

Montessori Education and Practice:

A Review of the Literature, 1996–2006

By Janet Hall Bagby

As a university-based educator and avid supporter of Montessori education, I have often wondered to what extent Maria Montessori's work is continuing to influence education and learning in other disciplines. The purpose of this review was to identify articles published in non-Montessori professional periodicals that included information about Maria Montessori and/or the Montessori method of education. A 10-year time span seemed appropriate, so articles published between 1996 and August of 2006 were reviewed.

A total of 54 articles are included in this review of the literature and are presented in alphabetical order by author's name. Although approximately half of the articles appeared in educational periodicals, a number of diverse publications are represented as well. These range from *Architecture* (Giovannini, 2000) to *Neuropsychological Rehabilitation* (Camp, 2001). The majority of the articles address curriculum and classroom characteristics of the Montessori method of education. About 20% of the articles focus on historical aspects of Maria Montessori's life and the development of the Montessori method. Most notable to me is the significant number of published articles on the therapeutic use of Montessori-based activities with persons with dementia. While we have long recognized the benefits of the Montessori approach for children, the many articles dealing with the effectiveness of Montessori-based interventions with individuals suffering from dementia support the application of Montessori's philosophy to such efforts and may support its use in programs developed for the elderly.

Angell, A. V. (1998). *Practicing democracy at school: A qualitative analysis of an elementary class council.* *Theory and Research in Social Education, 26*(2), 149–172.

This article describes a 3-year study that analyzed 216 class meetings in a Montessori upper elementary environment. The guiding hypothesis was that class meetings grounded in the principle of justice and equality would promote the development of democratic attitudes, respect for individualism, and values among the students. The study showed that 9–12-year-olds' natural inclination to work together did provide a window of opportunity for developing these

skills. Despite occasional disruptions, the group ethic in the classroom appeared to promote moral reasoning, equality, and justice.

Babini, V. (2000). *Science, feminism, and education: The early work of Maria Montessori.* *History Workshop Journal, 49*, 44–67.

This author writes about a relatively unknown time in Maria Montessori's life, the years from 1896 to 1907. During this period Montessori graduated with a degree in medicine and wrote her "method of scientific pedagogy." The author discusses how Montessori's interest in medicine and

feminism eventually led to the development of her educational pedagogy.

Bamberger, J. (1999). *Learning from the children we teach.* *Bulletin of the Council for Research in Music Education, 142*, 48–74.

This article focuses on children's musical intuitions and the two distinctive methods to construct meaning: pathmaking and mapmaking. Pathmaking is defined as a succession of constantly present, continuous actions. Mapmaking is a mental construction. Case study research was conducted using Montessori bells that the author described as "a rather extraordinary technological invention." Unlike other instruments, the Montessori bells look alike but play at different pitches.

Boyle, M., Mahendra, N., Hopper, T., Bayles, K. A., Azuma, T., Cleary, S., & Kim, E. (2006). *Evidence-based practice recommendations for working with individuals with dementia: Montessori-based interventions.* *Journal of Medical Speech-Language Pathology, 14*(1).

This article reviews the research literature related to Montessori-based interventions that support the use of Montessori principles and techniques for dementia patients. The research team examined five studies (included in this review) that were internally and externally valid and that utilized Montessori methods with the participants. There were approximately 74 participants, mostly female, ranging in age from 60–103. The activities were chosen for their ability to test a variety

of principles such as seriation skills, object permanence, and symbolic function. The average length of the studies was 9 months. This review found conclusive evidence that Montessori techniques were effective in working with patients diagnosed with mild to moderate dementia symptoms.

Brehony, K. J. (2000). *Montessori, individual work, and individuality in the elementary school classroom.* *History of Education, 29(2), 115–128.*

This author examines the role Montessori had in promoting individualized instruction over whole group education. A historical overview of educational movements in England and the U.S. is provided. The article emphasized that in addition to promoting the concept of individual work, Montessori advocated for changes in schools such as introducing Darwinian concepts in education.



Working independently

Brendtro, L. K. (1999). *Maria Montessori: Teacher of unteachable children.* *Reclaiming Children and Youth: Journal of Emotional and Behavioral Problems, 7(4), 201–211.*

This article describes Montessori’s life’s work. Through her medical

career, Montessori observed that children often labeled as “feeble minded” were in need of educational stimulation and experience. She believed all children had the potential to learn, and the goal of her pedagogy was to assist children in discovering their natural love for learning.

Camp, C. J. (2001). *From efficacy to effectiveness to diffusion: Making the transition in dementia intervention research.* *Neuropsychological Rehabilitation, 11(3–4), 495–517.*

The purpose of this article is to educate caregivers in effective ways to care for persons with dementia and other neurological disorders. Many caregivers operate with therapeutic nihilism, a belief that dementia patients cannot be taught new skills and behaviors. The Montessori Method, specifically Memory Bingo (a small-group, Montessori-based activity developed by the authors) was used with the patients who were unable to participate in traditional activities. The author concluded that the attitudes of caregivers must change in order for them to effectively treat and work with dementia patients.

Camp, C. J., Judge, K. S., Bye, C. A., Fox, K. M., Bowden, J., Bell, M., Valencic, K., & Mattern, J. M. (1997). *An intergenerational program for persons with dementia using Montessori methods.* *The Gerontologist, 37(5), 688–692.*

In this study, 12 older adults (median age of 88) with dementia were paired with children between the ages of 2 and 4. The pairs were matched in ability levels using seven Montessori baseline activities. The results showed that the elderly patients could be effective teachers and mentors for preschool children. The results also showed that participation reduced apathy in the dementia patients. The authors concluded that this type of intergenerational program was suc-

cessful with dementia patients because it provided them with compensatory skills and provided the opportunity for them to use their abilities.

Camp, C. J., & Skrajner, M. J. (2004). *Resident assisted Montessori programming (RAMP): Training persons with dementia to serve as group activity leaders.* *The Gerontologist, 44(3), 426–431.*

Four female dementia patients living in a senior center were trained in Memory Bingo (see above). This training included small group techniques in the Montessori method that had proven in previous studies to enhance engagement levels in dementia patients. The results of this research showed that early-stage dementia patients were successfully trained to be effective small group facilitators.

Campbell, M. H. (1998). *Fort Peck combines language immersion with Montessori methods.* *Tribal College Journal, 9(4), 15.*

This article describes the first-time use of Montessori’s method in language immersion schools at Fort Peck Reservation in northeastern Montana. The two immersion schools taught cultures rooted in the Dakota and Nakota languages to preschoolers and their parents. Because the Montessori values of encouraging independence and responsibility are mirrored in the Native American culture, the author recommended expanding the program to other Native American schools.

Christie, J. (2000). *Introduction of philosophy for children into the Montessori curriculum.* *Thinking, 15(1), 22–29.*

Beginning with the perspective that philosophy is an essential part of being human, Christie states that Montessori education has historically omitted philosophy from the curriculum, replacing it with geometry, reading, and writing for very young chil-

dren. She argues that Montessori education should introduce early levels of philosophy into programs through imagination, rational thought exercises, and reason, using a curriculum such as Matthew Lipman's Philosophy for Children. By merging the two curricula, philosophy could successfully be integrated into Montessori education.

Cosgrove, S. A., & Ballou, B. A. (2006). *A complement to lifestyle assessment: Using Montessori sensorial experiences to enhance and intensify early recollections.* *The Journal of Individual Psychology*, 62(1), 47–58.

This article highlights the similarities between Montessori education and the Adlerian approach to individual psychology. Montessori used sensory techniques in her educational theory because she stressed that intellectual development is built upon sensorial elements. Adler believed early recollections can trace the beginnings of a person's insight into mistaken beliefs, and that it is logical to use sensory elements to trigger early recollections. When these two methods are used in conjunction, the therapy process can become more productive and efficient.

Cossentino, J. M. (2006). *Big work: Goodness, vocation, and engagement in the Montessori method.* *Curriculum Inquiry* 36(1), 63–92.

Cossentino argues that Montessori's construct of "work" dramatically influences the dominant views of learning, teaching, and schooling. The theory of work with children vastly changes the way teachers interact with their students and how students view themselves in terms of school and their personal work. Work in a Montessori classroom enables the children to gain deep concentration in an activity they will encounter in the real world. Work also teaches the child how to work toward the betterment of society as well as themselves. This

author concludes that Montessori's enduring emphasis on work has created an alternative educational worldview.

Cottom, C. (1996). *A bold experiment in teaching values.* *Educational Leadership*, 53(8), 54–58.

This article describes a values curriculum designed and implemented by the City Montessori School (CMS) in Lucknow, India. At the time the article was published, CMS was the largest school in the world with 19,000 students in 15 sites. The CMS-designed values curriculum, Four Building Blocks, integrates universal values, excellence, global understanding, and service into the Montessori learning communities with the involvement of teachers, students, parents, and administrators.

Cox, M. V., & Rowlands, A. (2000). *The effects of three different educational approaches on children's drawing ability: Steiner, Montessori, and traditional.* *The British Journal of Educational Psychology*, 70(4), 485–503.

These authors compare Steiner, Montessori, and traditional methods of education in order to determine which approach is best for children's drawing ability. Sixty primary-aged students, 20 in each school setting, participated in the study. The educational methods were evaluated by assigning three drawing tasks to the children in each of the British schools: free drawing, scene drawing, and observational drawing. The results indicated that the Steiner method was the most conducive to creative, general drawing, and color detail. Steiner also produced better overall results in accuracy and detail of observational illustrations. However, the authors did caution that the outcome of the study could have been influenced by the strong emphasis the Steiner method places on art and creative environments.

Crawford, P. A., & Cornett, J. (2000). *Looking back to find a vision: Exploring the emancipatory potential of teacher research.* *Childhood Education*, 7(1), 37–40.

This article examines how research styles of teachers have changed over time. For years, only experimental research was deemed acceptable. However, recently this type of research has been described as too limited to accurately understand learning in children. The authors draw on historical influences such as Montessori's promotion of observational techniques to determine students' "sensitive periods" of learning to highlight the importance of teacher research and practice for improving education.

Dreher, B. B. (1997). *Montessori and Alzheimer's: A partnership that works.* *American Journal of Alzheimer's Disease*, May/June, 138–140.

Dreher recommends applications of Montessori's principles and practices for patients with Alzheimer's. She proposes that the concept of "work" as implemented through Montessori will increase the attention levels and sense of accomplishment in cognitively impaired elders. Topics covered in the article are: prepared environment, practical living, visual and auditory discrimination, and active learning.

Edwards, C. P. (2002). *Three approaches from Europe: Waldorf, Montessori, and Reggio Emilia.* *Early Childhood Research and Practice*, 4(1), 1–14.

Edwards compares and contrasts the Waldorf, Montessori, and Reggio Emilia approaches to education. These progressive approaches emphasize the importance of respect, peace, and reconstruction in the development of individualistic and intelligent children. The role of the teacher is to be a supportive, nurturing guide to the child, providing minimal instruction in order to allow individualism. Of these approaches,

Montessori education has the most empirical research on learning outcomes.

Elkind, D. (2001). **Thinking about children's play.** *Child Care Information Exchange*, 139(1), 27–28.

The author argues that “play is not the child’s work nor is work child’s play.” Drawing a contrast with Montessori’s viewpoint, Elkind cites Freud and Piaget as prominent psychologists who differentiated between work and play in their developmental theories. Play has an immediate value for the child, while the concept of work is preparing for the future.

den Elt, M. E., van Kuyk J. J., & Meijnen, G. W. (1996). **Culture and the kindergarten curriculum in the Netherlands.** *Early Child Development and Care*, 123, 15–30.

The authors trace the development of preschool education in the Netherlands from the 13th century to the present day. Maria Montessori was among several international educators who influenced the education system and, more specifically, the development of nursery schools in the Netherlands in the early 1900s. In 1917, the Dutch Montessori Association was established. Montessori education thrived in the Netherlands until the end of World War II, when the education of children under 6 was not a high priority for the government.

Giovannini, J. (2000). **The Montessori method.** *Architecture*, 89(6), 116–121.

Giovannini describes how an architectural firm transformed a Milwaukee office building into a Montessori school. The designers focused on creating large open-plan environments and spaces outside the school building that could be freely interpreted by the students. The hallways of the building were designed to simulate streets in a city leading to a central area in the school. The architec-

ture became an instructional tool to maximize Montessori teachings. Numerous photographs are included with the article.

Goksale, M. K., Chiplonkar, S. A., & Sukhatme, P. V. (1994). **Effects of environmental factors on growth and morbidity of urban Montessori children receiving supplementation.** *Ecology of Food and Nutrition*, 31, 269–276.

The purpose of this study was to investigate the relationship between physical growth, morbidity, and nutritional status of preschool children receiving food supplements in urban Montessori schools. 265 children, aged 30 to 60 months, from slums and middle class families in Pune City, India, participated in the study. The results indicated that housing conditions, hygiene, and sanitation influenced the nutritional status of Montessori children receiving supplementation.

Harper, M. M. (1997). **The authoritative image: “Among School Children” and Italian education reform.** *Studies in the Literary Imagination*, 30(2), 105–118.

The poem “Among School Children” by Yeats is the focus of this article. The author examines the influence of two of Yeats’ main intellectual sources, Maria Montessori and Giovanni Gentile. Although they had conflicting politics, both scholars agreed that freedom and self-discipline could be simultaneously achieved in a classroom setting. Both also agreed that people naturally desire the opportunity to learn. The author concluded that Yeats’ poem was based on Montessori’s “spiritualized materialism” and Gentile’s “politicized aesthetics.”

Humphries, J. (1998). **The developmental appropriateness of high quality Montessori programs.** *Young Children*, 53(4), 4–16.

Humphries advocates for the acceptance of quality Montessori programs as developmentally appropriate

for young children. She describes Montessori education as providing a balance between freedom and discipline, ensuring security and fostering independence, providing sufficient challenge as well as opportunities for success. The teacher’s role, the curriculum, the classroom areas, and developmental assessment of children are discussed as well.

Judge, K. S., Camp, C. J., & Orsulic-Jeras, S. (2000). **Use of Montessori-based activities for clients with dementia in adult-day care: Effects on engagement.** *American Journal of Alzheimer’s Disease*, 15(1), 42–46.

Nineteen participants completed this nine-month study of engagement levels during activity programming. While the control group engaged in the regularly scheduled activities, the treatment group participated in Montessori-based intervention programming. Results clearly indicated that “Montessori-based activities are designed to elicit positive forms of engagement in persons with dementia. . . .”

Korfmacher, J., & Spicer, P. (2002). **Towards an understanding of the child’s experience in a Montessori Early Head Start program.** *Infant Mental Health Journal*, 23(1/2), 197–212.

This article describes the development of a multi-method approach for understanding program processes in an Early Head Start program. Qualitative and quantitative data were gathered. A Montessori curriculum was used at all the schools that participated in the study. The main focus of the study was to see how the interventions affected the child, though the parent’s reactions and opinion were taken into account to get a more global view of the effects. The results were collected through teacher rating forms and an ethnographer’s observation. The authors concluded that program evaluation

benefits from a multi-method approach to gathering data.

Krafft, K. C., & Berk, L. E. (1998). *Private speech in two preschools: Significance of open-ended activities and make-believe play for verbal self-regulation.* *Early Childhood Research Quarterly, 13(4), 637–658.*

The purpose of this study was to examine how preschoolers' private speech developed in a Montessori program and in a traditional, play-oriented program. According to the authors, this was the first study to examine preschoolers' private speech development in a natural setting. A total of 59 3- to 5-year-old middle socioeconomic-status children participated in the study. Observations were made in six classrooms, three in each preschool, over a 2-month period. Outcomes indicated that children in the traditional program engaged in more private speech than those in the Montessori classrooms. The authors concluded that fewer opportunities for make-believe play, more direct involvement of the teacher in the children's activities, and more frequent classroom transitions in the Montessori classrooms contributed to the lower rate of private speech.

Lee, L. F. (2000). *The Dalton Plan and the loyal, capable intelligent citizen.* *History of Education, 29(2), 129–38.*

This article provides an historical overview of the Dalton Laboratory Plan, an individualized instruction system that began in the United States and thrived in England in the 1920s. Helen Parkhurst, the plan's creator, worked with Maria Montessori in the early 1900s and became an avid Montessori follower and teacher. At Montessori's request, Parkhurst taught the demonstration classroom for her at the 1915 San Francisco exposition, directed the national Montessori promotion fund,

and at that time, was the only person granted the authority to train Montessori teachers. Montessori's professional influence was evident in Parkhurst's Dalton Plan.

Loughran, S. (2001). *An artist among young artists: A lesson for teachers.* *Childhood Education, 77(4), 204–208.*

The purpose of this article was to demonstrate how the Montessori approach could be used in teaching art to young children. The teacher at this private northeastern Montessori school used an innovative approach by encouraging students to create through their eyes rather than starting with tools. Using objects from their immediate environment and nature, the children were able to experiment, inquire, and construct, which resulted in visible enthusiasm and energy in their cooperative efforts.

Malm, B. (2004). *Constructing professional identities: Montessori teachers' voices and visions.* *Scandinavian Journal of Educational Research, 48(4), 397–412.*

This study explores the meaning of being a Montessori teacher. Eight female Montessori teachers participated in interviews, journal writing, and reflections to create occupational life histories. The author researched which aspects of Montessori's philosophy attract teachers to the profession, ways in which teachers' professional roles align with their personal values and belief systems, and teachers' views on the current and future direction of Montessori education.

Martin, R. A. (2004). *Philosophy based alternatives in education.* *Encounter, 17(1), 17–28.*

This article compares and contrasts child-centered, progressive, and holistic alternative educational programs in the United States. Referred to as philo-

sophically based alternatives, the following approaches were included: Democratic and free schools, folk education, Quaker schools, home-schooling, unschooling, deschooling, Krishnamurti schools, Montessori schools, progressive education, open schools, and Waldorf schools. The author stressed the importance of continuing to fund these diverse educational approaches to ensure that the basic societal values of diversity and democracy will endure.

Miller, R. (1997). *"Partial Vision" in alternative education.* *The Journal of Alternative Education, 14(3), 27–33.*

This Montessori teacher presents his perspective on holistic education as not a single method but a multifaceted approach to learning. While analyzing the Waldorf approach, he provides comparisons to Montessori's philosophy. The author concludes that in holistic education, the most important factor is the relationship between the teachers and the students, not the method of education.

Miller, R. (2004). *Nourishing the spiritual embryo: The educational vision of Maria Montessori.* *Encounter, 17(2), 14–21.*

This more recent article by Miller describes how Montessori blended science with religion in her worldview. Her theory called for a spiritual renewal of humanity that could be prompted by the creative powers of a child's mind. Montessori believed that everyone was called to work in partnership with God. Children were viewed as spiritual energies whose inner discipline developed through purposeful activity.

Mirochnik, E. (2002). *The centerless curriculum.* *Teacher Education Quarterly, 29(4), 73–78.*

This author argues that educators should abandon the "child-centered"

educational theory. He criticizes the child-centered movement as just another prescribed set of theories and practices about the “right” way of doing things. Mirochnik describes the pop singer Madonna as an example of a nontraditional educator and contrasts her to Montessori, the traditional educator. Montessori’s method teaches to a higher power, or rather, limits creative new methods, while Madonna’s nontraditional approach allows current culture to interpret the style of teaching.

Miron, G. (1996). Free choice and vouchers transform schools. *Educational Leadership*, 54(2), 77–80.

This article discusses the reform of Swedish schools as voucher systems in public schools and a free choice policy in private schools were implemented. Montessori is described as one of the most common types of private schools with a special pedagogical approach. The reforms in free choice allowed students to have more choice in the type of education they wished to receive. Of the private schools, Montessori schools were found to have the greatest increase in enrollment.

Moll, I. (2004). Towards a constructivist Montessori education. *Perspectives in education*, 22(2), 37–49.

This South African educator argues that the Montessori method can be recast as a contemporary constructivist approach for early childhood education. Using Piaget’s and Vygotsky’s theoretical frames, Moll concludes that the Montessori method should be interpreted as a contemporary form of constructivism, and that he and his colleagues will continue to engage in this research agenda.

Orsulic-Jeras, S., Judge, K. S. & Camp, J. C. (2000). Montessori-based activities for long-term care residents

with advanced dementia: Effects on engagement and affect. *The Gerontologist*, 40(1), 107–111.

Conducted over a 9-month period, this study examines the effectiveness of Montessori-based activities programming for 16 residents with advanced dementia in a long-term care facility. The results showed that the Montessori activities did significantly increase engagement and affect levels. The authors conclude by expressing their hope that Montessori-based programming will be implemented with dementia patients in numerous varied settings.

Orsulic-Jeras, S., Schneider, N. M., & Camp, C. J. (2000). Special feature: Montessori-based activities for long-term care residents with dementia. *Topics in Geriatric Rehabilitation*, 16(1), 78–91.

Replicating the Orsulic-Jeras, Judge et al (2000) research, these authors also found positive effects on engagement and affect for the 25 dementia patients in the study. The treatment group participated in individual and group-based Montessori activities at least twice a week for the duration of the study.

Phillips, M. N. (1997). In the classroom: Doing what comes naturally. *Gifted Child Today Magazine*, 20(2), 26–50.

The article describes an environmentally friendly project called Our Green Classroom. The author is a teacher in gifted education and an environmental studies specialist at a public elementary Montessori school. The goal of the project was to develop an outdoor garden and to teach students greater respect for living organisms. The students improved their observation skills and received hands-on training in caring for plants and animals.

Readdick, C. A. & Douglas, K. (2000). More than line leader and door holder:

Engaging young children in real work. *Young Children*, 55(6), 63–70.

The authors encourage educators to provide children with authentic tasks for learning. Maria Montessori is presented as one of the proponents of engaging children in real-life work. Montessori acknowledged the importance of children engaging in real tasks from the world as opposed to make-believe activities. She also stressed the need for exercises that promote independence. The authors identified authentic work activities such as carrying wood, housekeeping, animal and child care, and errands, and conclude that these are productive ways to teach children responsibility and values.

Richardson, S. O. (1997). The Montessori preschool: Preparation for writing and reading. *Annals of Dyslexia*, 47, 241–56.

In this article Montessori’s structured, multisensory language curriculum is described as an effective tool for teaching writing and reading. According to Maria Montessori, the implementation of a multisensory approach is a requisite for teaching children with specific language learning disabilities. Montessori’s developmental approach teaches phonological rules that build writing and reading skills. The article stressed the importance of individualized teaching for children with learning disabilities.

Rule, A. C., & Stewart, R. A. (2002). Effects of practical life materials on kindergarteners’ fine motor skills. *Early Childhood Education Journal*, 30(1), 9–13.

The hypothesis for this study was: *Materials that promote use of fine motor skills developed from Montessori’s theory will improve children’s fine motor skills in a public school kindergarten when compared to more traditional fine motor activities.* Using a pre-test-post-test

design over a 6-month period, the experimental group of kindergarteners significantly outperformed the control group. With support for their hypothesis, the authors concluded that the Montessori activities produced the desired fine motor development.

Sarimski, K. (1999). Early development of children with Williams syndrome. *Genetic Counseling, 10*(2), 141–150.

This article presents findings from a research study on cognitive, linguistic, and attentional characteristics of young children between 1 and 6 years old diagnosed with Williams syndrome. Ten children participated in a 45-minute play session conducted by a special educator. A nondirective Montessori approach was used in the study because it built on children's strengths and attentional focus, encouraged children to select and complete their chosen activities, and minimized the role of adults in the interaction.

Schneider, N. M., Diggs, S., Orsulic, S., & Camp, C. J. (1999). NAs teaching Montessori activities. *Journal of Nurse Assistants, March*, 13–15.

These authors describe an experimental program in which Montessori activities specifically developed for dementia patients were implemented by nursing assistants (NAs). The study was designed by the staff at the Myers Research Institute, the same researchers who have completed the majority of studies using the Montessori method of education with residents with advanced dementia. The implementation was described as beneficial for the residents as well for the nursing assistants, who felt rewarded for their efforts.

Shute, N. (2002). Madam Montessori. *Smithsonian, 33*(6), 70–75.

This article provides an overview of Maria Montessori's life, her profes-

sional challenges and accomplishments. Shute concludes with a description of the Montessori movement in the United States since the 1950s, beginning with the revival of the method by Nancy Rambusch in Connecticut.

Sobe, N. W. (2004). Challenging the gaze: The subject of attention and a 1915 Montessori demonstration classroom. *Educational Theory, 54*(3), 281–297.

In this theoretical article, Sobe describes Montessori's 1915 demonstration classroom and the importance of attention in the learning process. This glass-walled classroom at the San Francisco International Exposition was the first major demonstration of Montessori's method in the United States. Montessori's pedagogy from this turn-of-the-century classroom illustrates what we can learn today about the role of attention in the learning process.

Soundy, C. S. (2003). Portraits of exemplary Montessori practice for all literacy teachers. *Early Childhood Education Journal, 31*(2), 127–131.

This qualitative study examines the nature of language and literacy, specifically the growth of reading and writing during a child's first six years. The research was conducted in an accredited Princeton Montessori school. The researcher observed in three settings—an infant classroom, a toddler classroom, and a preschool classroom—to capture how the children learned sounds and combined those sounds to make words and to construct written sentences. The findings concluded that early childhood language and literacy training are vital for future success.

Spodek, B., & Saracho, O. N. (1996). Culture and the early childhood curriculum. *Early Childhood Development and Care, 123*, 1–13.

The authors argue that the relationship between culture and child development is so close and complex that the two should not be treated separately. The culture of a particular country directly influences the content of its early childhood curriculum. Montessori is one of several models the authors present in an historical perspective to support their hypothesis.

Vance, D. (1999). Considering olfactory stimulation for adults with age-related dementia. *Perceptual and Motor Skills, 88*, 398–400.

This article describes the use of Montessori methods in treating dementia patients. The methods that were most commonly used were olfactory manipulations and enhancements. Previous findings suggested that dementia patients sat longer in environments that included visual, auditory, and olfactory enhancements. However, the author states that patients with dementia often perform poorly on tests using the sense of smell and concludes that this practice should be reevaluated.

Vance, D. E., & Johns, R. N. (2002). Montessori improved cognitive domains in adults with Alzheimer's disease. *Physical & Occupational Therapy in Geriatrics, 20*(3/4), 19–36.

These authors reanalyze data from the original study (Vance & Porter, 2000) "to determine if specific cognitive domains or abilities were more sensitive to the benefits of the Montessori materials." Results showed cognitive benefits on basic mental abilities (i.e., attention, object permanence, and memory) but no benefits on more complex mental skills such as vocabulary, spatial attention, and reasoning and abstract thinking.

Vance, D. E., & Porter, R. J. (2000). Montessori methods yield cognitive

gains in Alzheimer's day cares. *Activities, Adaptation & Aging*, 24(3), 1–21.

Alzheimer patients at two day-care centers participated in this 6-month study to evaluate the effectiveness of using Montessori activities as a cognitive intervention. After receiving 3 months of Montessori activities and 3 months of routine activities, the participants were evaluated on 22 cognitive measures and a Montessori Benefit Score was derived. The results indicated that the Montessori activities benefited the Alzheimer patients more than the regular activities.

Vaughn, M. S. (2002). A delicate balance: The praxis of empowerment at a midwestern Montessori school. *Communication Education*, 51(2), 183–201.

Through qualitative research methods, the author explores empowerment in the organizational context of a midwestern Montessori school. In many educational programs, the power rests solely with the instructor, and students have little ability to exert their own beliefs and opinions. Results of this study indicate that empowerment was approached in this Montessori

school as a communicative process in which teachers and students balanced their individual freedom with the need of the class community.

Williams, N., & Keith, R. (2000). Democracy and Montessori education. *Peace Review*, 12(2), 217–222.

This article describes how the Montessori curriculum fosters democratic attitudes in both the workplace and the social life. According to the authors, Montessori education stresses that living and working should be learned together and that a Montessori environment is a “workplace democracy.” Montessori emphasized the need to educate young children in the practice of democracy, and she identified education as a primary tool for promoting democracy. In many ways, democracy is one of the most important frameworks for Montessori education.

Yen, S., & Ispa, J. M. (2000). Children's temperament and behavior in Montessori and constructivist early childhood programs. *Early Education and Development*, 11(2), 171–186.

This study explores the relationship

between temperament and behavioral adjustment in constructivist and Montessori programs. The methodology included teacher ratings of behavior and maternal ratings of temperament for 102 children. The findings indicated a small but noticeable tendency for active boys to adjust better to constructivist preschools than to Montessori preschool programs. Montessori teachers were found to be more likely to perceive high activity as a behavioral problem. The same was not found for young girls who, even if temperamentally active, may adjust their behavior to meet adults' expectations. The authors state two limitations of their study: no observational data by neutral observers and the variability found in the Montessori programs.

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