

The Early Childhood Montessori Pedagogy: Practices and Challenges in Pupils' Cognitive Development in Dar es Salaam City, Tanzania

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ABSTRACT

The Montessori educational method has seen great success in recent years. The media portrays this method in a very favourable light, and educators and former students have given it their enthusiastic endorsement. Promoters of this pedagogy frequently cite scientific findings. In doing so, this study aimed to (i) explore the best practices to improve the status of early childhood Montessori pedagogy in influencing pupils' cognitive development and (ii) investigate the challenges facing Montessori pedagogy and influencing pupils' cognitive development. The sample size consisted of 55 participants, including 12 teachers and 6 principals from six Montessori centers and 37 pupils in Dar es Salaam city. Primary data were collected through interviews and questionnaires among principals, teachers and students, while secondary data were mainly collected by reviewing relevant documents related to the study. In this study, theme content was a major data analysis approach. The findings show that the implementation of Montessori pedagogy was ineffective among the visited centres. Similarly, it was observed that the Montessori centres seem to be established for commercial purposes and do not meet the required standards. In addition, the inability of teachers to support learners, uniqueness of Montessori pedagogy, inconsistent implementation and difficulty in training teachers are some of the major challenges. This study recommends that there should be application of the work cycle, use of scaffolding methods, ensuring learners' freedom and the use of multiage classrooms. In addition, practices such as multiage classes and freedom of the learner seem to be the best, as they offer opportunities among pupils to choose activities based on their interest. Overall, the providers of Montessori education need to improve the implementation of Montessori pedagogy specifically in the supervision and training of teachers.

Keywords: Early Childhood, Montessori Pedagogy, Practices, Challenges, Cognitive Development, Tanzania

INTRODUCTION

It is widely accepted that the early years of life are critical for the development of a child's mental and other potentials and, in particular, its personality development. According to Klein (2002), children's learning and development occur in multiple contexts. The family is the first in the context of the society that socializes the child and provides him/her with the basic physiological and psychological needs after which the preschool takes over these roles. For this reason, parents in the family were regarded as "first teachers", preschool teachers as "second teachers" and the environment as "third teacher".

Underpinning the importance attached to early childhood education, of which preprimary education is an integral part, the World declaration on the survival, protection and development of children in 1990 undertook a joint commitment to make an urgent universal appeal to give every child a better future. The World Conference on Education for All (1990) and the United Nations Convention on the Rights of the Child (1989) emphasized urgent priority to ensure access to and improve the quality of education for all

children. For many children, preschool is their first experience in a structured setting with teachers and groups of children. It is an opportunity to learn to share, follow instructions and begin the foundation for learning that will occur in primary school.

Montessori is the single largest pedagogy in the world, with over 22,000 public, private, parochial, and charter schools on six continents, enduring even as other teaching methods have shined and diminished. Working with children and adults in the 1920s, 1930s, and 1940s in places as diverse as Spain, Rome, India, Argentina, the Netherlands, Pakistan, Sri Lanka, and India, the method became increasingly international. International congresses and national and international organizations have been significant factors in the movement for 100 years, and international conferences continue to draw participants from every corner of the globe, but research providing qualitative data to enhance understanding of the implementation of the method in diverse international settings is rare (Whitescarver & Cossentino, 2008).

Montessori Pedagogy was founded and developed by Dr. Maria Montessori (1870-1952). When she started working with children with mental disabilities, she realized that the need for a pedagogical approach was more pressing than a mental approach to care for them. Itard (2009) and Seguin's (1866) contributions helped Montessori create sensorial materials and practical life activities that contributed to building children's confidence, independence and self-discipline. Due to the economic recession in Rome from 1900 to 1912, the pedagogical approach expanded, and Montessori took part in social projects with low-income families and opened schools in abandoned buildings. This allowed her to work with children from the poorest sectors of society who were mostly afraid and shy, who sometimes challenged authority and were possessive or disruptive (Montessori, 2019).

The curriculum presented in Montessori classrooms addresses the developmental and intellectual needs of infants, toddlers, children and young adults from birth to age twenty-four. Lessons presented to individual students or small groups by teachers to observe the emotional, physical, intellectual and social needs of the individuals and the social and work groups they are a part of and to adapt instruction to move from the concrete to the abstract.

The methodology allows children and students freedom to purposefully move about the classroom and make work choices independently, to participate in peer teaching and to develop concentration through uninterrupted, self-chosen work periods. Assessment is authentic, ongoing, and void of most forms of reward or punishment. Montessori teachers are trained to assist each child in growing as a unique individual intellectually, physically, socially and emotionally to a mature person with a sense of social responsibility (Whitescarver & Cossentino, 2008).

Despite the fact that infant education is in high demand in most societies, it is not compulsory in either Burkina Faso or Spain; for both countries, compulsory education begins at age 6 with primary education, which lasts six years and then continues into secondary education until the age of 15. Even though the school organizations are similar in these countries, disparities are apparent in their structure and enrolment rates. Figures for the 2015-2016 school year in Spain show 57% enrolment of 0- to 3-year-olds and 96% of 3- to 6-year-olds (National Institute of Statistics, 2019), whereas in Burkina Faso, the enrolment rate in preschool was a mere 1.17% in 2005 (UNICEF, 2019).

In Turkey, Atli et al. (2016) argued that teachers in colleges confirmed that they received training on the philosophy of the Montessori approach, as most of the participants said that they trained in all the fields. The study concluded that the required infrastructure was established for teachers' training in basic activity fields and understanding of basic fields. Most of the teachers stated that for the practical dimension of the education, they learned how to use the materials systematically under the guidance of trainers. All teachers, except for one, underscored that they received practical training in classrooms without children. This was considered a disadvantageous situation because the teachers lacked the opportunity to observe how children used and selected the materials and how children used the spaces.

The first early childhood education and care ECEC facilities in Botswana were established shortly after independence to serve the expatriate community (CFBT, 2008). However, national policy on early childhood education was established in 1981. The provision of early childhood education and care in Botswana is not only compelling with child cognitive development but also more useful to eliminate the problems of early pregnancies, single parenthood and exacerbation by HIV/AIDS.

In Tanzania, the Ministry of Education Science and Technology reviewed the primary education curriculum beginning with standards one and two in 2015. The main aim of this review was to improve competence in literacy and numeracy in the early grades syllabi for reading writing and arithmetic following the 2016 curriculum review. The preprimary curriculum review was influenced and guided by the education and training policy of 2014 and recommendations from various stakeholders.

According to Mtahabwa and Rao (2009), young children in Tanzania attend programmes in child care centres, nursery schools, Montessori or other preschools and preprimary classes that are affiliated with primary schools. Private sector enterprises typically provide education and care for children below five years of age. Two years of preprimary education became part of the formal education system in 1995, and the country now has a 2-7-4-2-3⁺ system denoting the number of years allocated to preprimary, primary, ordinary level secondary education, advanced level of secondary and higher education, respectively. Preprimary education theoretically serves children from aged five to six years (MOEC, 2006) but currently 4 to 5 years for preprimary school.

This study assessed the effectiveness of early childhood Montessori pedagogy on pupils' cognitive development in Dar es Salaam City. It was guided by the following two objectives:

1. To explore the best practices to improve the status of early childhood Montessori pedagogy in influencing pupils' cognitive development,
2. To investigate the challenges facing Montessori pedagogy and influencing pupils' cognitive development.

LITERATURE REVIEW

Uniqueness of the Montessori Teaching Model

Montessori philosophy and practice are unique and differ in many ways from other educational practices, such as those in Saudi Arabia. First, Montessori's practice and approach to English teaching and learning is driven by Maria Montessori when she focuses on the stages of human minds and development. Maria stated that children at a young school age have sponge-like brains in which children during this time have the ability to easily absorb information and recall it. She called this stage 'an absorbent mind stage' (Montessori, 1949). During this stage, students can learn any language and assimilate any culture with ease and pace (Gutek, 2004).

Moreover, Montessori schools' settings are based on some principals that help to foster the learning of English. The English language classrooms in Montessori schools are organized to pave the way for more meaningful collaboration and interaction in a multicultural environment that facilitates English learning. Chomsky stressed the importance of social interaction in a diverse environment to help learners in their process of acquisition (Lightbown & Spada, 2013).

According to Montessori principals, pupils' processes of English acquisition and accumulative knowledge are greatly supported by the learning environment, which would ultimately help students increase their academic achievement (Ghaffari et al., 2017). Montessori settings positively influence students and advance their development of independence and self-exploration at their most (Lillard, 2013).

Working in and with a multiage group is one of the Montessori principles and approaches to English teaching (American Montessori Society, 2017). Working in and with multiage groups, learning moments and teaching possibilities would soar; younger and even older students would learn from each other by imitation, observation, and meaningful discussion (Lillard, 2005).

In multiage groups, the groups are flexible and might differ, which permits students to find interest in the work of other groups or individuals. In addition, young adolescents learn from the various activities that cooperative and collaborative learning environments offer in classrooms (McDurham, 2011). As time progressed, Montessori students accepted diversity and variances and did not fear interaction or even cooperation with others. As a result, students would smoothly progress at a higher educational level (Mckenzie, 2007).

Features of Montessori Pedagogy

Prepared environment

The key feature of the Montessori pedagogy is that of providing children with a developmentally appropriate physical and psychic environment in which to live and learn (Röhrs, 1994). This “prepared environment” is one of the central ideas of Montessori pedagogy and is discernible in orderly, multiage classrooms carefully equipped with very well-constructed, practical, purposeful, and generally self-correcting learning materials to meet the physical, intellectual, emotional and social needs of students who are grouped according to major periods of growth through which all children pass. Within the prepared environment, children and students move freely about the room, selecting learning activities, receiving lessons from peers as well as from the teacher and giving lessons to others in return, and immersing themselves in concentrated attention to tasks that contemporary psychologists have called “flow!” (Rathmunde, 2007). These environments allow children to take responsibility for their own education, giving them the opportunity to become human beings able to function independently and hence interdependently (AMI, 2008).

Sensitive periods

Montessori represented these major periods of growth through which all children pass, or periods of human development, as a “rhythm! of six-year stages, which she termed the Four Planes of Development. These four planes are from birth to age six, 6 to 12, 12 to 18 and 18 to 24. Dr. Montessori represented the stages—infancy, childhood, adolescence, and maturity—in a chart of four inverted, adjacent, equilateral triangles. Each stage is characterized by an opening and closing phase of three years, represented visually by the falling and rising legs of each triangle. The acquisition of particular skills and experiences is heightened during the first phase of each stage, but during the second half, those achievements gained in the first phase are consolidated in preparation for the next stage. Montessori teachers who have worked in classrooms at several levels will agree with this statement made by an Italian elementary teacher trainer. Infancy and adolescence are described as more turbulent creative periods, in contrast to childhood and maturity, which are calm phases of uniform growth (Feez, 2007).

Planes of development

Dr. Montessori also aligned periods of special interest or receptivity guiding the activity of children and students to each of the three-year groupings of the Four Planes of Development. She was inspired by the Dutch biologist Hugo de Vries to call these times when learning may seem effortless, sensitive periods. Dr. Montessori believed that just as the special sensitivity toward light in newly hatched caterpillars of the *Porthesia* butterfly guides them toward the end of branches to find the most tender leaves they need for growth, the child is endowed with a special sensibility that urges him to focus his attention on certain aspects of his environment to the exclusion of others (Standing, 1957).

For example, a child of age three experiences a sensitive period for order. At this age, the child has a particular passion for established routines. Disorder is deeply disturbing to the child at this stage. The passion of older children becomes justice and moral judgment. They are absorbed with their friends, forming cliques or tight friendships with their own codes of conduct and pecking orders. Children and students remain with the same teacher in classrooms organized according to the three-year and occasionally six-year age groupings, developing powerful peer bonds, self-esteem, and leadership skills as they progress from youngest to oldest.

Multiage groupings better reflect natural human communities and facilitate the social development of children and students. Cooperation and collaboration rather than competition guide the relationships of individuals in the classroom. The range of differences is much greater than in a single age or grade classroom, and individual differences become the norm rather than anomalies because everyone is different. A classroom begins the school year with a core group of older children who return for a second or third year knowing the rituals and routines established during the previous school year. The youngest students entering the classroom have older peers who are able to mentor them as they make the transition to a new classroom.

The teacher is able to follow the development of students over three years, allowing late bloomers to acquire skills at their own pace, knowing they have three years, rather than one, to do so. Younger students observe lessons given to older students, learning the concepts independently or making the process easier for themselves at a later time. Older students attend lessons with younger students to hear old favourites or to review concepts they did not fully understand the first time they received the lesson. All students are able to accomplish high-quality work unencumbered by the anxiety that often results from comparisons with peers or standardized benchmarks that do not take into account the often irregular patterns of development and skill acquisition.

Curriculum

The curriculum presented in Montessori classrooms addresses the developmental and intellectual needs of infants, toddlers, children and young adults from birth to age twenty-four. Lessons are presented to individual students or small groups by teachers specially trained to observe the emotional, physical, intellectual and social needs of the individuals and the social and work groups they are a part of and to adapt instruction to move from the concrete to the abstract. The methodology allows children and students freedom to purposefully move about the classroom and make work choices independently, to participate in peer teaching and to develop concentration through uninterrupted, self-chosen work periods. Assessment is authentic, ongoing, and void of most forms of reward or punishment. Montessori teachers are trained to assist each child in growing as a unique individual intellectually, physically, socially and emotionally to a mature person with a sense of social responsibility (Whitescarver & Cossentino, 2008).

Freedom and responsibility

The sense of responsibility develops in partnership with freedom that is introduced gradually to the very youngest children entering a classroom for the first time or to older students entering a Montessori environment after attending a school where guidance for behaviour is provided external to the individual. Freedom in the Montessori classroom does not mean children are allowed to do what they want or when they want to do it with total disregard for other individuals in the environment. Freedom is frequently misunderstood by educators, parents, and even by teachers trained in the methodology. The concept can be misinterpreted as mindless permissiveness. In a true Montessori school, the concept of freedom is bounded by limits. Students learn not only to make choices that are beneficial to their own development but also to consider and respect the ground rules of the community and the choices of others.

According to a German biographer of Dr. Montessori, this balance of freedom and responsibility is one of Dr. Montessori's truly original contributions: she not only gave consideration to the inclinations and interests of the children, as was done by many New Educators who based their work solely on this principle but also sought to encourage responsibility and self-discipline on the part of the children (Röhrs, 1994). A British contemporary of Dr. Montessori asserts that the manner in which freedom was developed in children in Montessori classrooms has significant implications for society as a whole. He stated that her method proceeds along the lines that the political development of society inevitably dictates. Long ago, Herbert Spencer noted that the type of education always follows the type of society in a monarchical state; for instance, arbitrary authority will be a far more important factor in school discipline than in a republic. Hence, the Montessori Method, founded on the idea of liberty, fulfils an essential condition of democratic education, and the future of all civilized states will be democratic (Culverwell, 1915).

An article in *The World Book: Organized knowledge in story and picture*, published in 1917, describes what a visitor to a Montessori classroom for children age 3-6 on the east coast of the United States would see: A visitor entering the room will be struck by the harmonious and ordered activity of the children. Here, a child is wrestling with an obstinate button on one of the frames for buttoning; another is composing words with the movable alphabet upon a prettily tinted carpet upon the floor. Another is building the "tower! Others are writing upon large slates or upon blackboards hung on the walls. Children pass lightly to and fro, fetching from the cupboards what material they need, or returning it after use; exchanging remarks with their companions or stopping to admire another's work.

The whole atmosphere, in fact, is a busy and essential activity, and each child happily concentrates on the work in hand. Little notice is taken of the teacher, who moves softly from one child to another, giving her a simple demonstration, there a lesson or word of encouragement, or joining enthusiastically in the joy of a child who has made a discovery or succeeded in performing some new feat by himself. The children's activity does not emanate from the teacher but is the spontaneous self-activity of the children themselves, having origin in the sources of life. Before this, the teacher is a humble and retiring observer, seeking to help and serve, rather than shape or evoke, the phenomena of life, which unfold (OShea, 1917).

Ninety years later and in over ninety countries would the scene be significantly different? Open shelves of a height determined by the age and size of the children and students needing to access the materials arranged upon them in a preway to facilitate the child's passage from concrete to abstract in the learning process now take the place of the cupboards found in the first classrooms in Rome. The materials and activities displayed on shelves also reflect the age of the children and students. The wooden materials in the sensorial area in an early childhood classroom would not be appropriate in an elementary classroom. Timelines, collections of cultural artifacts, scientific models, and many more books fill the shelves in classrooms of older students. What does not change is the freedom to self-select material from the shelves, taking it to a mat, rug or table, working with it alone, with a partner or in a small group for a period of time that is, in ideal circumstances, determined by the participants before returning it to the shelf and going on to another activity.

Many of the materials were designed by Dr. Montessori in Italy over a century ago and are standardized by various commercial manufacturers worldwide. "Today, at the beginning of the twenty-first century, these objects continue to be used daily in thousands of Montessori classrooms across the world" (Feez, 2007).

Differences reflecting the local geography, history, and culture of the classroom may be apparent in the teacher-made materials. A wooden puzzle of an oak tree in Minnesota is a papaya tree in Tanzania. History timelines in an upper elementary classroom may reflect a more general history of early humans common to many countries but also the particular history of the country, state, province, canton, or oblast in which the students of that particular classroom reside.

Montessori and mainstream education

Educational policy researchers who study Montessori have identified a profound coherence that has existed within the system across time and space but is noticeably at odds with the perpetual pendulum swing of education reform (Robinson, 1998). One hundred years after the opening of the first Montessori school, the innovative method retains characteristics that are “qualitatively different from existing forms” (Barnett, 1953). The method is described as arising from the inspiration of genius (Lillard, 2005) but framing the method within the four-step process of innovation described by Usher (1954). Dr. Montessori’s initial perception of a problem concerning the children in the asylums of Rome, the coming together of a series of events including the offer presented by the Good Building Association, her act of insight in providing both method and materials to approach the problem, and decades of critical revision within an international community of progressive education, gives greater depth to understanding the method as an innovation achieved through systematic and scientific study.

Unfortunately, like the elephant in John Godfrey Saxe’s poetic version of the famous Indian legend, “The Blind Men and the Elephant”, the method has been subject to myriad misinterpretations resulting from the failure of critics and supporters to fully understand the complexities of its totality (Haines, 2005). Fundamental differences between the Montessori and mainstream methods of education are complex and difficult to summarize. Seventy years ago, Dr. Montessori lectured that “education today has fallen far behind contemporary needs” (Montessori, 1985/1949, p. 32), and while many critics today would agree that her statement remains true, the Montessori pedagogy has existed on the periphery of mainstream education in all but a few countries across the globe.

Even so, many of its essential elements—child-sized furniture, hands-on learning activities, multiage classrooms, sensitive periods for learning, the absorbent mind, and the importance of movement in brain development (Lillard, 2005)—have had both an indirect and direct influence on modern educational methods at the center. Many of these ideas, considered revolutionary one hundred years ago, have become woven into what is considered to be best practice in mainstream education, further complicating succinct comparison. My own experience teaching in Montessori private and public schools in the United States and the conversations I have had with my colleagues over the years and with the Montessori teachers in several countries I met during the research process lead me to believe that the tensions between adult-centered, empirical, data driven paradigms preferred by departments and ministries of education and other stakeholders with power to influence the formation and/or funding of educational policy and holistic, developmental approaches that have framed educational discourse since the first school opened in 1907 have, nonetheless, increased.

Upon entering almost any classroom in the United States, not only would you see that the basic tools of learning have not changed in decades (Broadfoot, 2000), but the structure and relationships within have become even more rigid and resistant to pervasive systemic change. Montessori pedagogy stresses the importance of the relationship between the teacher and the child, the child and the environment, and the environment and the teacher, often placing each at the vertex of an equilateral triangle to illustrate the dynamic interactions that occur in a classroom. Extending this idea to a comparative model of two triangles highlights the power relationships inherent to the tension between various stakeholders within the worldviews of mainstream versus Montessori pedagogy.

The first triangle represents the hierarchical system of mainstream education. Children and teachers are at the apex of the triangle, which is then inverted, placing children and teachers at the bottom, in the least authoritative position, rather than at the top. According to Levin (2000), right at the bottom of the education status list are students. They are subject to direction from everyone above. Even though all the participants in education will say that schools exist for students, students are still treated almost entirely as the objects of reform. The requirements of state and local standards, institutions of teacher training, and reform initiatives

occupy the middle portion. Textbook publishers and testing companies hold a position of considerable influence, followed by national standards, ministries of education and federally mandated reform. Each level believes it knows best what the lower levels need to do and forces them to comply with directives, mandates and reforms that may or may not be in their best interests.

Teachers and students are often lost in a shifting maze of mandates and methodologies. An insatiable appetite in the United States for fine-tuning individual components of educational provision has resulted in the implementation of successive reforms, each attempting to stabilize the back and forth motion of the top-heavy inverted triangle by introducing new programs, revised standards, and updated tests. In an address given in Copenhagen in 1937, Dr. Montessori described the educational situation as she saw it seventy years ago. The world's peoples are disorganized, and each individual thinks only of his own immediate well-being. Education as it is commonly regarded encourages individuals to go their own way and pursue their own personal interests. School children are taught not to help one another, not to prompt their classmates who do not know the answers, but to concern themselves only with getting promoted at the end of the year and to win prizes in competition with fellow pupils (Montessori, 1985).

Patricia Broadfoot (2000) describes the current educational environment as one where little seems to have changed. Students who are dominated by concerns about grades and marks, teachers who are preoccupied with measuring up to externally derived criteria of quality, institutions whose very existence may depend on the configuration of their performance indicators, and systems whose quality is measured by quantifiable results are the educational manifestations of 'The Assessment Society' (p. 365). In Montessori pedagogy, the child is again at the apex, but this second triangle is not inverted. It sits upright, firmly grounded like the pyramids of ancient Egypt. At the base of the triangle are pedagogical principles identified through the scientific observation of children. At the next level are institutes of teacher training, national and international organizations, schools and classrooms.

The prepared environment and the teacher are located together at the level below the apex to symbolically illustrate how the environment is prepared by the teacher, but once prepared, it supports the teacher in embracing Dr. Montessori's directive to "follow the child" (Montessori, 1964). No model is able to perfectly represent the range of differences possible within as well as between mainstream and Montessori pedagogy. This model also does not acknowledge the fact that power, wealth and influence are shared unequally, and those wishing to implement a child-centered pedagogy such as Montessori cannot entirely escape the regulatory power of the societal institutions within which it must function.

According to Nancy Curran (1985), who conducted a study of institutional resistance to the Montessori method, a restructured view of education privileging child-centered methodologies similar to the model above creates a perception held by many stakeholders, including teachers, that it leads to a loss of power, prestige and economic position (Curran, 1985). Montessori teacher training develops not only high methodological and philosophical expertise but also an acknowledgement of the limits of power of teachers. "The environment, rather than the child, is the locus of control. To follow the child, the teacher must sublimate her urge to control the child and seek, instead, to cultivate with meticulous care the physical and emotional space in which children develop" (Whitescarver & Cossentino, 2008).

Early Childhood Education in Tanzania

In the Tanzanian context, early childhood education is for children aged between 5-6 years (Education and Training Policy of 1995). In Tanzania, early childhood education was introduced in the 1980s through the successful implementation of the National Economic Program of 1981-2000 (Mtahabwa, 2009). In implementing early childhood education in Tanzania, the government has made several education reforms and policies since independence. The intention was to provide quality education to concur with the important declarations emphasizing education, such as education for self-reliance of 1967, the Universal Primary Education of 1977, the Education and Training Policy (ETP) of 1995, which formalized early childhood education, and the education and training policy of 2014,

which considers early childhood education as compulsory and entry point for joining primary education in Tanzania (litchi, 2018).

Ndijuye et al. (2020) argue that the recognition of the importance of implementing early childhood education in Tanzania was a response to international policy statements that emphasized the right of education for all children. The government of Tanzania engaged in providing early childhood education in partnership with other stakeholders, i.e., religious-based institutions, nongovernmental organizations, and individuals.

According to MoEST (2019), in its basic education statistics in Tanzania (BEST), there were 17,771 preprimary classes attached to nearby public and private primary schools in Tanzania, and in the same year, there were 1,429,169 pupils enrolled in those schools. Additionally, there were 12,333 preprimary teachers, out of whom 3567 (28.9%) were trained and qualified preprimary teachers with teaching certificates. In 2019, the Ministry of Education, Science & Technology engaged in a crash program of training in-service teachers in ECE. These pieces of training were conducted zonally by using tutors from education training colleges. The main purpose was to impart appropriate knowledge and skills in ECE and make the trainees competent with the TIE ECE curriculum.

Early Childhood Education Curriculum

According to Stotsky (2012), a curriculum is a plan of action that is aimed at achieving desired goals and objectives. It is a set of learning activities meant to make the learner attain goals as prescribed by educational systems. Generally, it includes the subjects and activities that a given school system is responsible for. Moreover, it defines the environment where certain learning activities take place. Furthermore, curriculum defines what happens in any formal educational institution, and no school or university can exist without it.

In the provision of early childhood education in Tanzania, the curriculum used in schools, especially in all public schools and in some private schools, is the Tanzania Institute of Education curriculum. The main implementer of the TIE curriculum is the government in its schools. This curriculum was prepared by the Tanzanian Government through its Agent, namely, the Tanzania Institute of Education, in collaboration with other educational stakeholders and educational professionals. The TIE curriculum is designed to prepare children to acquire knowledge and skills, including cognitive, physical, emotional, and social skills, to enable children to join primary education (MoEST 2016).

As already shown above, early childhood education has been given priority in many countries worldwide. Furthermore, it has also received support from both international and national stakeholders in the respective countries. Most of these nationals have developed education policies and curricula to support the delivery of early childhood education with the intention of imparting knowledge, skills and competencies for those children to be ready to join the upper level. In Tanzania, the case has been the same, whereby in the 1980s, Tanzania initiated the delivery of early childhood education, and it was incorporated into the education policy of 1995 and that of 2014. To improve this in 2016, an early childhood education curriculum was developed by the Tanzania Institute of Education, and the Ministry of Education instructed this curriculum to be used in all public schools.

METHODOLOGY

This study used a descriptive case study design since Montessori bases are implemented differently from other pedagogies. The sample size consisted of 55 participants, including 12 teachers and 6 principals from six Montessori centers and 37 pupils in Dar es Salaam city. The study selected a sample of six schools, and from each school, principal and other teachers at the preprimary level were selected by using purposive sampling. In addition, a sample of pupils

was randomly selected depending on the total number of pupils in a particular class. Next, the researcher applied a preliminary investigation for the purpose of verifying schools if they met appropriate requirements for assessment. The criteria to use are two: first, a school had to be early childhood educators, and second centers where they teach must use Montessori pedagogy of education. If a school did not meet the criteria, then it was excluded from the sample.

After preliminary investigation, the process of collecting data began with school principals who were required to complete a survey. The main objective was to identify how the schools worked and how the Montessori approach was implemented regarding the environment and teacher guidance. Then, the prepared interview guide was used to obtain the views and opinions of teachers and principals on the effectiveness of Montessori pedagogy on the cognitive development of pupils. Similarly, the researcher participated in observations inside and outside of the classroom. The focus of observation was on the effectiveness of Montessori pedagogy on students' cognitive development.

Observation was followed by document review to support the information from observation and interviews. The review focused on academic records and the daily routine of school as planned by the school administration. The observation was guided by an observation checklist. Finally, the data were analysed through content analysis focused on coding themes and concepts.

RESULTS AND DISCUSSION

The best practices to improve the status of early childhood Montessori pedagogy in enhancing pupils' cognitive development

The purpose of this objective was to reveal the views of respondents on the best practices in improving the status of early childhood Montessori pedagogy. The study used focus group discussion to hear the suggestions of respondents. From what has been observed, the following best practices were highlighted: application of work cycle, scaffolding, learner freedom and multiage grouping classes.

Application of work cycle

The findings indicated that the visited teachers value the significance of the work cycle in pupils' activities. In Montessori pedagogy, a full cycle of work is the time that the child concentrates on a single task from start to finish. This is very important because it enables the learner to concentrate on one task at a given time. One of the teachers argued that This method starts when the student takes the equipment and later takes it to the learning area. After that, the student will follow all the steps explained to him, and when he is done, he returns the equipment to his place. In addition, sometimes he can do it by cleaning the place where he worked. This helps the child to be attentive because he is always busy with one thing until he completes it. Moreover, during the entire period when he is learning, he should not be interrupted (Interview, 2022).

The quotation from the respondent indicated that the work cycle is important for pupil concentration and learning of specific tasks. In addition, the study established that pupils must concentrate for a certain period of time to master a certain task. During the work cycle, there may be times when the child is engaged inside and outside the classroom and when they participate in a small group lesson such as story time, music or yoga. These are sometimes delivered by peripatetic teachers. Children might also engage in a one-on-one lesson given by the teacher. All activities that are spontaneously chosen by the child, including snacking and outdoor play, are valued as part of his/her learning. For younger children (three to four years old), the work cycle consists of many cycles of activity, while older children (five to six years old) may engage in one or two prolonged activities or games. There are also some children who learn better by observing others engaged in activities. They only touch the learning materials when they have observed and absorbed all the processes or steps essential for success – full completion of the given activity.

As argued by Fulton (2018), the work cycle usually spans the morning and is at least two and a half hours long, but it can stretch across the whole day and is only interrupted by the lunchtime routine. Similarly, to satisfy sensitive periods for order, movement, language, small detail, refinement of the senses and social aspects of life as well as the child's growing ability to concentrate, the day is usually organized into three-hour blocks of activity, which Flynn (1991) termed work cycles. In practice, this means that from the beginning of the nursery day, children should be free to select activities of interest. They are also expected to return them to the right place.

Scaffolding

The other best practice mentioned by respondents was scaffolding. The respondents revealed that scaffolding is necessary in supporting learners when they perform a certain task. A teacher from Montessori Center said,

This method is very good, especially when the student needs to learn something new. Often, the teacher has to help the student to understand by starting with the simple things he or she knows and then moving on to new ideas. When this method is used well, students tend to understand the topic in question (Interview, 2022).

The quotation from the respondent revealed that when scaffolding was properly used, young children were provided with support and guidance while they were learning. Through scaffolding, it is easy for a child to learn something new at an appropriate age or higher than their age. This finding is similar to that of Fulton (2015), who stated that each activity focuses on a unique quality within the activity, building up the child's knowledge and skill in small, manageable steps while they grow in competence and understanding. Children are encouraged to repeat the activities until they master specific skills or demonstrate understanding of a specific concept.

Learner's freedom

The freedom of learners in Montessori pedagogy seems to be a center of the learning process. The study established that when speaking of children's freedom, freedom of movement is directly linked with freedom of choice. It enables the child to move freely around the classroom, choosing activities, selecting where to do them and with whom and for how long. One of the visited teachers said,

For the Montessori curriculum to go well, you must give the student the freedom to learn. The teacher must ensure that the student has the opportunity to choose what to learn and for how long with whom. Freedom to learn is very helpful in discovering and developing children's talents (Interview, 2022).

The quotation from the teacher established that the best way to implement Montessori pedagogy is to ensure that there is freedom in the learning process. Montessori (1991) saw freedom as an essential component of the child's emerging self-regulation and, as such, it carries social responsibility towards oneself as well as the group, which is appropriate to the age of the children. In addition, there is only one basis for observation: the children must be free to express themselves and thus reveal those needs and attitudes that would otherwise remain hidden or repressed in an environment that did not permit them to act spontaneously. An observer must have at his or her disposal children placed in such an environment that they can manifest their natural traits (Montessori, 2007).

Multiage grouping classes

The visited teachers insisted on the issue of multiage classrooms as among the best practices for effective implementation of Montessori pedagogy. The study established that it is important to group children following the three-year age span within the individual stages of development. So effectively children from birth to three learn together,

as do three- to six-year-olds, six- to nine-year-olds, nine- to twelve-year-olds and so on. One of the visited teachers said the following:

Older students have the chance to become mentors to their younger classmates while learning and practicing important leadership skills. Younger children naturally look up to and emulate older children, and so in a classroom with a range of ages, there are always opportunities for a child to “graduate” from observer to leader. Older students also and great joy in being trusted to teach their younger peers (Interview, 2022).

The quotation from the teacher revealed that when the pupils are grouped in a range of three years, they can help each other. According to Montessori, these groupings are important because they offer children opportunities to learn as a ‘family’ or ‘community’ and thus reflect a more natural organization of children’s learning. This approach also enhances children’s cooperation; it provides older children with an opportunity to guide younger children and thus consolidate their understanding as they share their knowledge with their younger or less able peers.

In summary, the findings from the field revealed that the visited teachers were trained under Montessori pedagogy from higher leaning institutions. Meanwhile, the assistance had general knowledge of early childhood education but lacked specific knowledge of Montessori pedagogy. The implementation of Montessori pedagogy in visited centers faced some challenges, such as the inability of some teachers, low accessibility, inconsistent implementation and uniqueness of the pedagogy.

Some of the visited teachers were helping pupils instead of guiding them in performing various tasks. The study also observed teachers who did not offer a chance for pupils to complete a cycle on planned activities. The other observed challenge was low accessibility. The visited centers charged a fee that is not affordable for most families in Dar es salaam. This creates low accessibility of this kind of education and goes against the purpose of Dr. Montessori of helping students with difficulties. In addition, the visited centers provided a kind of education that is not consistent. The methods of teaching, materials used and assessment vary from one center to another.

The study revealed some best practices, such as scaffolding, learner freedom, multistage grouping, and application of the work cycle. The visited teachers had views on the importance of scaffolding during the implementation of Montessori pedagogy. The technique is useful in guiding and supporting learners in various stages during the learning process. The practices suggested by teachers were learners’ freedom. The pupils during the learning process had to be free to develop new ideas and create the best ways of solving various learning challenges.

In addition, the visited teachers insisted on multistage grouping of learners. In the multiage group, the teachers had views on support and helping pupils in different age groups. Moreover, pupils in the multiage group had an advantage of being taught by the same teacher for the same teacher.

The challenges facing the effective implementation of early childhood Montessori pedagogy in enhancing pupils’ cognitive development

The purpose of this objective was to determine the challenges faced in the implementation of Montessori pedagogy. The findings were revealed through focus group discussion with teachers and assistants who guided the learners in the implementation of Montessori pedagogy. During the discussion, several challenges were discussed, such as the inability of teachers, low accessibility, difficulty in teachers’ training, inconsistent implementation and uniqueness of the pedagogy.

Inability of teachers

During group discussion, the visited teachers mentioned the inability of teachers as among the challenges of implementing Montessori pedagogy. The study revealed that in visited centers, the teaching and learning

process is prompted by commercial motives. Then, teachers try to assist the learners to the extent that they are not given an opportunity to grow independently. One teacher said,

Most Montessori centers are privately owned, which means that most of them are there for business purposes. For example, most of the visited teachers were busy helping the pupils instead of guiding them to perform the task for themselves. If you look on this, you will discover that it is not the purpose of Montessori pedagogy (Interview, 2022).

The quotation from the respondents revealed that teachers are motivated by commercial and not the standards of Montessori pedagogy. For that case, the study established that the visited teachers were not able to implement Montessori pedagogy effectively. This study concurs with Duckworth (2006), who identified the lights on the teacher as a possible challenge for implementing Montessori in schools. The role of Montessori teachers is not to lead teaching and learning because it is a disruption of the learning flow. As a result, teachers should act more wisely in regards to the correction of students' errors and using students' strengths, knowledge and critical thinking to discover their mistakes, think about them and fix them.

In addition, Montessori teachers have to develop warm and supportive relationships with children, marked by respect for the children's abilities and individual developmental needs. While children in the Montessori environment are not given unfettered freedom, they are free to choose their own work. The teacher respects children's work choices, ensuring that individual choice does not become secondary to group activities. Montessori teachers are trained to carefully observe children's interests and activity. The way Montessori teachers observe children's activity can be compared to the 'fluid rather than static' approach to observation advocated by Fler & Surman (2006) for teachers working in early childhood settings. Knowing how to observe constructively and when, and how much, or how little, to intervene is one of the most important talents the Montessori teacher acquires during a rigorous course of training. Close observation provides the evidence teachers use to make decisions about how to foster children's interests and meet children's learning needs. Observation is also used to monitor children's progress.

Low accessibility

Even though Montessori's way of teaching originally came from classrooms in low income areas in Rome, currently most Montessori schools are private schools that have a high price tag associated with enrollment. They are also more likely to be in areas with high-income families, making it too difficult for low-income families to enroll. During the study, one teacher said the following:

When Maria Montessori started this education system, she focused more on helping disadvantaged children. However, now things are very different. Almost all Montessori schools are private. Even worse, the fee is slightly high. This situation leads people who have low income to fail to obtain this education (Interview, 2022).

The quotation from the respondent shows that the accessibility of Montessori education is difficult. Only a certain class in society can afford this kind of education. In addition, the study found that this kind of education was found mostly in either town or church centers.

Difficult in teachers' training

From what has been discussed by teachers, the training of teachers under Montessori pedagogy is difficult. This is because there are few colleges and universities that offer Montessori pedagogy. On this issue, one teacher said,

This curriculum is actually not available in every college. For example, here in Dar es Salaam, I know that the college at Msimbazi center is the one that trains teachers at the diploma level. This clearly shows that the

issue of preparing teachers in this curriculum was challenging. At the end of the day you will see that there are few teachers, few centers and even few students (Interview, 2022).

The quotation from the teacher established that it is difficult to train teachers under Montessori pedagogy. Most colleges offer training on early childhood education up to the level of a bachelor's degree but not in Montessori pedagogy. This finding is in line with other scholars. Lillard (2018) believed that teacher preparation in Montessori is a major challenge that requires a different type of preparation in which Montessori depends on the training of teachers rather than education. In addition, Cossentino (2009) believed that preparing a teacher to become a Montessori teacher requires a deep and serious transformation in how young pupils learn and when human development occurs.

Inconsistent implementation

Another challenge revealed by the study is inconsistent implementation. The visited teachers argued that there is no uniformity in teaching and learning under Montessori pedagogy. The use of teaching and learning materials differs depending on the location and budget of the center. In addition, the study established that one criticism of Montessori schools is that not all schools follow exactly the educational methods developed by Dr. Montessori.

Although most schools adopt the basic program, many also adapt it to their local needs. Common adaptations are shorter work periods, special classes, extra activities, supplementary learning materials, grades, and homework. Because the Montessori name is not trademarked, almost any school can claim to be practicing it. It is hard for families to evaluate whether the Montessori schools they are considering are adhering to the original standards or not. The quality of teacher training is also difficult to evaluate. Lillard (2013) commented that some researchers have noticed that the implementation fidelity of the Montessori Method is associated with different outcomes in children. In Russia, despite all efforts, the implementation of the Montessori model still experiences some challenges: One teacher for large school; cost of materials; lack of government support for special needs, government regulations; lack of upper elementary training; increasing enrolment, poor quality Montessori material; and lack of practical life (Schnepf, 2010). Additionally, part of the children's problem with Montessori is their parents, who tend not to put any parameters around the child's behaviour believing the teacher does all the job and the child does not understand when to get serious academically. The Montessori Method should work well for above-average intelligence children with parents who are involved in their lives.

This lack of training of Montessori teachers is predominant mostly in African countries, Nigeria inclusive. This is due to the high cost of training teachers for this method and getting the Montessori books. This state hinders the effectiveness of implementing the Montessori Method, thereby leading to poor academic progress (Divya et al., 2004).

Uniqueness of the pedagogy

The discussion with respondents revealed that Montessori pedagogy is unique to the extent that pupils who accomplish preprimary education cannot cope with traditional primary schools that use the TIE curriculum. One of the teachers said,

This curriculum is very unique. If a student completes primary education, it is good to be enrolled in a primary school that runs on the Montessori curriculum. Otherwise, if a student is sent to regular primary schools, he will not be able to do well (Interview, 2022).

The quotation revealed that Montessori pedagogy is unique, and it became a challenge for a pupil to join primary schools that use the TIE curriculum. The study established that, currently, there are no high schools or universities that teach based on this Montessori pedagogy. Students who have been accustomed to

independent learning, an open-ended structure, and a lack of concrete lessons were surprised to find that they will have rigid classroom structures, inflexible timetables, deadlines, and homework assignments in higher education environments.

The findings are similar to Christensen (2018), who considered Montessori to be unique instruction and a major challenge for teachers in other schools to follow. Children in Montessori settings, for instance, learn naturally and by self-discovery rather than by traditional prompt methods of instruction. As a result, little support and guidance, if any, is given to students in Montessori, for whom most, if not all, teachers in the traditional methods have never experienced or are even not familiar with it.

As revealed from semistructured interviews, the visited teachers identified four other categories of challenges for the implementation of Montessori: 1) the educational context, 2) work ethics and environment, 3) the nature of teachers and students, and 4) social and personal aspects. Within each typology, there were some emerging themes and related subthemes.

Moreover, according to the perspectives of the interviews, the educational context was the one mentioned mostly as a challenge for the implementation of Montessori pedagogy. The visited teachers described the educational context as central, hieratical, and complicated with no clear standards. The Ministry of Education in visited centres should have complete control and be in full charge of not only making educational decisions but also setting up regulations, standards, salaries, awards or punishments that all schools and educational institutions must follow. Meanwhile, the visited Montessori centres were almost not under the Ministry. There was no follow-up guidance during the study.

The absence or lack of a clear educational philosophy was an astonishing finding that was agreed upon by all members during an interview. English teachers and specialists in particular stressed the fact that educational philosophy is not known, clear, or even exists. Members of the groups did elaborate more on the side effects of not having a clear philosophy. For instance, one of the visited teachers clearly stated,

truly, it is something implausible not to have a philosophy for our education. Not having one would make everyone do the job based on his personal values and beliefs because it is impossible for anyone to act without having a philosophy or belief of his own. There is a clear difference among various centers that offer preprimary education under Montessori pedagogy (Interview, 2022).

The quotation from the teacher revealed that the implementation of Montessori pedagogy was based mainly on commercial purposes rather than following the established philosophy.

Moreover, work environment and ethics were also a major challenge to implementing the Montessori pedagogy in visited centres. There was nothing so special about the educational work environment in Ilala, which lacks a deeper level of individual choices and group support. From the discourse of the interviews, all members indicated that teachers have limited free choices in regard to materials, curriculum and activities. They must follow a set of procedures, activities and teaching methods. Any attempt to deviate from the text is not encouraged and in some extreme cases prohibited. The teachers in particular stated that they often felt unfree to be creative and try new things. One of the teachers said,

Although we are in charge of the learning outcomes, we feel controlled by the curriculum, materials and assessment that we must follow with little, if any, support and guidance. I always hear 'do' and 'do not do' which makes me obligated without a total freedom. The parents also had their own expectations from their children. Most parents need their child to count, read and write in few days specifically communicating in English language (Interview, 2022).

The quotation from the teacher revealed that the working environment makes those teachers less creative and more dependent and obliged to follow the roles. Cooperative work was also mentioned as being neither the desired degree nor the norm in the work environment. Sometimes the teachers were forced to follow the demands of parents as their clients and put aside the requirements of Montessori pedagogy. For instance, in a survey of Montessori schools in America, Povell (2009) revealed that of the number of Montessori schools that were operating at the time of the study, only approximately 20% were formally associated with an official Montessori sanctioning body. The lack of training and practical knowledge of Montessori programs on the part of teachers engaged in Montessori education has been of concern in its successful implementation (Vettiveloo, 2008).

For a school to be accepted as a Montessori school, it must be recognized by a Montessori Association. There is no school in Turkey complying with the above requirement. Therefore, there is no formally recognized Montessori school in Turkey. In fact, the International Montessori Association has not listed Turkey among the countries having Montessori schools (Durakoglu, 2010). The schools in Turkey were opened by commercial motives and failed to comply with the standards of schools giving education based on the Montessori approach. In Tanzania, according to Schnepf (2010), Montessori centres in Lushoto experience different challenges, including poverty, few literacy activities/books, large class size, unengaged teachers, older children receiving traditional instruction, communal work mats, lack of outdoor space, and toilets in separate buildings.

CONCLUSION AND RECOMMENDATIONS

Numerous aspects of Montessori pedagogy positively take into consideration children's developmental requirements and ought to be a fundamental component of instructors' working modalities in so-called "traditional" public schools (such as the possibility for each child to be in multiage classes; to have an absence of explicit, formal grades, rewards, or punishments; and a low teacher-student ratio). However, Montessori's theory on cognitive development has to be examined in further detail and may help to explain the divergent findings of the various studies.

This study has concluded that Montessori pedagogy is practical and useful in imparting knowledge and skills among learners. However, if not well implemented, it can destroy children. The destruction is due to the focus of Montessori centers, which focused on commercial and left aside the key guide of the pedagogy. The visited teachers help pupils attract parents instead of guiding them and provide an opportunity for them to practice for themselves. The study established that the government had to support the training of teachers in colleges and universities to meet the established standards of Montessori pedagogy. In addition, there must be a link between the Montessori centers and higher education institutions that offered Montessori training.

Therefore, it is recommended that the providers of Montessori education improve the implementation of Montessori pedagogy specifically in the supervision and training of teachers. The owners of Montessori centres have a duty to ensure that all necessary requirements and standards for Montessori are met before the teaching process. In addition, the teachers who teach pupils in Montessori centres need to be smart by following the proper way of guiding learners during the teaching process.

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