ Other (6) _____
- ▫ Prefer not to say (7)