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Echahid Chiekh Larbi Tébessi University -Tébessa

Faculty of Letters and Languages

Department of Letters and English Language

Investigating the Extent to which the Montessori Method Affects Teaching and Learning Literacy Skills for CVC Words:

The Case of Preschoolers of Polyglossia Private School at El Hammamet and Excellence Academy at TEBESSA

A Dissertation Submitted to the Department of Letters and English Language in Partial Fulfillment of the Requirements for the Degree of Master in Language Sciences

Candidates: **Supervisor:**

Fatma Zohra GOUASMIA   Ms. Nawel KRARZIA

Rania HACHICHI

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Dedication

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To my supporters, the source of boundless joy in my life, and cherished fragments of my very soul - my beloved sisters Noor, Maria, Rahaf, Touka and Isra, as well as my brothers Mohamed and Ramy;

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Ms. Fatma GOUASMIA

Dedication

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List of Abbreviations

ALM: Audio Lingual Method

CVC: Consonant-Vowel-Consonant

DV: Dependent Variable

IV: Independent Variable

LMA: Large Movable Alphabets

SPSS: Statistical Package for the Social Sciences

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PRESCHOOLERS OF POLYGLOASSYA PRIVATE SCHOOL AT EL HAMMAMET

AND EXCELLENCE ACADEMY AT TEBESSA

By

Fatma Zohra Gouasmia

Rania Hachichi

Echahid Cheikh Larbi Tebessi University, Tebessa

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Department of English Language and Literature

Faculty of Letters and Languages

University of Larbi Tebessi, Tebessa

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Abstract

Language development in early childhood is crucial, particularly when it comes to literacy skills, which is why suitable teaching methods have to be employed during this stage. Unfortunately, current language instruction approaches in primary schools, especially for teaching English, are often criticized for being inadequate and lacking depth in addressing the interests and requirements of learners. In 1907, however, Dr. Montessori introduced a method recognized for its focus on pivotal developmental stages and personalized instruction tailored to meet the specific needs of each learner. The current study aims to investigate the extent to which the Montessori method is effective in teaching and learning early literacy skills related to CVC words as an alternative to traditional methods used in Algerian primary schools. To achieve this aim, a quantitative approach is adopted and a quasi-experimental research method is conducted in Polyglossia School −El Hammamet− and Excellence Academy −Tebessa− on two groups (experimental and control group) of 15 participants. Both groups underwent the same pretest and posttest about the target aspect related to literacy skills in question. It is assumed that the Montessori method would enhance the learner's performance in literacy skills, no matter how old they are (3,4, or 5 years old) compared to the traditional method; and the findings proved this to be true as they indicate a significant development of literacy skills related to CVC words among the participants in the experimental group, with an effect size of 90%. This is attributed to the implementation of the Montessori method, using sensorial materials. Results attributed to the traditional method indicate a lesser improvement (40%). Based on a comprehensive analysis of the outcomes, it is recommended that the Montessori method be adopted totally or partially in language classes, as it has proven to be advantageous for teaching early literacy skills.

Keywords: Montessori method, CVC words, early literacy, sensorial materials

General Introduction

1. Background of the study

English is currently the most widely spoken language in the world, with approximately 1.5 billion people speaking it either as a first or a second language, according to a report on language trends published in 2022 by Collen. This dominance of English in global communication has been noted by scholars like Gillen and Hall (2013), who claimed that it is the only lingua franca that holds such remarkable influence in politics, economics, and even social interactions worldwide. As a result, learning English has become a requirement for both children and adults nowadays. Due to its importance, teaching English is considered a delicate task; the foremost objective of an English teacher is to impart vocabulary and literacy skills to students of primary grades, with a focus on developing their reading and writing abilities.

According to Gillon et al. (2023), building a strong foundational vocabulary is crucial for foreign language learners before introducing them to literacy skills. After mastering the alphabet, the simplest structure to be introduced next is CVC words (Consonant-Vowel-Consonant), which allow the learner to utilize their phonological knowledge as a starting point for literacy tasks (Schmitt, 2000). This approach suggests that in order for learners to develop early literacy skills, such as reading and writing, instructors must first have a solid understanding of the approach to teach early literacy skills, which was considered and detailed by Dr. Montessori, the founder the Montessori method.

In 1907, Dr. Maria Montessori introduced her method to the educational field, which is a learner-centered approach. Her idea is that the child is an active participant in his own development and has a natural desire to learn. All what the child needs is a prepared environment based on sensorial activities and different materials (Montessori materials) where he can freely go toward his interest. Dr. Montessori (1949) deduced that when the

child feels free during the learning process, he would absolutely develop a decent education in terms of responsibility, self-dependency and natural desire to learn, unlike the non-Montessori methods (traditional methods) where the learning process is teacher-centered and the learner's role is mightily passive. That is, the learner only receives knowledge from the teacher and gives it back in examinations and evaluations, which is considered as a "creativity shading method" by Dr. Montessori (1949).

Dr. Montessori had a unique perception of the learning process, particularly when it comes to language. She firmly believed in the immense intellectual capacity and potential of human beings when it comes to learning language. In order to harness this potential, she developed a pedagogy that stood in opposition to conventional methods, which focused solely on seeing and hearing in order to receive knowledge. According to Dr. Montessori (1917/2013), it was essential to engage all senses in the learning process in a certain period of age. By doing so, the teacher would be able to determine what the learner truly needs to learn. Drawing from this perspective, she created specialized learning materials for each aspect of language, including the large moveable alphabet (LMA), sandpaper letters, and the pink series, which were specifically designed for teaching and learning early literacy skills that are reading and writing (Montessori, 1912).

Dr. Montessori (1912) proposed that the LMA and sandpaper letters serve as an introduction to literacy for children aged 3 to 6 years. Through these materials, children become familiar with the shapes and sounds of the letters of the alphabet, which is a fundamental step towards the writing process. The next step is the pink series, which consists of six pink boxes, one for each vowel (a, e, i, o, u); each box contains objects with their corresponding picture and tag, in addition to sight-words box. It is important to note that the pink series is specifically designed to teach writing then reading CVC words.

2. Statement of the Problem

For not being revised for so long, the Algerian educational system has been marked with its failure by numerous researchers, as Rezig (2011), Tafiani & Boufatah (2017), and Gacem (2018). They claimed this based on the fact that the conventional approaches to education have been inadequate in meeting the diverse needs of all students and addressing the developmental requirements of early childhood, especially when it comes to language learning. Consequently, students in the same classroom, taught by the same teacher and given the same material, exhibit a wide range of academic achievement, from weak to excellent (McDurham,2011, as cited in Al-Abiky 2019). Despite the fact that these issues have been discussed and acknowledged, the Algerian Ministry of Education is continuing to make additions to the primary school curriculum without any apparent revision to the methods of teaching, such as the recent addition of English as a subject to be taught in early classes.

Primary school is considered as a fertile ground in learning languages due to Krashen′s (1982) emphasis of age as a crucial factor in learning a second language. Therefore, Patel and Jain (2008) regard English teaching and learning as a delicate task that necessitates a strong foundation in the essential elements of the language, as well as the use of appropriate teaching methods and techniques to ensure the learner's engagement in learning English as a second language. The Montessori method is widely regarded as a successful approach to teaching and learning, particularly in relation to language acquisition, as it takes into account the child's age, needs, and interests. In terms of language, the Montessori approach progresses from writing to reading using the sensorial materials such as LMA, sandpaper letters and the pink, blue and green series, specifically during the second plane of development for children between the ages of 3 and 6 years. This differs from the conventional methods used in Algeria, where the second language is introduced to primary

school children at the age of 8 to 9 years, through the use of only a whiteboard and a textbook, and the child progresses from reading to writing.

The gap noticed prior to this study is concerned with the unsuitability of the methods used to teach English as a second language in primary schools. Moreover, there is a lack of evidence for how effective the implementation of the Montessori method can be to teach early literacy skills, as an alternative for the already used methods for the purpose of enhancing all children's academic achievements as far as early literacy skills are concerned.

3. Research Objectives

The fundamental objective of this study is to highlight the extent of the impact of the Montessori method in teaching and learning CVC words along with its literacy skills (meaning knowledge, writing and reading) for preschoolers of Polyglossia private school. Moreover, the study aims to determine how the Montessori method can be effective in teaching and learning CVC words in comparison with the non-Montessori (traditional) method. Following that, the study seeks to evaluate the usefulness of the Montessori sensorial materials that are designed to teach and learn early literacy skills (as far as CVC words are concerned) across various age groups.

4. Research Questions and Hypothesis

The primary question that arises from this study is:

To what extent does the implementation of the Montessori method affect teaching and learning CVC words to preschoolers?

Deriving from the primary question of this study, there are three secondary questions:

a) How effective is the Montessori method in comparison with a traditional method?

b) Is the teaching of writing and reading CVC words based on the pink series effective for children across all age groups?

    c)   Do the sensorial materials (LMA and sandpaper letters) make a difference in writing and reading skills and the learning of CVC words compared to the non-Montessori method? To address the objectives and questions of this study, it is hypothesized that:

1) Learning CVC words with literacy skills, writing and reading, using Montessori sensorial materials would definitely enhance the child's interest in learning.

2) Using the pink series to learn early literacy skills of CVC words will affect the performance of children across all age groups positively.

3) Having the child engage with all his senses in learning early literacy skills using the pink series is more effective than him being a passive learner in a non-Montessori classroom.

5. Population and sampling

The target population of the study comprises preschoolers from different settings, which are Polyglossia Private School at EL HAMMAMET and Excellence Academy at TEBESSA. Our sample consists of 30 preschoolers and was selected following a stratified random sampling to obtain a mixed grade that consists of age groups of 3–6 years old. Then, preschoolers from Polyglossia were assigned to the experimental group for the feasibility of the setting to apply the Montessori method while those from Excellence Academy were assigned to the control group.

6. Methodology

To test the aforementioned hypotheses and answer the questions raised, the present study heads for a quasi-experimental design due to its relevance in investigating the extent to which the Montessori method is effective in teaching and learning literacy skills for CVC words. Both groups received the same pre-test and post-test to test the target CVC words along with the literacy skills (phonetic awareness, knowledge of meaning, reading and writing), and to ensure that both groups possess an equal level of knowledge. Furthermore,

the post-test was administered to the experimental group after being taught the target CVC word′s literacy skills using the Montessori method, and to the control group after being taught traditionally. The findings were analyzed using a paired sample t-test to calculate the test scores.

7. Structure of the Study

This research project aims to experiment the effectiveness of applying the Montessori method in teaching and learning CVC words along with its literacy skills. Consequently, it comprises two chapters preceded by a general introduction. The first chapter is devoted to reviewing the literature in relation to the Montessori method and the teaching and learning of early literacy skills (CVC words) as far as English as a second language is concerned. The second chapter is devoted to the practical part, which would test the aforementioned hypotheses, where the methods and the results are discussed, and closing with a general conclusion.

Chapter One: Overview of the Montessori Method; A Glance at the Scope of Teaching and Learning Early Literacy Skills for CVC Words

Introduction

Various language teaching methods emerged in the field of education over the years. Among these methods is the Montessori method, which was established by Dr. Maria Montessori in the early 1900s as an alternative to conventional teaching methods, changing the way and the standards of teaching early literacy skills. Accordingly, in this chapter, the Montessori method as well as the teaching and learning of early literacy skills are presented in two sections for an overall understanding of the topic.

The first section provides a general overview of Dr. Maria Montessori and her method alongside with its central concepts as far as language is concerned, such as principles, periods of development, and didactic materials. Finally, the applicability of the Montessori method in Algeria is discussed.

The second section of this chapter focuses on the teaching and learning of early literacy skills, specifically on CVC words. It begins with an overview of the developmental stages of literacy skills (writing and reading), followed by a review of theoretical approaches to early literacy learning and teaching related to CVC words. The section concludes by citing some practical examples and discussing experiments conducted by researchers in the same concern.

1.1 Section One: The Montessori Method

In 1907s, the Montessori's pedagogy was introduced to the educational field by Dr. Maria Montessori. Her philosophy focuses on the child, for him being the constructor of the future man. From that, the Montessori method and its principles were constructed.

1.1.1 Biography of Maria Montessori

Figure 1 depicts Maria Montessori who was and still is the women who revolutionized the educational field′s perception of the child (Gutek, 2004). According to Lillard (1972) and Gutek (2004), in 1870 Maria Montessori was brought to life by a well-educated mother and an accountant in the military forces father in their hometown, Ancona, Italy. When she was three years old, her family decided to move to Rome as they believed their daughter deserves to receive better education. However, Kramer (1976) stated that Montessori family moved to Rome when their unique daughter was 5 years for work commitments and not for their daughter′s education. When she grew up, they persuaded her to be a teacher as it is the only permissible job for women at the time. However, her passion for mathematics led her to opt for engineering as a career in 1886, underestimating the fact that this profession was traditionally male-dominated. Later, young Montessori′s interest went toward biology so she decided to be a doctor. In her era, it was also unprecedented for a woman to pursue studies in medicine. For this reason, she was rejected multiple times by the board of higher education. In 1896, Maria had proved her merits to study medicine side by side with men and she was finally admitted as the first doctor women in Italy (Lillard, 1972).

Figure 1

Dr. Maria Montessori

Note. From "*The Absorbent Mind*", by M. Montessori, 1949, The Theosophical Publishing House.

During her studies, Dr. Montessori went through several struggles. She was banned from participating in the anatomy practical sessions on the grounds that a woman can never be competent to attend side by side with men autopsy sessions, so she was practicing alone when no one was in the morgue at night. The professor of anatomy and her classmates were surprised by her having excellent marks although she was banned from attending the course. Dr. Montessori was doing her best to keep going despite the fact that her father was opposing her actual career; he refused even to consider her achievement of being the first and the only female who overstepped the boarder that was put to negate women′s creativity in the Italian kingdom (Kramer, 1976). In August 1896, one month right after her graduation, Dr. Montessori was chosen as a delegate to represent women in a feminist seminar in Berlin. She defended woman and child labor in another seminar due to her deferent perception of the child.

Lillard (1972) stated that prior to her graduation in 1896, Dr. Montessori commenced her employment at a psychiatric clinic, with the university staff in San Geovanni Hospital in Rome; meanwhile, she did not cease her researches. As an integral part of her duties, she dealt with children with different nervous illnesses and mental disabilities. Lillard added that children in the asylums were placed in bare rooms (1972). After having their meals, they used to play with their leftovers on the floor. The medical stuff considered this as a defective behavior, but not Dr. Montessori. She believed that it is a sign of intelligence. Since those children had nothing to play with, there was only food that they can manipulate and play with using their hands. Therefore, Dr. Montessori deduced that those children need more than medical help. She spent two years working with unfortunate children, designing different materials, observing which can help them most to learn. She said in 1912:

I succeeded in teaching a number of idiots from the asylum both to read and write so well that I presented them at a public school for examination together with normal

children. And they passed the examination successfully …. While everyone was admiring the progress of my idiots, I was searching for the reason which could keep the happy healthy children of the public schools on so low plane that they could be equaled in tests of intelligence by my unfortunate pupils. (pp. 38,39)

The theoretical framework proposed by Dr. Montessori can be traced back to the pioneering research endeavors of Jean Itard and Edouard Séguin in 1988, who believed that children with intellectual disabilities can be educated through *hands-on learning*, learning by touching, and that *sensation-based* instruction*,* involving different senses like touching and seeing*,* is the only efficacious way for a deviated child to learn. Montessori already believed that medicine is not enough to solve their deviation as far as learning is concerned, but education can do that. In 1901, Dr. Montessori relinquished her role in the asylum and delved into the fields of philosophical education and pedagogical pathology. Moreover, she served as a lecturer at the university of Rome in 1904. Two main principles of hers were the basis of her lectures at university: (1) a child, during the task of learning, needs to be assisted and guided, not judged or even evaluated; and (2) the child possesses an inherent capacity for seeking knowledge from birth, which must be nurtured and guided by the caregiver or teacher (Lillard, 1972; Kramer, 1976; Gutek, 2004).

In January 1906, driven by her aspiration to work with typically developing children, Dr. Montessori was assigned the responsibility of caring for young children in a new housing project located in San Lorenzo. She arranged a designated area for the children, furnished with child-sized tables, chairs, armchairs, and other materials that she had previously used at the asylum (Kramer, 1976). An assistant was assigned to her, who had no prior teaching experience, which Dr. Montessori found beneficial as it allowed her to experiment with her new methods without being impeded by traditional teaching approaches. She guided her about the use of the materials, and gave her total freedom in the classroom (Lillard, 1972).

One year after the success that was seen in the "*Casa Dei Bambini*" of Dr. Montessori, the Montessori method was spread in the country as a successful way to teach children from different ages, and started as an official classroom as it is today known in kindergartens, children′s houses (Casa Dei Bambini) and Montessori classrooms. In 1907, Maria Montessori wrote "The Montessori method".

Montessori reached a significant level of prominence both in Italy and internationally, and her writings were translated in different languages. She traveled to America in 1914, where she received a warm reception from Thomas Edison. The American Montessori Society was subsequently established, with Alexander Graham Bell serving as its president. During her time in America, she taught Helen Parkhurst, who organized a glass classroom to enable observers to witness her teaching methods firsthand. In 1939, she went to India, where she met Mahatma Gandhi. She stayed there till the end of the World War II, 1946. Montessori kept going on with her son, Mario, who was following his mother's path. She released her famous masterpiece: "The Absorbent Mind" in 1949; then, she spoke at the UNESCO and was greeted with a standing ovation. Her contributions were recognized through the awarding of the Legion d'Honneur, in France, and an honorary Doctor of Philosophy degree from the University of Amsterdam. On May 6[th,] 1952, at the age of 81 years old, Dr. Maria Montessori passed away in the Netherlands (Kramer, 1976).

1.1.1 Principles of the Montessori Method

1.1.2.1 Respect for the child. On the one hand, Dr. Montessori claimed that each person is inclined to have their comfort zone, where they attempt to be creative or do something productive, but this tends to be disrupted by other people, which cause anger and irritation (Montessori, 1912). She also mentioned that children experience a similar zone when they are trying to make connections, understand patterns, and correct themselves; then what happens if they are interrupted? In fact, the child also experiences similar irritation.

Hence, one of the core principles of Montessori is to respect the child, which means that the child must have the chance to move, observe, and correct himself at his own pace. She also emphasized that this is not what adults are doing; they do not respect children; they attempt to push the child to follow them despite his specific demands; they are arrogant and, above all, unpleasant to children, and then they expect the child to be subservient and well-behaved, knowing how strong his instinct for imitation is and how affecting his faith in and admiration for the adult is. In any case, children will mimic adults, so adults should, therefore, treat them with the same compassion that they would want to see in them.

On the other hand, in the non-Montessori classroom, the teacher comes in with a ready-set pattern, a timetable (history, English, math, etc.), but the child wants to know more about that incident that the teacher discussed the previous day in the geography class, for example. Will the teacher listen to the child, and start the discussion about geography? Will they stick to the timetable instead? What usually happens in a non-Montessori classroom where everything is usually teacher-centered is that respecting the child may not happen; hence, the Montessori classroom goes by the opposite principle and gives a lot of importance to the respect of the child. Ultimately, teachers must show children respect by assisting them in doing things and learning for themselves. Children who have options are more likely to acquire the skills and talents required for effective learning, autonomy, and high self-esteem (Montessori, 1936/1996).

1.1.2.2 The Absorbent Mind. Maria Montessori, in her book "Education for a New World" (1946), used the term "absorbent mind" to describe how young infants freely and subconsciously absorb knowledge from their surroundings. Children from birth to age six, according to her, have an absorbent mind that helps them acquire and assimilate knowledge and skills through their senses and experiences. She also stated that at this time, children have a greater potential for learning and are motivated by an inherent need to explore and

understand everything around them. She also added that children's experiences and impressions at this critical age significantly influence their development, defining the person they will become (Montessori 2007a, 2007b, as cited in Isaacs, 2018). Indeed, Montessori's educational method is built on establishing an atmosphere that promotes the child's natural tendencies while allowing them to explore and learn at their speed freely. The absorbent mind is a core idea in the Montessori education that highlights the necessity of giving rich and stimulating experiences for young children to encourage their growth and allow them to attain their greatest potential. Montessori (1949) also stated that the absorbent mind does not distinguish between what is good or terrible, right or wrong; it purely absorbs every idea it encounters. Moreover, infants during this phase have a short attention span and their focus quickly shifts from one experience to the next. She also concluded that an absorbent mind is a powerful tool for developing and absorbing knowledge, and providing children with rich and varied experiences during this period can have an enormous influence on their future development and achievement

    1.1.2.3 The Sensitive Periods. Montessori (1936/1996) stated that sensitive periods are periods in child's life when he is preoccupied with one aspect of his environment to the exclusion of all others. Repeating particular behaviors for an inexplicable reason until a new function develops with explosive power as a result of these repetitions, the child's extraordinary internal vigor and delight at these times stem for his ardent yearning to establish connect with his surroundings. This interaction is motivated by his love and his surroundings, too. She mentioned that the possibility for a natural triumph is gone forever if the youngster is prohibited from following the interest of any particular sensitive period. Additionally, Montessori identified sensitive periods in a child's life that were associated with a desire for order in the surroundings, the use of the hand and tongue, the development of walking, a curiosity with minute and detailed items, and a period of strong social attention

(Lillard, 1972). She also added that the child loses his specific sensitivity and desire in this area with a disconnecting; his physical growth and maturity are affected; as a result, the possibility for development during his sensitive period must not be overlooked. Thus, the youngster must be assisted as soon as one appears. The grown up or adult must not assist the infant in forming itself, because this is nature's job, but he must show a sensitive regard for its manifestations, supplying it with what he requires for its creation but cannot obtain for itself. In summary, the adults must continue to create an appropriate environment for the psychological embryo, just as nature did in the form of the mother for the physical embryo (Lillard, 1972).

- **Sensitivity to Order**

Order is not only a sensitive period, but also a need of the child (Montessori, 1949). It appears early in the first year of life, even in the first months, and lasts until the second year. Dr. Montessori noticed the sharp contrast between the child's love, order, regularity and the major adult's lesser joy and satisfaction in having everything in place, and noted that the child's desire of order stands from a fundamental need for a precise and predictable environment. Only in such an atmosphere can the infant classify his observations, forming an inner conceptual framework to understand and go with his surroundings, and identify the link between items rather than objects themselves through his exceptional sensitivity order (Montessori, 1949).

- **Sensitivity to Learning through the Senses**

The desire to investigate the world with the tongue and hands signals the start of the second sensitive period. The infant absorbs the attributes of the items in his surroundings through taste and touch, and strives to act on them. Importantly, it is through the sensory and motor activity that the neutral structures for language are formed. As a result, Montessori determined that the tongue, which humans use for speech, and the hands, used for working,

are more inextricably linked with his mind than any other part of his body, she called them "instruments of human intelligence" (Montessori, 1949).

- **Sensitivity to Walking**

From 12 to 15 months after they start walking, babies have a strong desire to do better at it. They will walk for a long distance before becoming exhausted of using this new talent. "It is often underrated how long a kid can walk for, provided they are allowed to do it at their leisure, but the adult must be aware that they have no notion of time and they love to explore," (Montessori, 1949). The infant is transforming throughout this time from a helpless being to an active one.

- **Sensitivity to the Social Aspects of Life**

The youngster realizes they are part of a group when they are approximately two and a half to three years old. He begins to exhibit a strong interest in other children his own age and eventually learns to play together with them. There is a sense of coherence, which Montessori felt arose instinctively rather than as a result of internal motivation (Montessori, 1936/1996). She also noticed that, at this age, children begin to adapt their social conduct after that of adults, and they progressively absorb the social standards of their community. This is an excellent time to learn social conventions and etiquette. Knowing and following norms, as well as developing grace and respect, are critical during this sensitive period.

- **Sensitivity to Small Objects**

As mentioned by Montessori (1948/1993), when a newborn enters their first year and has a bigger area to explore, they are drawn to little items like insects, pebbles, stones, and grass. They will grab something up, examine it carefully, and maybe put it in their mouth. The need for detail that babies this age have is part of their efforts to have a better knowledge of the world. During this sensitive era, babies are drawn to practical life materials.

- **Sensitivity for Language**

Dr. Montessori (1949) wrote regarding language acquisition that the child learns on his own; no one instructs him. It is the child who has the ability to change the features of people and the characteristics of language. By closely observing the child, we may tell that he possesses specific abilities that help him develop the qualities of the adult he will become. She added that the learning of language starts shortly after birth, since the kid may hear the voices of the people around him, and these impressions are retained on an unconscious. Through interactions with other individuals in his context, the child's linguistic abilities keep improving. Language acquisition includes hearing sounds, witnessing the physical actions of speaking, creating sounds, learning communication through speaking and the meaningful nature of words, symbols, letters, and reading. The unconscious process of acquiring our native language is quite powerful, and the sensitive phase for language provides the absorbent mind with the foundations needed to grasp that language period (Montessori, 1949).

1.1.2.4 Prepared Environment. Maria Montessori regarded the "Children's House" (Casa Dei Bambini) as an educational environment distinct from other educational settings, and the main idea behind contemporary school buildings is that they should be hygienically proper, meeting the regulations of healthy housing, and so on. Her plan was to construct them in such a way that they are psychologically rewarding; that is, the structure should match to the psychological demands of the kids (Montessori, 1944).

In English, the word house is always used, which is frequently taken as the structure in which we are located. Montessori chose the name Casa, which also means "house" in Italian, the language in which she lectured, because she viewed the surroundings as a "home lovely home" for children, where they may feel completely at ease both physically and psychologically (Montessori, 1944). As she clarified, it is known that an ideal Children's House has both an indoor and an outdoor environment, and about the outdoor setting she

says, "What is needed for children is an open air atmosphere of activity that will develop the psychological side", she also added that a prepared setting is one that is created to satisfy children's developmental requirements. It is devoid of tension, competitiveness, and judgment, and encompasses physical space, furniture, materials, children, and adults. It is a place where everyone feels welcome and free to be themselves (Montessori, 1944).

Montessori believed that we can create an environment for our kids that will maximize their learning, give them the independence to learn and to take control of their lessons as well, in a place where they can develop or progress to be the best version of themselves (Seldin & Epstein, 2003). In fact, the understanding of the prepared environment is that each material is placed in a certain place, or in a certain way for very specific reasons. For example, the easier materials are placed at the top of the shelf because that is what the kid is able to do first, and they actually require the least amount of concentration and activity since they haven't built that much strength of focus, and ability to concentrate. However, as much as the material progresses, it gets more difficult and challenging. Correspondingly, inside the prepared environment, we must have the appropriate furnishings as Montessori specified: the materials for practical life, sensorial, language, and math. One of the key aspects of prepared environment is the mixed-age group in which Montessori discovered that children learn best in a communal setting where they may connect with peers of all ages and skills. This helps them learn from one another, collaborate, and grow in tolerance and social skills. In summary, the prepared environment and the mixed-age group are crucial aspects of the Montessori method to education, and they work together to produce a loving, exciting, and fascinating learning environment for children (Montessori, 1948/1993).

1.1.2.5 Auto Education. Montessori (1949) defined the idea that children may educate themselves through auto education (also known as *self-education*). Children who actively participate in a controlled setting and have the option to choose actually teach

themselves, especially when the Montessori method teachers set up classrooms so that students may educate themselves. In her book The Psychology of Auto-Education, Hunt (1912) revealed substantial complementarity between Montessori's auto-education principles and Henri Bergson's theories of 'matter' and 'form' and the development of awareness. According to Hunt, Bergson defines sensations and perceptive faculties as 'matter', and the propensity to construct connections between them as 'form' Bergson (as cited in Hunt, 1912). The newborn infant has 'matter' (sensory perception), and 'shape', which will naturally assist it in making sense of its surroundings. "This distinction between form and subject of knowledge has a significant impact on educational approach" (Hunt, 1912). Further, Bergson claims that once intelligence has worked its way up through the senses (matter) and established connections (form), it may "turn backward on itself and awaken the potentialities of intuition which yet sleep within it" (Bergson, as cited in Hunt, 1912). Moreover, to make the process of self-education work, the stimulus (the content) must not only bring forth activity, but also direct it. All physical or fundamental properties of items should be judged not only by the immediate reaction of attention that they elicit in the child, but also by their existence of this essential trait, the successful collaboration of the highest processes (comparison, judgment).in brief, Montessori's auto-education technique encourages children to self-educate through physical experiences, such as matching shapes, colors, textures, dimensions, weights, and smells. When an error is made, the child is encouraged to try again.

    1.1.2.6 Teacher′s Role. It is vital for the teacher to lead the child without having him feel their presence too much. They may always be available to offer the required support, but may never be the impediment between the child and his experience (Montessori, 1948/1993). Montessori (1949) refers to the instructor as the "directress/director" in her writing. She addresses them more like a director of a show than as a teacher, yet many in the Montessori community have criticized the use of this phrase in recent years (Loeffler, 1992 as cited in

Isaacs, 2018). In the modern setting, the instructor's function has been taken to indicate more of a guide or facilitator, although to "direct" still suggests being in charge of the child's learning. The environment must be well-suited to the child's requirements and interests in order for them to access spontaneous learning. The Montessori teacher's responsibility is to provide a learning environment that meets the developmental needs of the target age group and takes into account the preferences of the students. The main method for determining if the environment needs to be changed, as well as any potential adjustments to the design or content of the classroom, is observation. Moreover, Dr. Montessori claimed that teachers need to know that the Montessori pedagogical approach is based on individual knowledge of children and planning for their specific needs and interests (Montessori, 1912) Teachers must develop materials and activities designed by Montessori, observe and document children's learning, place the needs of the child above their own, and organize and maintain the classroom according to children's abilities. Also, Dr. Montessori emphasizes that the teacher's role should be minimally intrusive, except when addressing substantial errors. The teacher should refrain from creating a sense of failure or confusion in the child when a mistake occurs. Instead, the teacher should integrate the mistake into the lesson, ensuring that all children gain awareness from it (Gutek, 2004). In addition to that, teachers must trust the child, create a diverse learning environment, and be humble to learn from and with them (Montessori, 1949). As a result, the purpose of the Montessori teacher is to help children develop self-confidence and internal discipline (Edwards, 2002).

1.1.3 Montessori's Stages of Development

Doctor Montessori recognized that the child progressed through pattern developments. She called them "planes of development", and she identified four (04) distinct planes that the child passes through from birth to the age of twenty-four: Early Childhood, Childhood, Adolescence, and Young Adulthood (and Maturity). She noticed that in each of

these planes psychological and physical characteristics were vastly different from one child to another. She believed that it is like a metamorphosis that the child goes through (Montessori, 1946). For example, a child aged 0-6 is going to take everything he can and absorb every nuance of the world around him. Subsequently, Dr. Montessori divided this process to help us understand the patterns of these stages (planes), and it goes as follow:

    1.1.3.1 Early Childhood (Birth to age 6). Montessori (1949) approved that, despite the fact that early childhood education provides several developmental milestones and advantages, this key phase concentrates on the child's ability to absorb new knowledge and stimulation. Montessori mentioned that when a child feels comfortable in his/her surroundings, he/she will learn and develop gross and "fine motor abilities", as well as "unconscious" and "conscious" minds, considering everything that occurs throughout the child's first six years of life. She also added that young minds are learning so much, from discerning noises, scents, and tastes to crawling, standing, walking, and speaking they will acquire hand-eye coordination, acclimate to their culture, expand their vocabulary to several hundred words, and refine their cognitive growth as they approach toddlerhood, among many other milestones. Accordingly, the Montessori developmental stages divide the first plane into two three-year cycles. Additionally, she also claimed that, throughout the first plane of development, children will practice autonomous play and task completion, developing the mindset of "I can do it all by myself!", and together with independence, the child's individuality and personality differentiation emerge, as they begin to exhibit clear personality traits and emotional patterns.

    1.1.3.2 Childhood (Ages 6-12). With key cognitive milestones established, the second plane of development increases the child's drive to learn more and gain independence. The child's attitude now includes "I can decide and think for myself!" as a consequence of their maturing conscience and functioning understanding of good and evil (Feez, 2010 as

cited in Isaacs, 2018). In addition, Montessori activities for this age range will develop problem-solving, critical thinking, and cause-and-effect scenarios. Furthermore, as the child learns more about the world and the environment, they will begin to explore their position in it, their identity and who they want to become, and how they may help those in need (Montessori, 1948/1993).

1.1.3.3 Adolescence (Ages 12-18). For everyone, adolescence is a turning point. This third plane of development strengthens children's reflective learning and application as their emotional, physical, and social growth reach new heights. With a developing understanding of the world around them and their own feelings, adolescence fosters self-concern and self-assessment, culminating in the following mentality: "I can stand on my own!" Adolescents will practice making more autonomous decisions, building a social life, and developing emotional independence as a consequence (Montessori, 1948/1993).

1.1.3.4 Young Adulthood & Maturity (Ages 18–24). When the child goes from adolescence to early adulthood, the fourth and final plane of development occurs, improving maturity as they move towards ultimate independence. Young people will begin to explore who they are spiritually and emotionally at this point, creating a more cognitive knowledge of their identity (Montessori, 1948/1993). Also, during this period of growth, there is a strong desire for financial independence and decision-making. With new experiences working and earning a salary, their mindset has shifted to "I can acquire it myself!". Dr. Montessori realized that they may need their own specifically prepared environment, and that there could not be one prepared to serve all children, which is why she designed a specific prepared environment for children in each of these planes; their needs were very different.

1.1.4 Montessori's Five Great Lessons

Montessori's elementary curriculum includes five "great lessons" as an essential part to be presented for the pupils 3-6 years old at the early beginning of every scholastic year in

Montessori classrooms (Lillard, 2005). He added that these lessons are a part of what Dr. Montessori called "the cosmic plan" that is five narratives about the coming of the universe, the coming of life, the story of humans, how writing began and the story of numbers (Montessori, 1948). Familiarizing the child with these lessons would enhance his/her understanding of the universe. Furthermore, the child would be left with the desire to explore more the subject matters that are presented in the great lessons. Each lesson stimulates the child's imagination and shapes his/her view of the world (Montessori, 1948)   .

1.1.4.1 First Great Lesson: The Coming of the Universe and Earth. The first story is titled "The Creator with no Hands". Dr. Montessori (1948) went for this choice of the title to spark the child's imagination about the mysterious force that flawlessly brought about the existence of the universe, and how everything came into being. Within a fascinating atmosphere, the teacher, whether in an open-doors or a specialized Montessori classroom, starts to explain how the universe maintains its stability through natural laws such as gravity. Using special effects, the teacher demonstrates these laws to the children explicitly. Afterwards, it is essential to mention that the universe was believed to be in a state of cold and darkness before the Big Bang. It was only after this explosive event that galaxies were formed, leading to the emergence of the universe as we know it today, as stated by Lillard (2005). According to the curriculum of the American Near North Montessori School, it is recommended to demonstrate to children the outcomes of the explosion that led to the formation of planets, liquids, solids, gases, and the separation of the earth into continents. This can be achieved through 4 diagrams and 6 experiments. That way, the first great story lesson paves the way for exploring astronomy, chemistry, physics, and geology.

1.1.4.2 Second Great Lesson: The Coming of Life. The next thing to be presented to the child is the coming of life. Dr. Montessori, in 1948, provided an account of the emergence of life on Earth. She explained that after the explosive event that brought about the existence

of the planets, the stars and the milky-way as a whole galaxy, it started to rain continuously. The water of the rain stopped the volcanoes and washed all the rocks on the earth. Consequently, the rocks started to poison the water of the sea. As a solution, single-cell and multi-cellular organisms were created and eventually became fossilized at the bottom of the sea. The Paleozoic, Mesozoic, and Cenozoic periods are recounted, starting from the reign of trilobites and culminating with the advent of humankind. The timeline illustrates the evolution of invertebrates, fish, plants, amphibians, reptiles, birds, and mammals. Isaacs (2018) believed that this lays the groundwork for lessons in chemistry, nutrition, animal and plant classifications, animal care, and the interdependent relationships within an ecological system. Also, the students are exposed to the formal scientific terminology of zoology, botany, and anthropology.

 1.1.4.3 Third Great Lesson: The Story of Humans. Dr. Montessori (1948) claimed that after listening to the first and second great stories, questions like "Who am I?" or "Why do we exist in this great universe?" will come to the child's mind. Only the third great story, "the story of humans", would fulfill his/her inquiries. This one explains how humans have been distinguished from other creatures with three main endowments, namely the mind for reasoning, the heart for feeling and loving, and the hands to create and innovate. Besides, Montessori (1948) added that the third lesson would illustrate to the child the way human beings benefited from these endowments for satisfying their needs and making an entire history and civilization. Hence, the child's interests would likely be oriented toward studying history and culture.

 1.1.4.4 Fourth Great Lesson: How Writing Began. The central concept of the fourth great lesson is the origins of writing. Dr. Montessori (1948) insists that the child should be knowledgeable enough about the development of spoken and written language as a tool of communication throughout history. The lesson commences with introducing the

communication system of signs that was first developed by Egyptians, who used to draw pictures to communicate ideas. Yet, they found that this system may be confusing for the reason that one picture may be interpreted differently. Therefore, they innovated a secondary communication system based on sounds (Lillard, 2005). Afterward, the Phoenicians borrowed the pictures system from the Egyptians; then they subjoined a symbolic system of communication that is used nowadays: the alphabet (Montessori, 1948). The teacher needs to present this lesson by illustrating figures of every stage of language development. Moreover, the story of hieroglyphs, the invention of prints, and the development of the English language must be presented to stimulate the child's interest in reading, writing and language branches (Lide, 2018).

      1.1.4.5 Fifth Great Lesson: The Story of Numbers. The fifth lesson ought to cover the origins of numerical systems and how counting emerged as a necessity for various purposes. It is important to note that the Sumerians and Babylonians invented the first numerical system, which was based on the number 60 for measuring time (60 seconds, 60 minutes) (Montessori, 1948). Additionally, the concept of zero was first developed by the Indians and incorporated into their numerical system, which was similar to the Arabic system. Other numerical systems, such as those used by the Greeks, Chinese, and Romans, should also be mentioned. This is an initiation to a great and vast science called *mathematics*. The fifth lesson will lead to the study of mathematics, geometry and numbers (Montessori, 1948).

      The Montessorian cosmic education was created to awaken the child's curiosity and imagination in learning. Dr. Montessori (1948) stated that her method is *culture-based.* That is, the Montessori education is designed to foster a deep acceptance and understanding of different cultures and religions, as well as a sense of responsibility to care for the world and its people. Based on this claim, Grazzini (2013) claimed that Montessori deduced that the

cosmic education is adaptable to any culture and any religious perspective. He further added that in a Montessori classroom with diverse cultural and religious backgrounds, teachers can focus only on presenting factual   accounts while introducing the five great lessons.

1.1.5. Didactic Material of Montessori

Dr. Montessori documented in her personal notebook from 1914 that during her time working at the asylum she observed a distinctive approach through which children have when first examine it intently staring at it long before proceeding to touch it, shake it, and in some cases, even bite or lick it. According to her, children engage multiple senses in their exploration of unfamiliar objects. Along with these observations, she innovated the sensorial materials, saying: "My didactic material offers to the child the means for what may be called 'sensory education'" (Montessori, p29, 1914).

Education of senses represents the classification of senses by Dr. Montessori. She expanded to nine the number of humans senses. In additions to our basic five senses, she added chromatic/color, baric/weight, thermic/temperature, and stereognostic/tactile-muscular. For the sake of developing each of these nine senses, she designed sensorial materials based on Séguin and Itard's hands-on learning method (Isaacs, 2018). Using sensorial material in the Montessori classroom will refine the child's senses so that he can differentiate and notice even the smallest difference between observable objects, be it the shape, the size, the weight, the texture, the color, or even the temperature. Moreover, touching the wooden materials will facilitate the task of recalling for the child (Montessori, 1914).

1.1.6 Critiques to the Montessori Method, and Possibility of its Application in Algeria

While the Montessori method is widely recognized as an effective approach to teaching elementary students, it has also been the subject of criticism for several reasons (Alhashim, 2022). The method was criticized in Arab and Muslim countries for the catholic beliefs that were integrated in Dr. Montessori's philosophy of the cosmic education, as

claimed by Alhashim (2022). However, Gumiandari et al. (2019) refuse this perspective by claiming that the Montessori method is a multicultural approach, and it has many principles that align with Islamic perspectives, in addition to the fact that this method is adapted in many Muslim countries such as Saudi Arabia, Qatar, UAE, Jordan and others. Besides, Abdullah et al. (2018) stated that both Dr. Montessori and the Muslim philosopher Al-Ghazali shared the belief that child education is a divine obligation and should be approached with utmost respect and care, bearing in mind that the first word of God to his Prophet Mohamad (Peace Be Upon Him) was the word "read". They both stressed the importance of treating children with dignity and providing them with education that reflects this responsibility, as well as emphasizing the existence of the Almighty God, who endowed them with these learning capacities.(Abdullah et al, 2018 as cited in Al-Abiky 2019)

Gumiandari et al. (2019) have also criticized the Montessori method for its lack of evaluation and examination. According to them, the method does not require learners to do any homework or take any tests, which can hinder the desire for competition and achievement among learners. They argue that parents want to see the outcomes of their child's education after a period of studying, and the Montessori method does not provide them with such measures, underestimating the claim of Dr. Montessori (1917/2013) that her method is looking for preparing the child's potential and interest in learning not only for examinations, but to his entire social life. That could be understood as the following: If parents are interested in the essence of education for their children to build a future educated, responsible and collaborative person, the Montessori method is absolutely the best option.

Again, Gumiandari et al. (2019) have raised concerns about the Montessori approach for it being highly expensive. Children from underprivileged backgrounds and those whose parent's salaries are limited may not have access to the Montessori education, which could hinder their development and potential. The authors advocate that this fruitful approach

should not be monopolized by the elite, but rather made available to all children so that they can receive decent education and contribute to the betterment of society. If the salvation is to come, only government may adopt the Montessori method and sponsor children houses, kindergartens and magnet schools to spread the opportunity to all. Otherwise, the Montessori method could be considered and integrated in public schools. However, it is questionable if a country that provides learning for free to everyone, like Algeria, could afford the expenses of the method's requirements to apply it in public schools. The answer is to come only if the applicability of the Montessori method is suggested and discussed in the Algerian educational field.

Overall, the Montessori method is a child-centered approach that prioritizes experiential learning through hands-on activities and self-directed play. The philosophy is rooted in the belief that children have an innate desire to learn and will thrive when given the freedom to explore their interests. Dr. Montessori developed a holistic approach that encompasses various stages of development, didactic materials, and great lessons to impart a comprehensive foundation in different subject areas. The Montessori method aims to foster independence, creativity, and critical thinking skills, making it a highly effective approach for educating young children.

1.2 Section Two: Approaches to Early Literacy for CVC Words

The current section is concerned with the review of the literature related to the scope of early literacy skills of CVC words along with different theoretical perspectives to teach and learn them.

1.2.1 The Scope of Early Literacy

Giving children a solid reading education in their early years results in improved outcomes later in life (Campbell et al. 2002). Over the last decade, there has been a growing

consensus on the set of abilities that serve as the foundation for reading and writing competence (Neuman, 2015).

To become proficient readers, infants must have a strong linguistic and conceptual knowledge foundation as far as second language is concerned, a large and diverse vocabulary, and verbal reasoning skills to comprehend concepts delivered through text. Children must also learn code-related skills, such as understanding that a) spoken words are consisting of smaller elements of speech (phonological awareness), b) the idea that letters represent these sounds (the alphabetic principle), c) several systematic correspondences between sounds and spellings, and d) a repertoire of highly familiar words that can be acknowledged easily and automatically, in which we can find what is called Top-Down and Bottom-Up approaches (Neuman, 2015). Hence, Snow et al (1998) defended that working with children to practice identifying each sound will aid their literacy advancement. Reading to the child daily is also an excellent way to promote a love of reading, which is vital for phonics success; as a matter of fact, reading small words like "cat," "bag," and "pen" helps children improve early reading abilities. These are known as 'CVC words' since they are constructed from consonants, vowels, and consonants. When children read a CVC word, they first recognize each sound, then speak them loudly, such as *c-a-t*, and then blend the sounds to read the entire word *c-a-t > cat*, for example (Tankersley, 2003)

However, Neuman (2015) asserted that, in order to achieve a high level of competence, young children must be given the opportunity to develop these strands together rather than in isolation because children's first experiences with print are influenced by meaning rather than sounds or letters, although it is crucial to remember that in practice toddlers learn these skills by means of cooperation and connection with meaningful events. Given the recent focus on early literacy and the increasing diversity of children in most countries, it is essential and appropriate to assess these critical dimensions, as well as the

strengths and gaps in our ability to effectively measure these skills. In fact, between zero and three, the brain develops quicker than at any other period. Correspondingly, promoting reading in the early stages of life is critical. Children's brains atrophy if they are not stimulated, if they are not read to, if they are not engaged, and if they are not asked questions. There is a real opportunity to provide books to parents and encourage them to read to their kids. Frequently, singing with one's children, and engaging in conversations with them prepares the next generation to be incredibly successful at school (Campbell et al. 2002).

In addition to the fact that Levine et al. (2010) stated that literacy development is less about a single essential period and more about windows of opportunity that span early life, it reaches its highest around the age of ten. They also added that even if a child has limited access to language and reading experiences at home, there is a lot of distance that can be gained through literacy-rich expanded learning or mentorship options like preschool, extended day programs, cross-age literacy partners, and the like.

1.2.2 Stages of Early Literacy Development

Chall (1996) claimed that literacy might be understood as dependent on instruction, with the consequence that quality of education is crucial. This concept highlights the developmental aspect of literacy, the passing of children through multiple stages of literacy, in each of which the reading and writing tasks change qualitatively and the role of the instructor has to adapt appropriately (Chall, 1996, as cited in Snow, 2006).

1.2.2.1 Stage Zero (Pre-Reading). Adams (1990) declared that between the ages of 6 months and 6 years, the child pretends to read and progressively acquires the ability to recreate stories when glancing at pages of books previously read to them. He also added, the child learns to name letters of the alphabet, print his or her name, and play with books, pencils, and paper. By the age of six, children understand millions of words but can only read a handful, if any. Adults are urged to support a child's language attempts at this time by using

parallel speaking, building on verbalizations, and recasting the child's verbalizations. He also added that adults should encourage children to employ two to three-word combinations in social circumstances, and adults should use dialogic reading or successfully shared reading with young children aged 2 to 5 years. He added that any instruction (phonics, vocabulary, etc.) should be related to book reading, and such books should have rhyme, alliteration, and repeating phrases. Thus, he added, adults should vocally name items with which children are involved in their surroundings and encourage them to raise inquiries and comment on observations.

1.2.2.2 First Stage (Word Recognition). Hirsch (2003) noted that readers could recognize an entire word more easily than a letter. Frith (1985) divided this progression into three stages: logographic, alphabetic, and orthographic. Logographic means using visual or graphic aspects to read words; alphabetic means using grapheme-phoneme interactions to analyze words; and orthographic means using spelling patterns. A framework like this exposes the critical sub-skills needed in the reading process. He also categorizes reading development into three stages: logographic, alphabetic, and orthographic. At the logographic stage, the young child relies on visual patterns to recognize words. The child progresses to the development of alphabetic skills as this becomes insufficient. Not all youngsters will be able to distinguish the letter-sound association in words and 'pick up' the alphabetic code immediately. They require specific and direct education in letter knowledge, as well as an early emphasis on phonological understanding. Finally, in the orthographic stage, a degree of grapho-phonemic knowledge is attained, and the reader may use the variety of abilities gained at each step (Frith 1985, as cited in Paterson & Marchall 1985)

1.2.2.3 Second Stage (Vocabulary Development). Snow (2006) asserted that vocabulary knowledge is an essential aspect of language ability and serves as the foundation for how students talk, listen, read, and write. It is a reliable predictor of early and later

literacy results Vocabulary is significantly associated with other measures of linguistic skills in healthy growing youngsters. For example, it is significantly linked to reading comprehension (Ouellette & Beers, 2010, as cited in Arrow & McLachlan, 2011). Moreover, Sénéchal (2006) highlighted two crucial vocabulary facts: a) early individual differences in vocabulary help to explain differences in children's reading comprehension success, and b) there is a beneficial relationship between vocabulary growth and phonological awareness, with vocabulary growth thought to result in a reorganization of how words are stored in memory.

1.2.2.4 Third Stage (Fluency). Fluency, according to Langenberg et al (2000), is a crucial aspect of excellent reading; without fluency, readers may struggle to grasp what they read. Furthermore, the US National Reading Panel defined fluency, in 2000, as "the ability of readers to read orally with speed, accuracy, and appropriate expression". Nichols et al. (2009) extend this concept by defining "speed" as the "automaticity of word recognition" and "expressive reading" as "reading orally with appropriate prosodic features such as expression, stress, pitch, and suitable phrasing". According to Rasinski et al. (2020), reading fluency is "a reading characteristic that occurs when readers' cognitive and linguistic systems are developed to the extent that they can read with sufficient accuracy and rate to allow for comprehension". Hypothetically, recognition speed and accuracy increase, fluency grows, more cognitive resources become available for understanding the meaning of what is being read, and comprehension improves, just as it does with word decoding. Reading fluency, while strongly reliant on word recognition abilities, is not entirely the product of them. Beginning readers learn to read orally, using aspects of spoken language such as "expression, stress, pitch, and appropriate phrasing," as defined by Nichols et al., (2009).

1.2.2.5 Fourth Stage (Writing & Reading development). Recent studies on the emerging literacy approach affected most of what we learned about writing from early

childhood in the 1960s. According to readiness scientists, young children began acquiring literacy through school teaching and learning to read before learning to write (Sulzby &Teale, 1987). Furthermore, Montessori (1912) demonstrated how to distinguish clearly between both components, writing and reading, contrarily to the common belief that writing comes before reading. She confirmed that reading is not the test the little boy/girl makes when he/she checks the written word. In fact, the youngster converts sign into sounds in the same way he originally translated the sounds into signs, so he already understands the word that he has written. Also, according to Levine et al (2010), writing begins when a child recognizes that his signs may convey an intention (meaning). She added that researchers in emergent literacy demonstrated that the child learned to read very early through informal interactions with his friends, family, and teachers. She also mentioned that, although earlier viewpoints focused exclusively on reading as a prerequisite for writing, this new perspective widened the focus to "literacy" and asserted that reading and writing were inextricably linked and developed concurrently.

    1.2.2.6 Fifth Stage (Spelling Development). Breadmore et al (2019) believed that the process of learning to read and write might be one of the most difficult obstacles in a child's life. Spelling is one of the most crucial aspects of single-word writing. Although interest in spelling development has grown in recent years, the study of spelling has yet to garner the same level of attention as the study of reading. In a point of fact, spelling development studies are essential not only because there is a pedagogical interest in understanding how children acquire this major aspect of literacy, but also because children's early spellings provide information concerning their initial knowledge of the graphic and phonological characteristics of writing that cannot be obtained in any other way. Additionally, according to the phonological viewpoint, the most difficult task for youngsters learning to spell in alphabetic writing systems is grasping the concept that letters represent phonemes

(Blachman, 1991). Also Pollo et al (2009) affirmed that children must also have alphabetic knowledge or understanding of precise sound-to-letter correspondences, although learning how to break down spoken language into strings of phonemes is a greater challenge in this regard than learning the specific connection between phonemes and letters. Also, she added that from a phonological viewpoint, it demonstrates the progression of children's spelling abilities in terms of their developing capacity to map word sounds to phonetically acceptable letters, a process known as encoding.

1.2.3 Theoretical Perspectives for Teaching and Learning Early Literacy Skills

Internationally, a variety of theories are followed for teaching and learning languages. This variety is opted for due to the claim of researchers that no one single view of learning can be depended on in learning languages since they are interrelated and complementary to each other. Thereupon, most educational systems vary their methods between behaviorism, sociocultural and cognitivism views; this variation lies under the technical term "eclectic approach" (Rao, 2018) while the Montessori method is not really familiar and applicable in public education despite its seniority (Kolkman, 2014).

1.2.3.1 The Behaviorist View. John Watson, Ivan Pavlov, and Burrhus Skinner are the researchers who shaped the belief that all human behaviors are learned through an interaction with the external environment through a process called *conditioning*. For the adherence of this belief, they suggested that behavior is merely a response to a particular stimulus from the external environment and has nothing to do with the human mind (Faryadi, 2007). In the same context, Hour (2012) adds that behaviorism is concerned only with the observable behaviors: "stimulus-response behaviors". Behaviorists deduced that humans are born with "Tabula Rasa", which means that when born, the human mind is a blank slate that would be filled with what is happening in the external environment. Therefore, new behaviors are learnt through *classical* or *operant conditioning* (Faryadi, 2007).

As a theory of learning language in particular, behaviorists believe that language is a behavior that is learnt from the external environment. With the notion of "Tabula Rasa" in mind, a child is willing to learn a language only if he is exposed to it from the external environment in a repetitive way (Hour, 2012). Moya (2014) stated that from a behaviorist point of view, the acquisition of oral language by children occurs through a process that entails imitation, practice, and reward facilitated by a human role models present in their environment, who serve as stimuli for language learning. That is, in the behavioral classroom, for the sake of learning early language skills as reading and writing, the teacher acts as the human role model as he provides the knowledge for the learner. The learner will imitate, repeat and get rewarded by the teacher if he behaves as desired.

Based on behaviorist principles, the Audio-Lingual Method (ALM) was developed with the aim of introducing early literacy skills (reading and writing) in a particular language. Alemi & Tavakoli (2016) defined ALM as a method of teaching that emphasizes the mastery of spoken language, grammar and vocabulary through repetition, drills and pattern practice. In this method, the teacher demonstrates the target aspect of language and the learners are supposed to imitate and repeat it until they have attained proficiency. ALM heavily depends on audio aids such as tapes and language labs that offer structured settings for exercises and repetition. It discourages the use of translation and elucidation; however, the target language is presented through contextualized scenarios and narratives as alternatives.

Behaviorism paved the way for the development of numerous theories regarding reading and writing, particularly in relation to early literacy skills. The fundamental skill taught and learned in behaviorism classrooms is reading. Due to its critical role in language learning, the traditional bottom-up reading theory was formulated based on behaviorist psychology, claimed Pardede (2008). The theory of bottom-up reading asserts that the reading ability is a series of sequential sub-skills that must be attained in order: phonetic

awareness, word recognition, sight vocabulary, and then reading in its entirety. Through

repetition, these sub-skills are internalized by the learner as a desired behavior that should be

positively reinforced to ensure its continued development (Suraprajit, 2019). As for writing

skills, behaviorism suggests that it takes place right after reading is accomplished.

Schwanenflugel & Knapp (2016) added that even the writing process is a set of habits that

have to be repeated and reinforced in a behavioral classroom. This approach is called

behavior modification, in which the undesirable habit is positively reinforced to the end that

the desirable habit is there.

Woollard (2010) explained that the application of behaviorist principles for teaching

early literacy skills, precisely CVC words (also referred to as *sight vocabulary* and *phonetic*

words in behaviorism), occurs through a series of activities and instructional methods. As for

reading, Woollard mentioned that repetition, narratives and dialogues are basic tasks to

accomplish reading, in addition to imitating the teacher and reading together loudly with him.

He added that the teacher may reward the desirable behaviors giving verbal complements,

sticker cards, or scores. However, the undesirable behaviors may be negatively reinforced but

not punished. Relating to writing, imitation and repetition must shape the writing instructions.

The teacher may modal the written word or letter on the board; therefore, the child would

imitate the movement of the hand and the way the pen is held. For this reason, pens and drafts

should always be present on the learner's table. Moreover, repetition tasks should be prepared

for the learner in writing class (Woollard, 2010).

1.2.3.2 The Cognitivist View. Cognitivism emerged as a response to behaviorism's

theory of learning, with the aim of addressing whether the mind plays a role in acquiring

behaviors. While cognitivism does not reject behaviorism outright, it incorporates the concept

of the mind into its framework (Kaya & Akdemir, 2016). Pritchard (2009) emphasized that

the study of human cognition is a central focus for cognitive scientists, encompassing

learning, memory, and social interaction. In their research, cognitivists frequently prioritize mental processes and utilize modern technologies. Apart from this, within the framework of cognitive learning, the emphasis is on the processing of information as a means of acquiring knowledge. Learning is viewed as an active process in which the learner engages in various cognitive activities such as receiving, observing, selecting, interpreting, and constructing information. In this approach, the learner is considered as an active agent in the learning process.

As stated by Hadley & Terry (2001), a crucial differentiation between meaningful learning and rote learning has been made by cognitivists, raising the claim that knowing the subject with its meaning in a relevant context permits the learner to relate the new knowledge with his pre-existing cognitive structure. As a result, the new knowledge is permanent. In contrast, Hadley & Terry (2001) stated that cognitivists assured that any subject that lacks meaning is unlikely to be retained permanently. The primacy given to meaning lead to the emergence of different approaches to early literacy teaching and learning for second language including the top-down approach. Suraprajit (2019) referred to the top-down approach in early literacy development as an inductive process that involves the segmentation of knowledge from the general to specific aspects. This approach implies the application of higher-level cognitive processes, such as schemata activation and prediction-making, to guide the interpretation and production of language at a lower level of granularity. The top-down approach assumes that learners draw on their prior knowledge and experiences to comprehend and produce language, which facilitates the acquisition of new language knowledge and skills.

Benadla (2012) asserted that the top-down approach to learning is widely used in most educational systems, particularly in teaching English as a second language. Regarding its application in early literacy teaching and learning, Neuman and Roskos (2005) viewed the

child as the constructor of meaning during the task of learning reading and writing. Likewise, they emphasized adults' role in supporting the child's reading and writing development. Adding to that, the process of developing reading and writing skills should be seen as a continuous journey, rather than a linear sequence. Children move back and forth between different skills, sometimes showing advanced ability in certain areas while still requiring support in others. The goal is to create a supportive and engaging learning environment that allows children to explore and experiment with various literacy skills, encouraging them to progress at their own pace.

As for the implementation of the cognitive view in teaching and learning reading and writing, Brand and Dalton (2009) claimed that besides preparing the convenient environment of learning, the teacher must opt for brain storming instructions before providing the information. Afterward, the information should be applied in different tasks for reading and writing. Incorporating such cognitive-based learning experiences into daily literacy instruction can help young learners make connections with the text, leading to an increase in vocabulary and comprehension skills as well as writing.

   1.2.3.3 The Socio-Cultural View. Lev Vygotsky 1962, the founder of the sociocultural theory, believed that cognitive development in early childhood is heavily influenced by social interaction with more skilled individuals. He rejected the idea that learning is an individual cognitive process and emphasized the importance of social interaction and collaboration in advancing learning and development. Not only social interaction, but also cultural context and language play a vital role in Vygotsky's theory. He suggested three key principles that contribute to learning literacy, namely genetic analysis, social learning, and mediation (Warschauer, 1997). One of the major key themes in the socio-cultural theory is the zone of proximal development, which highlights the gap between what children can accomplish independently and what they can achieve with the assistance of the

more knowledgeable other, be it the parents, the teachers, or even peers and what is beyond the child's reach (Bakar, n.d.).

According to Pérez et al. (2011), the socio-cultural perspective presents early literacy skills as a complex social-cultural practice that is shaped by history. Plus, it is inseparable from language by means of which the child decodes and encodes the knowledge depending on his socio-cultural experiences. Thus, reading and writings do not develop solely and implicitly, but rather the child's environment and surrounding people initiate his understanding of literacy skills. In teaching reading and writing in the classroom, the teacher must consider the student's culture and literacy of his native language since the native language can never be excluded in teaching foreign language from a socio-cultural view. Besides, the teacher must accept students' attempts in oral or written language even if it is influenced by his own home culture so that he paves the way for the scaffolding process to interfere (Pérez et al, 2011).

The socio-cultural theory ensures that oral and written language learning are inextricably related to each other. Coding and decoding oral or print language go jointly in learning second language (Gee, 1994). As for reading, Bruner's constructivism emphasizes that learners engage in an active process of "meaning making and reality construction" by utilizing cultural tools such as symbols, texts, and ways of thinking (Pérez et al,2011). This involves drawing upon personal experiences with the world, applying methods of text interaction learned from one's cultural group, and utilizing knowledge and skills related to letters, words, and text organization when interpreting written texts. For writing, constructing literacy task requires a different set of skills, including the ability to handle writing instruments and knowledge of the cultural norms surrounding writing. In this sociocultural context, the environment and purpose of the task play an important role in shaping the meaning that is ultimately constructed (Pérez et al, 2011).

Davidson (2010) outlined a set of pedagogical recommendations for early literacy instruction, drawing upon the socio-cultural perspective. Regarding the fact that a rich vocabulary is what a child needs most to engage in the task of learning reading and writing, the teacher ought to design tasks and games that would stimulate the zone of proximal development. This way the teacher will be aware of what the student is knowledgeable about and how he would assist him. Then, these activities have to be structured according to the level of difficulty. Furthermore, in a suitable environment of learning, it is preferable if the teacher sets for collaborative activities where he engages learners of different levels of intelligence in the same group task to create interaction.

1.2.3.4 The Montessorian View. In defining language, Dr. Montessori said: "Language is the instrument of thinking together. Language did not exist on the earth until man has made his appearance (. …). Men are united by language, and language has become more complicated; it has grown with man's thought" (Montessori, 1949, pp. 157-58). She considered language as the foremost precious heritage of human beings; it is by dint of language that man is distinguished from other creatures. She adds that language learning capacity is an innate notion that pre-exists in human's mind from birth. Additionally, language aspects' development takes place in the first plane of development, i.e., from birth to 6 years where the child acquires the language perfectly from the surrounding environment. Dr. Montessori firmly believed that the sensitive period is the ideal time for language acquisition, and that no language can be mastered as effectively as the one learned during this critical period (Montessori, 1949).

1.2.3.4.1 Preliminary Language. The development of second language occurs best during the first plane of development (birth-6 years), where the child is in a perceptional phase of the external objects in his environment. During the first 12 months of age, the child is absorbing whatever word he hears; thus, a great repertoire of vocabulary is constructed

passively. Once the child is 18 months of his age, he starts to display what had been stocked in his mind as far as vocabulary is concerned (Gutek, 2004). Additionally, Dr. Montessori firmly believed that the sensitive period is the ideal time for language acquisition, and that no language can be mastered as effectively as the one learned during this critical period (Montessori, 1949). At this point, she assured the cruciality of helping the child during learning a second language using the same sensorial materials of first language learning, yet language proficiency is required for the teacher to guide students decently.

1.2.3.4.2 Developing Literacy for Second Language. Montessori (1912) illustrated the importance of developing the child's vocabulary at his first plane of development by suggesting numerous steps to be considered. She suggested that, in order to entail child's language and communication abilities, he should be exposed to daily life activities by which he will develop his listening skills. With that in mind, the child has to be exposed only to appropriate vocabulary as well as well-structured grammatical utterances. She added that storytelling in the realm of real life will indirectly prepare the child for reading and writing as it familiarizes him with an expanded range of vocabulary.

1.2.3.4.3 Developing Writing Before Reading. In House of Children, Dr. Montessori noticed that, by means of the sensorial materials, it is convenient to commit children to writing before reading (Montessori, 1912). She also emphasized the idea that a child during the first plane of development is innately willing to accomplish writing before reading. When an infant of two years sees his sister or his brother revising at home, he would likely hold a pencil and start imitating the writing process. In this regard, Montessori said that children must develop two critical skills. Firstly, they need to commit the shapes of letters and their corresponding sounds to memory through representing the English letters with the phonic system; that is to represent each letter with its sound. Thus, the child will be able to distinguish and recognize different sounds in words. Additionally, they need to learn how to

correctly form each letter and understand the shape of each one using sandpaper letters and the large movable alphabet. Secondly, the child must develop the necessary muscular skills to hold and move a pencil effectively. Writing requires fine motor skills, such as holding a pencil properly, controlling pressure on paper, and moving the pencil accurately to form each letter. These skills take practice and coordination between the hand, fingers, and eyes. Montessori writing materials drill the child to write indirectly for it requires hand-mind coordination (Wolf, 2009).

- *Sandpaper Letters*

Dr. Montessori developed the sandpaper letters, which use a multisensory approach based on touching and seeing to educate the *tactile* sense in first place to teach children about letter shapes and sounds simultaneously. These letters consist of sandpaper cut-outs in the shape of each alphabet mounted on a wooden tablet: consonants in red (recently made in pink by Montessori coaches since it belongs to the *pink series*) and vowels in blue as shown in Figure 2. Whenever sandpaper letters are in use, the teacher tells the child to trace the shape of the letter with his two fingers as it is shaped; meanwhile, he articulates the sound repeatedly. Consequently, the letter will be automatically being stored in the child's memory since he sees the letter, feels its shape and hears its sound simultaneously (Wolf, 2009). In this respect Dr. Montessori said "In general, all children of four are intensely interested in writing, and some of our children have begun to write at the age of three and a half. We find the children particularly enthusiastic about tracing the sandpaper letters." (Montessori, 1912, p.185)

Figure 2

The Sandpaper Letters

Note. From "*The Montessori Elementary Materials*", by M. Montessori, 1965.

- ***Large Moveable Alphabet***

The understanding of the use of sandpaper letters is further improved through the utilization of a Large Moveable Alphabet (LMA). It refers to a collection of wooden letters of the alphabet that enables the child to write without the need for advanced writing skills as represented in Figure 3. In this regard, Montessori (1949) asserted that:

The child can find an intense intellectual interest in being able to represent a word by putting together the (…) symbols of letters of the alphabet. It is much more fascinating at the beginning to create words from letters of the alphabet than to read them, and it is also much easier than writing them since writing involves the additional labor of mechanisms that are not yet fixed. (p.263)

Using this technique, the child will feel that he is able to write only using his phonemic awareness; thus, he will be stimulated to try writing with pencil and paper as the sensorial materials had prepared him indirectly to delve into writing tasks (Isaacs, 2018).

Figure 3

The Large Moveable Alphabets

Note. From "*The Montessori Elementary Materials*", by M. Montessori, 1965.

  1.2.2.4.4 Developing Reading. Wolf (2009) states that the Montessori approach to reading is organized into three clear stages, each presented in a color-coded series: pink, green, and blue. The pink series, as shown in Figure 4, is designed to write and read three-letter words (consonant-vowel-consonant) such as *cat*, *pin*, *red* or *dog*. They then read it, beginning with rhyming exercises, exploring the different words that can be formed by replacing the first letter and keeping the last two letters, such as *r-un* (*f-un*, *g-un*, *s-un*, *p-un*). Objects and images are used to help identify concrete words; however, abstract CVCs words are presented through real life actions, and as children become more proficient and accurate, fewer and fewer visual cues are needed. Children need fewer objects or images to support their initial reading skills as they move from reading nouns to adjectives and verbs. This progress culminates in the reading of phrases, sentences, and books. In Montessori settings, pink reading levels are often identified by materials written on pink cards and contained in pink boxes as well as other activities such as word lists, attached and detached sentences and small story book (Wolf, 2009).

Figure 4

Pink Object Boxes

Note. From "*The Montessori Elementary Materials*", by M. Montessori, 1965.

There are words that cannot be decoded or illustrated by their real objects called *sight words*; they include articles, pronouns, adjectives, and many other words. Dr. Montessori believes that this kind of words are complicated to be represented to the child with their grammatical functions at that earlier stage. Hence, they should be learnt through sight and memorization (Lněničková, 2015). Phonetic object boxes, phonetic reading cards, phonogram box, phonogram card, sight words box and puzzle are fundamental components of pink series. With the help of the multiple aforementioned tasks reading will be accomplished. According to Dr. Montessori (1965), once the child has completed the Pink Series and has become proficient in reading and writing CVC words, he/she is ready to progress to the Blue Series. Although the Blue Series shares many similarities with the Pink Series in terms of its components, Dr. Montessori clarified that the key difference lies in the complexity of the words presented. The Blue Series is designed to introduce longer words that have initial and final blends, but also phonetic words such as /st/ in *stand*, *step*, *stem* as an initial blend and in *list*, must, *dust* as a final blend, as well as median blends as in *bucket*, *magnet*, and *bottom*. The last area in the Montessori language is the Green Series, which deals with words beyond the phonetic words level. Dr. Montessori (1965) stated that the child will learn about different sounds (phonograms) and their corresponding spellings. To facilitate learning, a variety of

materials are used, including the Small Movable Alphabet, Phonogram Boxes, Phonograms in an Envelope, Phonogram Lists, Phonogram Booklets, Phonogram Sentence Strips, and Phonogram Books. These materials are designed to provide the child with additional reading practice, expand his/her vocabulary, and encourage independent reading (Montessori, 1965).

1.2.3.4.5 The Three-Periods Lesson. Montessori (1912) declared that the three-periods lesson dates back to Edouard Séguin, the founder of hands-on education. Dr. Montessori later obtained this idea and defined the three-period lesson as giving the child only 3 items from the lesson in a quick and funny way. It is divided into three stages:

- **1st Period: Introduction**

The teacher must begin by choosing an item then articulates its name loudly and clearly several times to emphasize it. For instance, when the teacher uses sandpaper letters, he chooses the letter and says: "this is /a/" with its phonemic sound, and keeps repeating the process.

- **2nd period: Recognition**

At this level, the child is not just a listener; he must know the item with its name and its shape as well. The teacher is supposed to leave the space for the child to touch the item and feel its shape. Proceeding with the same example, the teacher must give the sandpaper letter of the sound /a/ and show the child how he can touch it with his fingers to feel its shape.

- **3rd Period: Test**

The teacher must make sure that the child would answer correctly before moving to this phase. Whenever he is ready, he asks the child about the chosen item to test whether he learnt it or not. Concluding with the aforementioned example, to test the child, the teacher may ask him to trace and tell him what the letter is when he has already mixed it with other sandpaper letters.

1.2.3.4.6 Language games. Godar (2011) described the child as a hyperactive being during his second plane of development. This activeness is usually oriented toward exploring the world with his senses, which is called "playing". Deriving from this idea, Dr. Montessori suggests the appropriate use of playing as a fruitful method to teach and learn language along with its aspects. Lestari (2020) stated that following Dr. Montessori, the development and refinement of sensory abilities, including touch, sight, and sound, plays an indirect role in preparing for writing and reading. This includes the improvement of hand and finger movements, which contribute to the acquisition of writing skills, in addition to attention and focus through seeing to recognize letters during the reading process. Complying with the same belief, Ebisujima and Chitwood (2015) suggested an excess number of games that a teacher might integrate in the lesson to make it fun and unforgettable for the child. For example:

- **Knock knock game:** Use the sandpaper letter as if it were a door and simulate the sound of knocking on it. Afterwards, turn the letter over and enunciate its corresponding letter sound*.*

- **Blind game:** Cover the child's eyes with a ribbon, and make sure he sees nothing, then tell him to trace the letter on the sandpaper letter then to spell it out.

- **Write with sand:** Using the sand or any other tangible product that allows the child to shape with a letter on the floor or the table, ask the child to write a given letter, for him to recall what he had learnt with the sandpaper letters and to prepare him for the process of writing with the pen.

1.2.4 Practical Background

In light of the notable success of the Montessori method in various countries worldwide, numerous academic studies were conducted with the purpose of investigating its effectiveness in teaching and learning early literacy skills following the Montessori

principles. Many researchers (Fero, 1997; Salazar, 2013; Lnenickova, 2015; Aghajani & Salehi, 2021; Buldur and Gokkus, 2021) reached a consensus in their studies that the Montessori method has positive impact on the instruction and acquisition of early literacy skills of English and other languages.

Two experimental studies were conducted in Algeria by Soltani (2021) and Gormi (2022) to examine the effectiveness of the Montessori method in teaching early literacy for Arabic and French. As for Soltani's study, she conducted an experiment using Montessori didactic materials in teaching reading and writing the Arabic alphabets for preschoolers. Children were interested in learning the alphabets due to engaging materials, according to her observation. She added that creating a playful environment for children aged 3 to 6 years old is more effective in facilitating faster learning. In the same context, Manouali (2020) experimented the usefulness of LMA and sandpaper letters in improving reading skills for French for 3rd grade of primary school. She observed that the Montessori materials and teaching method can have a beneficial impact on a student's reading development. Nonetheless, she noted that these materials need to be utilized for an extended period of time to achieve the desired results. The results of both studies supported their hypothesis, indicating that the Montessori method is an effective approach for teaching and learning early literacy, favoring the experimental group which was exposed to the Montessori method.

In 1973, Chitwood conducted a study examining the efficacy of Montessori materials in facilitating the learning of various academic subjects among preschoolers. The study concluded that Montessori's approach to sensorial education proves highly effective in fostering learning and developmental growth. Chitwood argued that the fingers possess memory as well, meaning that when a child touches an object, they can remember its texture and identify it later on. By incorporating this understanding into the design of sensorial materials, Montessori education offers an effective and playful method of teaching children

during their second plane of development, wherein they explore the world through hands-on experiences, as suggested by Dr. Montessori in 1914. Chitwood observed that when preschoolers were exposed to Montessori's diverse sensorial materials, their engagement with the tactile senses significantly enhanced the learning process.

A comparative study was done by Fero (1997) between the Montessori and the non-Montessori academic achievements of preschoolers. He deduced that students of Montessori schools are competent in all subjects, no matter how old they are; they have nearly the same competence in language literacy, mathematics, biology, chemistry and all the other subjects compared with conventional or non-Montessori students among whom there is no equal competence. In a conventional classroom, students have different levels, from the excellent down to the weak despite the fact that they were exposed to knowledge in the same exact way within the same context. The reason behind this difference, according to Fero (1997), is that the Montessori curriculum is designed along with student's needs, and its nature as a learner-centered approach; in contrast, the traditional method of language learning, for instance, is characterized as superficial, requiring children to master all language aspects simultaneously without a gradual preparatory approach.

Bearing in mind that "Providing children strong literacy education in the early years leads to better outcomes later on" (Campbell et al, 2002), the educational research scope had seen considerable attention given to investigating the most fruitful method to raise literate generations at an earlier age. Compared to other pedagogical approaches, the Montessori method has been given credits for being the most effective method for teaching and learning reading and writing since it depends on the process of writing before reading. Tahzeem (2015) found that introducing writing before reading is a productive method; when the child is segmenting the word, knowing its units to write it, reading is automatically there. There has also been attribution of credit to the sensorial materials for learning writing and reading.

McFarland (2015) claimed that the Montessori materials of reading and writing, namely sandpaper letters, LMA, and pink object boxes along with their activities, are designed in accordance with the children aged 3-6 years old. At this range of age, the child is on his second plane of development, where he explores the world with his hands. Dr. Montessori designed the materials regarding this fact to make the learning process unconscious for the child as he is having fun and being interested in manipulating the sensorial materials as shown by the guide. McFarland added that each material must be given a sufficient time in practice to get the desired results in writing and reading (2015).

Conclusion

This chapter presents a theoretical background on two research variables: The Montessori method and early literacy skills related to CVC words. The first section provides an overview of the Montessori method, including its history, principles, periods of development, Montessori great lessons, and didactic materials. The second section examines early literacy skills, particularly with regard to CVC words, from various learning perspectives. The literature reviewed clearly suggests that the Montessori method is an effective approach for teaching English to preschoolers because it is learner-centered and caters to the learner′s needs. According to Dr. Montessori (1912), language learning occurs best during the second plane of development, which typically occurs between the ages of 3 and 6 years. The Montessori method offers children the opportunity to freely explore and learn about the external world using their hands, following their interests and curiosities.

Chapter Two: Research Methodology, Data Analysis and Discussion

Introduction

This chapter is devoted to the field work conducted for the study. It provides a comprehensive explanation of the design used, sample and setting, research instruments and the procedures for collecting and analyzing data. Besides, the chapter represents a quantitative analysis of the data collected through the pre-test and the post-test to examine the extent to which the Montessori method affects teaching and learning early literacy skills for CVC words. It is divided into three sections; the study methodology is described in Section One, while Section Two focuses on the analysis and interpretation of the pre-test and post-test data. In Section Three, limitations of the study are discussed, along with recommendations for future researches.

2.1. Section One: Research Method and Research Design

This section outlines the field work of the study, including the methodology, design, sampling, and setting. It also details the methods, tools, and procedures used to collect and analyze data.

2.1.1 Research Method

The study implemented a quantitative approach to answer the research questions, and to test the hypotheses, which proposed that implementing the Montessori method is an effective means of teaching and learning early literacy skills, more precisely reading and writing CVC words. This approach allowed for the collection of numerical data that could be statistically analyzed and interpreted using inferential statistics to provide an overview of the changes in the participants' performance following the intervention of the independent variable (Creswell, 2009). By adopting this approach, the study aimed to provide a comprehensive understanding of the research theme.

2.1.2 Research Design

Cohen et al. (2018) declared that quasi-experimental designs are commonly favored in educational research since they offer an opportunity to study interventions where the controls and randomization of true experiments may not be fully present or may not be feasible due to ethical, logistical, or practical constraints. In the present study, a quasi-experimental design was utilized because all subjects have an equal chance to be selected in the sample, but it was not possible to randomly assign them to groups due to validity-related issues that will be discussed later. Therefore, this design was the most suitable choice to investigate the effectiveness of the Montessori method in teaching and learning early literacy skills for CVC words.

In addition, the study employed a pretest-posttest approach which facilitated the comparison of the data obtained from both tests to evaluate the changes in the dependent variable (DV henceforth) resulting from the independent variable (IV henceforth). Consequently, the study comprised two equal groups of participants: the experimental group, whose members were exposed to the Montessori method, and the control group, whose members were taught with a conventional method. Also, both groups received the same pre-test and post-test about the target CVC words along with its literacy skills (phonological awareness, CVC words knowledge, writing and reading).

2.1.3 *Population and Sample*

The aim of a particular study is to identify which group the research findings can be applied to and for which group the results can be generalized. In research, this group is commonly referred to as the *population* (Kumar, 2011). Grounding on Kumar's claim, Preschoolers were chosen as the target population of the current study to investigate the effectiveness of the Montessori method in teaching and learning early literacy skills for CVC words. This is based on Dr. Montessori's claim that children under the age of six can easily

acquire early literacy skills due to the period of development (Montessori, 1912). The study

drew its population from two different settings. The first setting, Polyglossia School,

consisted of 24 preschoolers, who were already divided into two groups; the first group

comprised 7 children aged 3, and the second one comprised 17 children aged 4 and 5. The

second setting, Excellence Academy, comprised 30 preschoolers divided equally into two

groups of mixed ages: 3, 4, and 5 years old.

When the population is identified in accordance with the aim of the study, sampling is

the next procedure to be followed in terms of methodology (Kumar, 2011). The aptness of the

sampling technique is a crucial determinant of the quality of the research (Cohenet al, 2018).

Founded on this, the study opted for the stratified random sampling technique due to the

requirement of having a representative sample in terms of age as the essential criterion

(Kumar, 2011). Furthermore, this sampling technique was used to obtain a sample size of 15

preschoolers for both experimental and control groups from the whole population, which

involved mixing and dividing the population into age-based strata. Then, from each stratum,

the fraction of elements in each stratum and the total number of the population multiplied by

the sample size was chosen. In conformity with the results, 5 elements were chosen randomly

from each stratum to finally comprise a sample of 15 children of different ages (3 to 5 years)

in both experimental and the control groups.

Preschoolers from Polyglossia School were selected to participate in the experimental

group. With the school's preparation efforts to transform into a Montessori school, the

learning environment has been designed to align with Montessori principles, providing child-

sized tables, shelves of materials, a variety of sensory toys, televisions, and an emphasis on

organization and cleanliness; however, the Montessori materials that are specifically designed

to teach early literacy skills related to CVC words were not afforded yet. Meanwhile,

preschoolers from Excellence Academy were placed in the control group. The sample from

both settings already had English classes, where they were exposed to oral language only. The teachers there confirmed that children in this age range (3 to 5 years) are not introduced to writing and reading yet because they are still too young. Thus, a pretest was administered to both groups to ensure that they have approximately the same knowledge as far as literacy skills for CVC words are concerned.

As aforementioned, the current study is conducted in different settings to avoid contamination, and compensatory rivalry, which are threats to validity. Shadish et al (2002), Torgerson and Torgerson (2008), and Creswell (2012) defined contamination and compensatory rivalry respectively as: the possibility of communication between the control and experimental groups that can influence the results of each, and the feeling of resentment that the control group may develop, which results from them being denied from the intervention and may influence their behavior (cited in Cohen et al, 2018, p.277). Considering that, it is a risk to validity to keep the two groups in one single setting, especially that the sample comprises children.

2.1.4 Description of the Procedures

2.1.4.1 Research Instruments.

2.1.4.1.1 Pre-Test. This study utilized a quasi-experimental design, specifically a pretest-posttest approach, to compare the development of early literacy skills, namely reading and writing, among participants before and after implementing the Montessori approach for early literacy skills related to CVC words (see Chapter One, Section Two). At the outset, a diagnostic test was administered to pretest the participants in certain aspects of early literacy skills for the target CVC words (Phonetic awareness, meaning recognition, reading and writing skills); since a diagnostic test is technically used to assess linguistic knowledge (Cohen et al, 2018). The pretest comprised four tasks; the instructions for these tasks were taken from the current, official English textbook approved by the Algerian Ministry of

Education for 3rd year primary school pupils, as it is designed for learners who are new to English courses. Furthermore, the pretest was revised by two primary school teachers of English as well as the supervisor to be validated for the current study.

The first task of the pre-test required the child to read a table of English alphabets, some of which were missing, and then asked to write down the missing letters in order to assess his/her phonological knowledge and writing skills for the English alphabet. The child first was asked, "Do you know alphabets?" If yes, he was required to list them, and then he was asked "Do you know what sound is made by this letter?" This way he would be scored for the phonetic awareness for each letter. Afterward, the child was instructed to write each missing letter by placing his finger on the first letter and then listing the remaining letters. Whenever the child noticed a gap, he was instructed to write the letter that was spelled simultaneously while placing his finger on that gap so that his writing skills would be scored.

The second task of the pre-test consisted of 20 pictures related to 20 CVC words (*hat*, *man*, *sad*, *rat*, *pen*, *red*, *leg*, *wet*, *pin*, *six*, *lip*, *zip*, *cup*, *gun*, *gum*, *bug*, *hot*, *box*, *dog*, and *lop*). The child was asked to listen to the CVC word spelled by the teacher and identify it by crossing the box under its corresponding picture; this task was designed to assess the child's ability to recognize the meaning of the CVC words. As for the third task, to assess reading skills, the child was instructed to read and match each CVC word to its corresponding picture; it contained 10 CVC words with their pictures. Finally, the fourth task aimed to test writing skills by requiring the child to observe the picture and write the corresponding CVC word by filling in the gaps in five short sentences (see Appendix A).

2.1.4.1.2 Post-Test. The final procedure to be taken in terms of data collection is the posttest. One week after the final intervention session, a posttest was administered to both groups to test whether the IV had an impact on the participant's performance. Kumar (2011)

and Cohen et al. (2018) stressed the importance of using identical versions of pretests and posttests to enable accurate comparisons of scores before and after the intervention.

The posttest of the current study aimed at assessing the participant's knowledge of the target CVC words, as well as their writing and reading skills. However, the number of the target CVC words has been reduced to a minimum of ten, during the treatment period; two words for each vowel due to time constraints. Also, only alphabets that are associated with the chosen CVC words were integrated in the treatment period and the posttest for the same reason. As a reminder, the design, the instruction, and the number of tasks remained the same as the pretest. The posttest was administered to the participants after a period of 8 weeks of intervention, more precisely one week after the last session of intervention (see Appendix B).

The experiment lasted approximately 8 weeks, although it would have been preferable to have a shorter timeframe to prevent any potential effects on the participant's performance in accordance with Kim and Wilson (2010). The treatment required more than one month to be appropriately completed.

The number of CVC words has been reduced to a minimum of ten words during the treatment period for a specific reason. The Montessori three-periods lesson approach suggests presenting only three items at a time, with each item being taught in three distinct steps, as mentioned in Chapter One, Section Two. Consequently, if all 20 CVC words along with their corresponding letters were presented, there wouldn't be enough time to give each word and its letters the necessary attention and coverage within the assigned treatment period. Also, only the letters that are associated with the target CVC words were presented during the treatment. It is crucial to state that the remaining letters were already familiar to the participants through oral practice; that is, participants were able to recognize all the alphabet letters with their shapes and names, which they learned from songs and videos, but not their written form nor their sounds and that was proved by the results of the pretest.

In this respect, there was a slight modification made to the posttest tasks. The first task, which aimed to assess the phonetic awareness of the children, was kept the same. Even though some letters were not introduced in the treatment, they were included in the task to prevent any confusion. However, only the letters that were presented during the treatment were left blank in the table, while the others were written. As for the remaining tasks, only the target CVC words were included. It is important to note that both the pretest and posttest were allotted a total of 60 minutes to be completed.

At Polyglossia School, one of the researchers implemented the Montessori method to the experimental group with the guidance of a Montessori-trained assistant. This decision was based on Dr. Montessori's belief that assigning an assistant with a background in education, but no prior teaching experience, would be advantageous in testing the efficacy of the materials (Lillard, 1972).

1.1.4.2 The Treatment. Once the participants were assigned to their groups, the experimental group (N=15) received 16 instructional sessions of the treatment: two sessions per week, 120 min each, about phonological awareness of the alphabet sounds as well as the target CVC words along with their writing and reading skills, using different Montessori materials for each instruction.

1.1.4.2.1 The Montessori Materials Used in Each Session of the Treatment.

- **Sandpaper Letters:**

Figure 5 displays the sandpaper letters that were used in the experiment. These letters were crafted by hand using wooden material and sturdy paper. The shapes of the letters were traced onto the paper in pink for consonants and blue for vowels, creating a textured surface. The sandpaper letters were the initial Montessori materials presented to the participants as they were designed to introduce the shapes and phonic sounds of the letters as the first step towards writing, according to Montessori's method (Montessori, 1912). It is crucial to

mention that only sandpaper letters of the letters that are associated with the target CVC words were used for five sessions, using the three-periods lessons—introduction, recognition and test — and in each lesson three letters were presented. In order to reinforce the participant's comprehension, in addition to playing language games such as knock-knock game, blind game and write-with-the-sand (see Chapter One, Section Two). As for the instruction, children were asked to trace the letter, imitate its shape and spell its sound repeatedly.

Figure 5

Sandpaper letters used in the experiment

- **The LMA:**

As explained in Chapter One, Section Two, the LMA serves as the second step in the writing process and complements the role of the sandpaper letters. Through the use of the LMA, children can construct words and structures consisting of only three letters, aligning with Dr. Montessori's (1949). In Figure 6, the LMA utilized in the experiment is depicted, as it was the most accessible version that closely resembled the original Montessori LMA shown in Figure 3 of Chapter One, Section Two. It is important to note that the cursive font used in the original Montessori LMA was not available; therefore, the most similar font was utilized instead.

Figure 6

LMA used in the experiment
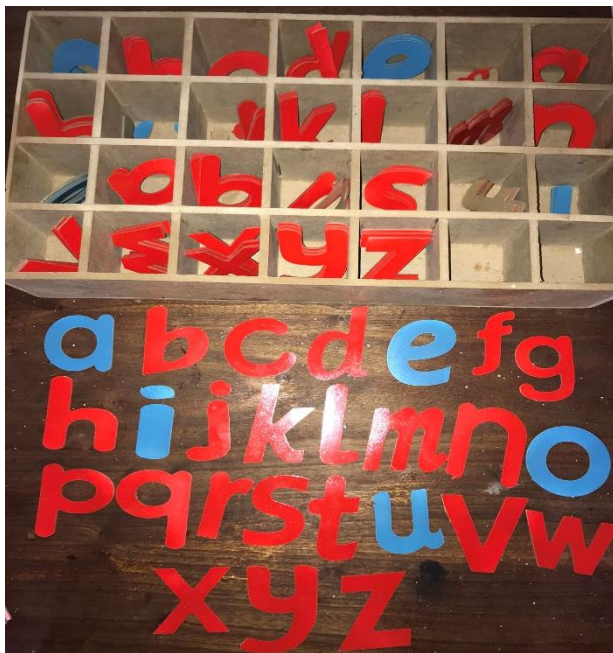
- **The Pink Object Box:**

In the experiment, a pink object box (Figure 7) was used, containing ten objects, with each pair of objects representing two CVC words for one vowel. The box also included visual cues in the form of pictures of the same objects, with their corresponding word tags. This step was introduced as the first stage towards reading, after ensuring that the children were proficient in using the LMA and could easily construct three-letter words. Initially, the children were required to match each object with its corresponding picture, to ensure their understanding of the target CVC. Next, they attempted to read the word tags and match them with the appropriate picture and object. This helped to reinforce their phonological awareness of the target sound for each letter presented. The purpose of this exercise was to evaluate the effectiveness of the sandpaper letters and the LMA in improving reading skills.

Figure 7

The pink object box used in the experiment

- **The White Board:**

The white board was used during in the experiment based on the observed interest of children to perform what they have learned from the sandpaper letters and the LMA. At the end of each session, children were allowed to go freely in an organized way to the board and write the word dictated to them with the desired color. In addition, a small lined white board was used to guide the children in writing on the line with the LMA.

It is important to note that due to time constraints, other activities from the pink series were not included in the treatment. These activities include attached and detached sentences, pink word lists, and the storybook.

1.1.4.2.2 The Period of the Treatment and the lesson plans. The participants who were placed in the experimental group went through an 8-week treatment comprising 15 sessions, where they were exposed to the Montessori method. Three lesson plans were

designed for the treatment based on Montessori's approach to early literacy development (1912), which progresses in a gradual manner from phonetic system awareness of the target 15 letters to writing, and finally reading the target ten CVC words. To achieve this progression, specific materials were used at each phase, as described in the second section of the first chapter.

- **Description of the First Lesson Plan:**

During the initial five sessions of the treatment, the focus was on the first lesson plan, which involved creating phonetic awareness among the children. The target letters, along with their sounds, were introduced to the children in these sessions, considering that they were already familiar with the letter names. The sandpaper letters were used to achieve this goal, where the children were instructed to trace the shape of the letter on the sandpaper while looking at it, and repeatedly spell its sound until they could remember it. This lesson was presented through the three-periods lesson, and only three-letter sounds were presented per session as well as language games that were played as practice for the third phase of the three-periods lesson.

- **Description of the Second Lesson Plan:**

In the second lesson plan, the introduction of the LMA and the pink object box was divided into five sessions. The focus was on teaching the children the names of the objects that corresponded to the target CVC words in the pink box. Ten objects (hat, man, pen, leg, gun, gum, zip, pin, box, and hot, which was represented by a real hot cup of coffee), each representing a CVC word, were introduced to the children at a rate of two per session. The children were asked to touch each object and repeat its name. Then, the CVC words were dictated to the children, and they were instructed to use the letters of the LMA to construct the word. For example, the CVC words "zip" and "pin" were introduced using a real zip and a real pin from the object box (as shown in Figure 7). Once the children were familiar with the

names of the objects, they were guided by the teacher to select the corresponding letters from the LMA to build the word as a further improvement to what they have learnt with the sandpaper letters.

- **Description of the Third Lesson Plan:**

The third lesson plan focused on developing reading skills in participants who had already mastered phonetic awareness and letter writing related to the target CVC words. According to what Dr. Montessori (1965) claimed and Tahzeem (2015) proved, once children have developed these skills, they are able to read automatically. As discussed in the second section of the first chapter, the pink object box is designed to help children develop reading skills using objects, pictures, and tag words. The participants were instructed to select a specific object identified by the teacher, and then attempt to read the tag words to identify the correct one for the identified word. Afterward, the participants were instructed to match each object with its picture and tag word. To further enhance reading skills, they were also instructed to read the CVC words that were written on the board.

1.1.4.2.3 The Control Group. In order to evaluate the impact of the Montessori Method on the development of literacy skills related to CVC words, this study was conducted using a control group. The control group consisted of 15 participants who were taught the same target CVC words along with their literacy skills traditionally. The traditional method refers to the one implemented in schools for the teaching of English, where reading is introduced before writing, in addition to the necessity of being guided by the conventional textbook.

The lesson plans to teach and learn the target structures for the control group were designed based on the ministerial English textbook of 3rd grades of primary school as it is designed for pupils who are new to the learning of English. The instruction required the child to look, listen and spell. First, he/she had to look at the CVC word introduced by the teacher

along with its picture and written form on the whiteboard. Second, the teacher had to name the CVC word loudly and clearly; meanwhile, the child was required to listen carefully and repeat. Third, the child was required to spell the written form of the CVC word that is written by the teacher on the whiteboard, by separating its letters and introducing its sounds. After being able to recognize the letters by their sounds and have the ability to read them, the child is provided with worksheets to attempt writing each CVC word along with its letters.

The control group received 15 sessions: two sessions of 120 minutes per week. The only difference between the control group and the experimental group was the additional treatment received by the latter, which is the Montessori method. By comparing the test results of both groups, the study could accurately assess the effect of the Montessori Method on literacy skill development related to CVC words.

1.1.4.2.4 The Target CVC Words and Letters. The purpose of this study was to investigate the effectiveness of the Montessori method in teaching early literacy skills, specifically in regards to CVC words. The experiment utilized a set of 20 CVC words, with four words for each vowel sound. However, due to limited time, the number of words was reduced to a minimum of two words per vowel, resulting in a final set of ten words: *hat, man, box, hot, pin, zip, leg, pen, gum,* and *gun*. These words were selected based on two criteria: first, they were not familiar to all participants (based on the pretest); second, objects associated with these words were readily available for use in the study.

1.1.4.3 Scoring.

1.1.4.3.1 Scoring of the Pretest. As previously stated, the pretest consisted of four tasks, each scored on 5 points. The first task required participants to fill in 15 missing letters in a given table. Scores for this task were based on both oral knowledge of the alphabet (0.2 points for each letter, totaling up to 2.5 points) and accurate writing of the missing letters (0.2 points for each letter, also totaling up to 2.5 points). The second task, worth 5 points,

involved identifying 20 CVC words, with 0.25 points for each correct answer. The third task, also worth 5 points, required participants to read and match 10 CVC words with their corresponding pictures, with 0.5 points for each correct match. The fourth task, worth 5 points, involved writing five CVC words. Each correctly spelled word was worth 1 point

1.1.4.3.2 Scoring of the Posttest. As a result of reducing the number of CVC words used in the study, it was not appropriate to maintain the same scoring scale for the posttest as was used in the pretest. Changes to the scoring system were necessary to ensure that scores accurately reflected participants' performance on the reduced set of CVC words. The scoring of the first task remained the same as in the pretest, but it changed for the remaining tasks. For the second task, participants were presented with a reduced set of 10 CVC words, with 0.5 points for correctly identifying each word. The third task remained the same as in the pretest, with participants required to read and match 10 CVC words with their corresponding pictures. Each correct match was worth 0.5 points. In the fourth task, participants were presented with 10 sentences containing gaps for each of the 10 target CVC words. For each correctly filled gap, participants received 0.5 points, resulting in a maximum possible score of 5 points for the task.

2.2 Section Two: Data Analyses and Interpretation

This section presents the statistical analysis of both the pretest and the posttest in terms of investigating the extent to which does the Montessori method affect teaching and learning early literacy skills for CVC words. The Statistics Package for the Social Sciences (SPSS) and Excel were used to get statistics and tables.

2.2.1 Analysis of Pretest and Posttest for both Control and Experimental Groups

After the final step of the procedure, the data collected from both the pretest and posttest were subjected to statistical analysis using the SPSS.22 software. The purpose of this analysis was to compare the outcomes of both groups and determine the extent to which the

Montessori method affected the teaching and learning of early literacy skills for CVC words, answering the study's main question: To what extent does the implementation of the Montessori method affect teaching and learning CVC words to preschoolers?" along with the secondary ones. Both independent and paired t-tests were used to measure the differences in the total average score between the pre-test and the post-test of both groups, in addition to evaluating the significance of the IV (the Montessori method); comparing the obtained t-value with the required t-value and the p-value obtained with the p-value required (p=0.05). Findings can't be significant until obtaining a p-value equal to or less than 0.05, and the t-obtained is greater than the t-required and vice versa (Cohen et al, 2018).

2.2.1.1 Experimental Group: Pretest vs Posttest

Table 1 and Table 2 display, respectively, the paired sample statistics of the experimental group as well as the results of a paired sample test used to evaluate the differences caused by the IV, i.e., the Montessori method, in the overall average scores between the pre-test and post-test measurements of the experimental group. As far as the mean is concerned, Table 1 shows that the mean of the posttest reached 15.23 at a standard deviation of 4.007, whereas the mean of the pretest was 4.27 at a standard deviation of 1.857. Consequently, there is a considerable difference between means of the pretest and posttest of 10.95 in favor of the posttest, as shown in Table 2. Furthermore, Table 2 indicates that the p-value (labeled sig.(2-tailed)) relatively falls short than 0.05 ($0.001 \leq 0.05$), and the obtained t-value 13.9 is significantly higher than the required t-value 2.145 at a significance level of 0.05. By taking into account all the aforementioned values and considering the significant differences observed among the participants in the experimental group, it can be said that the Montessori method proved to be highly effective.

Table 1

Paired Sample Statistics of Experimental Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Posttest Experimental Group	15.2267	15	4.00668	1.03452
	Pretest Experimental Group	4.2733	15	1.85683	.47943

Table 2

Paired Sample Test of Experimental Group

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Posttest Experimental Group - Pretest Experimental Group	10.95333	3.06078	.79029	9.25833	12.64834	13.860	14	.000

Note. Required t-value at (14) df at (0.05) significance level= 2.145.

Required t-value at (14) df at (0.01) significance level=2.977.

In addition to statistical significance, Fritz et al. (2012) stressed the importance of calculating the effect size of the (IV), claiming that, while a lower *p*-value indicates whether the intervention has had an effect or not, the effect size reveals the extent of that effect. Consequently, an accurate interpretation of the results will become possible. Grounding on the previous data, the effect size of the extent to which the Montessori method is effective was computed manually using Eta-squared (η^2) as shown in the following formula (Cohen et al, 2018):

$\eta^2 = t^2/(t^2+df)$. The results are displayed in Table 3.

Table 3

The Effect Size of the Montessori Method in the Pre- and Post-test of the Experimental

Group.

Test	df	t	ŋ²	Effect Size
Total	14	13.86	0.932	Large

Based on the analysis presented in Table 4, which serves as a reference for

determining the level of effect size (η^2), as recommended by Cohen (1988) and discussed in

Cohen et al (2018), it is evident that the Montessori method caused a large effect size of 90%

in relation to the development of early literacy skills in preschoolers. This indicates that the

observed effect is statistically significant.

Table 4

Cohen's (1988) Reference to Determine the Level of the Effect Size

Test	Effect Size Criterion		
	Small	**Medium**	**Large**
ŋ²	0.01	0.06	0.14

2.2.1.2 Control Group: Pretest Vs Posttest

The control group's scores in both pretest and posttests were also subjected to

statistical analysis using the paired sample t-test. This was done to compare the control

group's performance with that of the experimental group. The control group received

traditional instruction without any intervention from the experimental method. Means and

standard deviations of the latter group were also computed as shown in Table 5.

Table 5

Paired Samples Statistics for pair 2

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Posttest Control Group	6.0800	15	3.80356	.98208
	Pretest Control Group	4.4100	15	2.01390	.51999

The control group's mean score in the pretest was 4.41, with a standard deviation of 2.01 whereas in the posttest, the mean score improved to 6.08 with a standard deviation of 3.80. The difference between the means, as shown in Table 6, is 1.67. These results suggest an improvement in the performance of participants in the control group.

Table 6

Paired Sample Test of the Control Group

		Paired Differences							Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	Posttest Control Group - Pretest Control Group	1.67000	2.06266	.53258	.52774	2.81226	3.136	14	.007

Note. Required t-value at (14) df at (0.05) significance level= 2.145.

Required t-value at (14) df at (0.01) significance level=2.977.

Table 6 provides further detailed information regarding the significance. It indicates that the *p*-value (labelled Sig.(2-tailed)) reached 0.07, which exceeds the critical value of significance required p≤0.05. As for the *t*-value, the table shows the result 3.136 for a significance level of 0.07, whereas the required *t*-value is 2.145, for a significance level of

0.05. It means that the obtained *t*-value is noticeably larger than the required one. Given that

the *t*-value 3.136 is larger than the required one 2.145, and the *p*-value exceeds the required

level of significance, it can be inferred that, indeed, the control group showed a slight level of

improvement in comparison with that of the experimental group; however, this improvement

was not significant.

In order to strengthen the aforementioned conclusion, it was necessary to calculate the

effect size to determine the extent of effectiveness of the traditional method in teaching and

learning early literacy skills for CVC words. This was achieved by applying the same

formula (η^2) used for calculating the effect size of the experimental groups (Table 7).

Table 7

The Effect Size of the Traditional Method in the Pre- and Post-test of the Control Group.

Test	Df	T	η^2	Effect Size
Total	14	3.14	0.413	Large

According to the outcomes shown in table 7, and by referring back to table 4, it could

be said that the traditional method had a significant influence on the improvement of early

literacy skills for CVC words for the control group with an approximate percentage of 40%.

Based on a thorough analysis of the differences in average scores between the pre-

test and post-test for both the experimental and control groups, it is evident that there were

significant differences favoring the experimental group. The results indicate that the

application of the Montessori method yielded higher gains compared to the traditional

method in teaching and learning early literacy skills of CVC words for preschoolers. The

effect size of the Montessori method is 0.932, as considered by Cohen (1988), was massive.

In contrast, the effect size of the traditional method 0.413 was comparatively smaller.

Consequently, it can be concluded that the Montessori method is more effective than the

traditional method in investigating the method in question. Furthermore, in response to the

main research question with the first secondary question, it can be stated that the use of the Montessori method is effective to a higher extent compared to the traditional one.

2.2.1.3 The Pretest: Experimental Vs Control Group

In order to assess the knowledge of the participants in the control and experimental groups regarding the four language aspects under investigation (phonological awareness, CVC knowledge, reading skills, and writing skills), a pretest was conducted. The scores of both groups in the four tasks of the pretest, as well as their total scores, are presented in Table 8 and Table 9.

Table 8

Results of the Pretest for Experimental Group

Student Identity	Age	Experimental Group				
		Phonological Awareness	CVC Words Knowledge	Reading Skills	Writing skills	Total
1	3y	2.5	0.5	0	0	3
2	3y	2.5	2	0	0	2.5
3	3y	5	2	0	0	7
4	3y	2.5	0	0	0	2.5
5	3y	2.5	1	0	0	3.5
6	4y	2.5	1	0	0	3.5
7	4y	3.3	1	0	0	3.3
8	4y	0.8	2	0	0	2.8
9	4y	2.5	0.5	0	0	7.5
10	4y	0	1.5	0	0	1.5
11	5y	2.5	0.5	0	0	3
12	5y	5	2	0	0	7
13	5y	5	2	0	0	7
14	5y	3	2.5	0	0	5.5
15	5y	5	1.5	0	0	6.5

Table 9

Results of the Pretest for Control Group

Student Identity	Age	Control Group				
		Phonological Awareness	CVC Words Knowledge	Reading Skills	Writing Skills	Total
1	3y	2	0.7	0	0	2.7
2	3y	3.25	1.9	0	0	5.15
3	3y	2.75	2.4	0	0	5.15
4	3y	2.75	0.6	0	0	3.35
5	3y	0	0	0	0	0
6	4y	4.25	1.9	0	0	6.15
7	4y	3	0.3	0	0	3.3
8	4y	5	1	0	0	6
9	4y	2	0.8	0	0	2.8
10	4y	5	2.3	0	0	7.3
11	5y	5	3	0	0	8
12	5y	1.75	2.5	0	0	4.25
13	5y	0.1	2.4	0	0	3.4
14	5y	3	1.8	0	0	4.8
15	5y	2	1.8	0	0	3.8

Based on the data presented in Tables 8 and 9, it can be inferred that a significant proportion of participants from both groups demonstrated a certain level of phonological awareness, encompassing alphabet names and sounds. However, it is important to highlight that only four participants exhibited complete awareness encompassing all aspects of alphabets, including their names and sounds. In terms of knowledge of CVC words, most

participants showed familiarity with common ones such as "cat," "dog," "six," and "red" due to their exposure to oral English. As for writing and reading skills, the tables indicate that none of the participants had prior knowledge in these areas. Consequently, all participants scored zero in the third and fourth tasks, which evaluated their abilities in reading and writing.

Prior to delving into the experiment, it was crucial to ascertain that the participants possessed a similar level of knowledge concerning the early literacy aspects being considered. To achieve this, an independent sample t-test was employed to conduct comparisons between groups and to identify if the outcomes are homogeneous or if there are any notable differences as far as the pretest is concerned

Table 10 presents the statistical description for both groups data derived from the independent sample t-test, encompassing both the experimental and control groups. To verify if there is any difference between groups, it is essential to investigate the difference between their means (Cohen et al, 2018). Accordingly, the control group's mean is 4.410 with a standard deviation of 2.014 indicating no considerable variance in the scores i.e., the scores are consistent. Similarly, the mean of the experimental group's pre-test is 4.273 with a standard deviation of 1.857 reflecting no considerable variance in the scores i.e., the scores are consistent. Thus, there is a slight difference between the two groups means, which equals 0.137, in favor of the control group (as shown in Table 10).

Table 10

Statistical Description for both Experimental and Control Groups in Terms of the Pretest

	Group	N	Mean	Std. Deviation	Std. Error Mean
Pretest Mark	control group	15	4.4100	2.01390	.51999
	experimental group	15	4.2733	1.85683	.47943

The independent sample t-test was used to analyze the pretest scores of both groups, and the results are presented in Table 11 for more detailed analysis. To assess the significance between groups, the obtained *t*-value is reported as 0.193, with a significance level *p*=0.898. In comparison, the required *t*-value for a significance level of *p*=0.05 and a degree of freedom df=28 is 2.048. Therefore, a comparison of these values is needed to determine the significance between the two groups. It is evident that the required *t*-value 2.048 is greater than the obtained t-value 0.193. Similarly, the significance level obtained from the table 0.898 is higher than the required significance level 0.05. As a result, it could be said that the difference between the two groups is not statistically significant and a conclusion could be that the sample is homogeneous.

Table 11

Independent Sample T-Test Scores for both Groups in terms of the Pretest

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | 95% Confidence Interval of the Difference | |
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pretest Mark	Equal variances assumed	.017	.898	.193	28	.848	.13667	.70728	-1.31212	1.58546
	Equal variances not assumed			.193	27.817	.848	.13667	.70728	-1.31255	1.58588

2.2.1.4 Posttest: Experimental Vs Control Group

After confirming that all participants in the current study are homogeneous and possess similar levels of knowledge regarding the aspects of literacy skills being investigated, the experimental group was exposed to the intervention of the IV (the Montessori method). Following this intervention, a posttest was conducted for both groups to compare the

experimental participants before and after the intervention. The scores of the posttest for both

groups are displayed in Tables 12 and 13.

Table 12

The Posttest Scores of the Experimental Group

Student Identity	Age	Experimental Group				
		Phonological Awareness	CVC Words Knowledge	Reading Skills	Writing Skills	Total
1	3y	05	05	05	3.5	18.5
2	3y	05	05	05	03	18
3	3y	05	05	4.5	04	18.5
4	3y	4.5	3.5	03	02	13
5	3y	3.5	04	2.5	2.5	12.5
6	4y	3.4	04	04	03	14.4
7	4y	4.9	05	05	2.5	17.4
8	4y	3.5	02	1.5	01	08
9	4y	4.7	03	03	1.5	12.2
10	4y	3	03	2.5	0.5	09
11	5y	3.4	02	03	2.5	10.9
12	5y	05	05	05	04	19
13	5y	05	05	3.5	4.5	18
14	5y	05	4.5	4.5	05	19
15	5y	05	05	05	05	20

Table13

The Posttest Scores of the Control Group

Student Identity	Age	Control Group				
		Phonological awareness	CVC Word Knowledge	Reading Skills	Writing Skills	Total
1	3y	2.5	1	00	00	3.5
2	3y	3.5	2	0.5	00	6
3	3y	2.95	2.5	00	00	5.45
4	3y	2.75	0.5	00	00	3.25
5	3y	00	00	00	00	00
6	4y	4.5	2	1.5	00	7
7	4y	3.5	0.5	00	00	4
8	4y	5	1	3	1	10
9	4y	2	1.5	00	00	3.5
10	4y	5	3.5	3.5	2	14
11	5y	5	4	2.5	1.5	13
12	5y	2	2.5	1	00	5.5
13	5y	0.4	2.5	00	00	2.9
14	5y	3.5	3	1	00	7.5
15	5y	2.6	2.5	1	00	5.6

The scores presented in Tables 12 and 13 are associated with the experimental group and the control group, respectively. The results indicate a notable difference between the two groups, with the experimental group showing better performance. Table 12 clearly demonstrates that the majority of experimental participants scored above the average, with

only two participants falling below it. Notably, the experimental group exhibited significant improvement in all aspects related to CVC words, particularly in reading and writing, compared to the pretest where all scores showed improvement from zero. In contrast, Table 13 reveals that the control group's scores improved only slightly compared to the pretest, with only three participants scoring above the average. Moreover, there is no remarkable improvement concerning reading and writing for all participants.

To explore the significance of the posttest scores between both groups in revealing the effect of the IV, again an independent sample *t*-test was calculated, providing two statistical tables as shown in Tables 14 and 15. The first represents a statistical description of both group scores in terms of the posttest. It reveals that the control group's mean is 6.080, with a standard deviation equal to 3.803, showing no considerable variance in the scores. The mean of the experimental group's posttest is 15.233, with a standard deviation of 4.005, revealing consistency in the scores. Accordingly, there is a considerable difference between means of the two groups that equals (9.153), as shown in Table 14. Therefore, the experimental group's early literacy skills for CVC words developed, and it is obvious that the control group has made a slight progress, but it was the experimental group that displayed better results.

Table 14

Group Statistics of Experimental and Control Group in Terms of the Posttest

	Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest Mark	Control Group	15	6.0800	3.80356	.98208
	Experimental Group	15	15.2333	4.00529	1.03416

Table 15

Independent Sample T-Test for Posttest Scores of Both Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Differ-ence	Std. Error Differ-ence	95% Confidence Interval of the Difference	
									Lower	Upper
Posttest Mark	Equal variances assumed	.913	.347	6.418	28	.000	9.15333	1.42617	6.23195	12.07471
	Equal variances not assumed			6.418	27.926	.000	9.15333	1.42617	6.23160	12.07506

Additionally, further information regarding the significance of these differences can be found in Table 15. This table provides a more comprehensive breakdown of the details of the statistical differences between groups. Referring back to the table, the obtained *t*-value is 6.42 with a significance level p=0.35; whereas the required *t*-value with a significance level *p*=0.05 and a degree of freedom df=28 is 2.048. Accordingly, the required *t*-value with *p*=0.05 is relatively less than the obtained *t*-value, with *p*=0.35; i.e., 2.048≤6.42. Thus, the difference between groups is highly significant, in favor of the experimental group. A conclusion could be driven that the Montessori method is highly effective in learning and teaching early literacy skills for CVC word, compared to the traditional method.

2.2.1.5 Between-Subjects Effect of Age in the Experimental Group

The above-mentioned statistics provided results concerning the extent of the effectiveness of the IV on the experimental group as whole. However, a question is raised about whether the teaching of writing and reading of CVC words based on the pink series is effective for participants across all age groups. To answer it, the posttest outcomes were analyzed using ANOVA Two-way test to measure the partial effect size of the IV between the experimental participants in terms of age, i.e., this statistical test allows the identification

of difference in posttest performance by age group, (Cohen and Halliday,1996, as cited in Cohen et al (2018). In Table 16, descriptive statistics present the mean values of the experimental and control group participants categorized by age. The results reveal that the highest mean value, 16.10, is observed among participants who are 3 years old, with a standard deviation of 2.77. On the other hand, participants who are 4 and 5 years old exhibit almost equal means of 15.40 and 15.38, respectively, with a slight difference of 0.02 and with standard deviation of 2.70 and 5.52 in the experimental group.

The control-group displayed varied mean scores across all age groups, but the scores were considerably lower compared to the experimental group. In fact, most of the posttest scores fell below the average. In the control group, the highest mean score (7.70) was observed in the 4-year-old participants, followed by the 5-year-olds with a mean of 6.90. The lowest mean score was found in the 3-year-old group 3.64. Accordingly, there is a variance.

Table 16

Descriptive statistics of Two-Way Analyses of Experimental Posttest Scores

Age	Group	Mean	Std. Deviation	N
3 years	Experimental Group	16.1000	2.77038	5
	Control Group	3.6400	2.35940	5
	Total	9.5200	6.65592	10
4 years	Experimental Group	15.4000	2.70000	5
	Control Group	7.7000	4.38178	5
	Total	11.9000	5.60119	10
5 years	Experimental Group	15.3800	5.52467	5
	Control Group	6.9000	3.78220	5
	Total	11.1400	6.31650	10
Total	Experimental Group	15.6267	3.62165	15
	Control Group	6.0800	3.80356	15
	Total	10.8533	6.07343	30

Table 17

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	746.515[a]	5	149.303	11.625	.000	.708
Intercept	3404.805	1	3404.805	265.107	.000	.917
Age	33.185	2	16.592	1.292	.293	.097
Group	627.461	1	627.461	48.856	.000	.671
Age * Group	85.869	2	42.934	3.343	.052	.218
Error	308.235	24	12.843			
Total	4459.555	30				
Corrected Total	1054.750	29				

Note: Dependent variable: posttest score of experimental group

Partial Eta squared computed using p=0.05.

Taking into account the division of participants in the experimental group into three age groups (3 years, 4 years, and 5 years), Table 17 reveals a significant interaction between the age groups and the posttest scores F=3.343 at a significance level of *p*=0.05. According to Cohen et al (2018), this indicates a statistically significant main effect of the independent variable in terms of age. The partial effect size, η_2=0.2, indicates a large effect size of the Montessori method on all age groups under consideration. This finding provides a conclusive answer to the second secondary research question. The results are illustrated in the graph bellow for better Understanding.

Figure 8 represents a graph that depicts the variability in the average scores after the experiment for both groups categorized by age. The blue line represents the mean scores of the experimental group at different ages. As shown in the graph, the mean scores of all age groups from 3 to 5 in the experimental group are clustered around a similar value of 15. In contrast, the control group, indicated by the green line, displays a range of mean scores at

each age group. The mean score of participants aged 3 is 5, while the mean scores for the

other age ranges clustered around 6 and 7, below the overall average of 10.

Figure 8

Estimated marginal means of both groups in terms of age
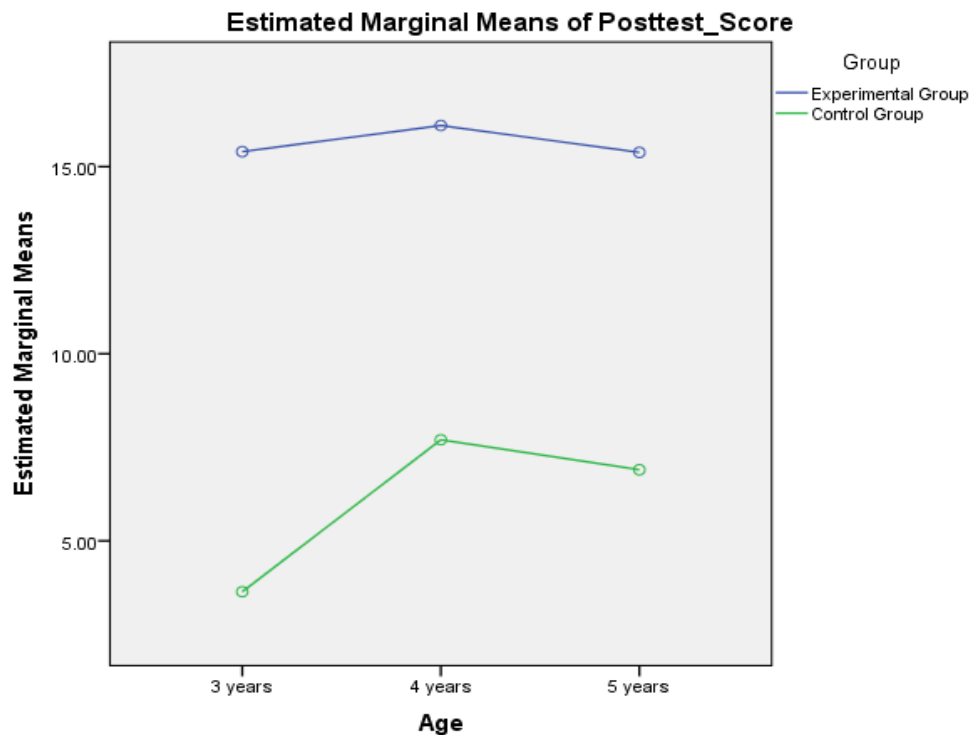
2.3 Section Three: Discussion and Results Interpretation

2.3.1 Summary and Interpretation of the Results

      2.3.1.1 Summary of the results. The present study utilized various inferential

statistical tests, including independent and paired t-tests, ANOVA Two Way, and effect size

measurements. These tests were employed to analyze the results obtained from the pretest

and posttest and assess the differences between and within groups; plus, examining the age-

related effects within the experimental group. Within groups analyses revealed a high

improvement in the experimental participant's performance between both tests. This

improvement is noticeable from the significant difference between means 10.95 which is

considered as a sign of the effectiveness of the Montessori method on teaching and learning

writing and reading of CVC words. To strengthen this finding, Eta Squared was calculated to assess the effect size of the IV. The results indicated a large effect of the IV, with a value of 0.9 for preschoolers, i.e. 90%. This means that the Montessori method had a significant to a high extent on teaching and learning reading and writing CVCs. In contrast, the control group using the traditional method showed only a slight improvement in participant performance, with a mean difference of 1.67 and an effect size of 0.4, i.e. 40%. This indicates that the traditional method was less effective compared to the Montessori method in influencing the DV. As a result, the primary and the first secondary research questions have been successfully addressed.

To determine the impact of the IV on each age group (3, 4, and 5 years), an ANOVA Two-Way test was conducted to investigate the effect size of the IV within subjects. This analysis aimed to address the second secondary research question. Concerning the experimental group, the findings revealed that the means of the three age groups were quite similar, with slight differences favoring the 3-year-old age group. The effect size of the IV on each age group was large; thus, the experimental-group participants exhibited nearly the same level in terms of reading and writing CVC words.

In the control group, there was a significant variation in mean scores among the different age groups. The highest mean score was observed in the 5 years' group, followed by the group of 4 years. Conversely, the 3-year-olds' group had the lowest mean score. This indicates that the traditional method had low distinct effects on participants in each age group, compared with the Montessori method. As for between-groups analyses, the outcomes of the pretest of both groups were analyzed statistically using an independent sample t-test, and the analyses showed that all participants nearly had the same knowledge concerning the phonological awareness and the CVCs knowledge, whereas they showed no scores in reading and writing. There was a slight difference in means of 0.137, where the experimental group's

mean was 4.273 and the control group′s mean was 4.410. Thus, it was statically proved that both groups possessed nearly the same level of knowledge; that is, the sample is homogeneous to be exposed to the IV (Cohen et al, 2018). However, it is crucial to mention that the zero-marked scores by both groups' participants in the reading and writing tasks in the pretest had relatively affected the correlation between groups, where it was reduced from 93% to 68% (Appendix G), which is still considered by Cole et al (2011) as a good rate and does not affect the validity of the study.

  2.3.1.2 Interpretation of the Results. The initial results of the current experiment indicated that the Montessori method had highly and positively affected the performance of participants in the experimental group in terms of learning to write and read CVC words. The posttest results demonstrate a remarkable improvement among the participants in all areas examined, particularly in reading and writing. It is noteworthy that during the pretest, none of the participants achieved any scores in these specific areas. This improvement can possibly be due to the simple structure of the CVC word, in addition to the usefulness of the Montessori sensorial materials. Exceptionally, two participants showed only a slight improvement, which did not exceed the average. This can be attributed to their absence during the treatment sessions, which may have affected their progress.

  As previously mentioned, the effectiveness of the Montessori method in facilitating reading and writing skills can be attributed to the utilization of sensorial materials, which are the Sandpaper Letters, LMA, and Pink Object Box, as initially suggested by Dr. Montessori (1914). Throughout the treatment sessions, all participants in the experimental group displayed a keen interest in learning with the used materials and exhibited curiosity in exploring them. Notably, when the first instruction involved tracing the letters on the sandpaper to learn sounds and be prepared to writing, it was observed that participants maintained their focus on the letter while simultaneously repeating the associated sound.

Consistent with Chitwood's findings (1973), it can be inferred that the participants in the study were effectively memorizing the visual shape of letters and establishing connections between these shapes and their corresponding sounds through tactile muscular engagement. This active involvement facilitated a comprehensive mastery of letter sounds, as evidenced by the outcomes of the posttest.

The element of time played a crucial role in the experiment, as it was essential for all participants to repeat each instruction multiple times until they achieved mastery based on the three-periods lesson (see Chapter One, Section Two). This observation aligns with the findings of Soltani (2021) and Gormi (2022), which highlighted that Montessori didactic materials effectively stimulate a child's interest in learning. However, it is worth noting that these materials often necessitate an extended period of time to yield the desired results. Thus, the first hypothesis of this study, which states that learning CVC words with literacy skills, writing and reading, using Montessori sensorial materials would definitely enhance the child's interest in learning, can be accepted.

Presenting the target CVCs alongside their corresponding objects using the pink object box proved to be an enjoyable and effective method for helping children remember the object names. For example, when a child encountered a zip, he/she touched it, opened and closed it, and some even made connections by saying, "Look, I have a zip on my coat too!". Similarly, when children held the pin, they carefully touched it to explore its parts while repeating its name. Consequently, when the pink pictures were later shown to them, they could readily identify the CVC associated with the presented image without much deliberation, thanks to the prior tactile recognition of the related object. This claim is supported with Chitwood's findings in 1973, where he found that by incorporating tactile and visual experiences into educational practices, the learners would likely encounter funny

learning process; in addition, their memory would be reinforced with discovering different textures with his tactile sense.

The same process happened for all the 9 objects except for the word "hot" because, according to Dr. Montessori, this kind of abstract words must be represented through real actions (Wolf, 2009). To know the meaning of the word *hot*, children were asked to touch the heater saying "Ouch! It is hot"; this hands-on experience was intended to create a connection between the word and the sensation, ensuring that the concept remained memorable to them (Montessori, 1949; Chitwood (1973). As a result, the children attained a high level of proficiency in understanding CVC words, as proved by their performance in the posttest.

It was deemed appropriate to introduce the LMA to facilitate the children's progress in writing. Given their solid understanding of letter sounds and their associations with the target CVC words, the children were considered ready to engage in writing, following the principles outlined by Montessori (1912). Over the five lessons dedicated to the LMA, the children were guided through the process of building words by selecting the corresponding letters. The LMA was placed in the center of a circle, with all the children seated on the floor, allowing everyone to observe the activity. To familiarize them with the process, a question was posed: "What do you hear first when I say 'hat'?", and the children responded with "ha". Here, it was crucial to raise their awareness that the sounds /a/ and /h/ are separated. This observation was essential in reinforcing the understanding that sounds can be represented by individual letters. Consequently, the children internalized this concept and, when they were asked again, they made conscious efforts to distinguish sounds from letters. This procedure was based on Dr. Montessori's principle: the teacher's role should involve minimal intervention, except in cases of significant mistakes; the teacher should avoid making the child feel as though he/she has made a mistake or misunderstood something. Instead, the teacher should incorporate this mistake into the lesson, ensuring that all children become aware of it (Gutek, 2004).

The selection of the words "gum" and "gun" was deliberate, in accordance with Montessori's assertion that children, when using the LMA, begin to explore the various words that can be formed by replacing a single letter while keeping the other two letters intact (Wolf, 2009). This phenomenon was observed with accuracy during the experiment, as the children actively engaged in discovering alternative words by manipulating the letters within the CVC structure. When they were asked to write *gum* after writing *gun*, they removed only the /n/, replacing it by /m/. After the 5 sessions, children were able to write with the LMA and even engaged to write on the board (Figures 8 and 9). That could be due to the fact that children had memorized the shapes of letters by their sensation; whenever the sound is spelled, they could directly detect its shape in their minds. The effectiveness of Montessori's approach to writing was displayed in the posttest results, where all participants developed from scratch.

Figure 9

A child's attempt with the LMA

Figure 10

A child's attempt to write on the board
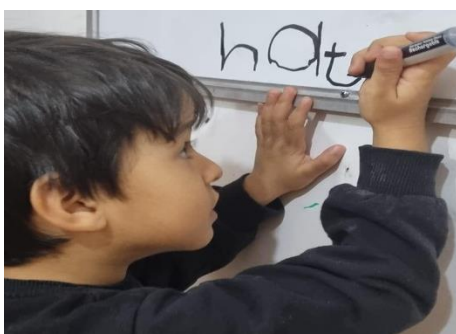
Once the writing phase was completed using the Sandpaper Letters and the LMA, the focus shifted to reading the target CVC words using the word tags in the pink object box. The children were tasked with reading each word tag and connecting it to its corresponding object, thereby demonstrating their understanding of the target CVCs. Surprisingly, the children exhibited remarkable fluency in reading, almost as if they were already familiar with the process. They could effortlessly spell out the words and, without much difficulty, identify the word and associate it correctly with its corresponding object (as depicted in Figure 10). This supports the finding of Tahzeem (2015) as he pointed out that implementing writing exercises before reading instruction can be a beneficial approach. By engaging children in the process of segmenting words and understanding their individual units in order to write them, reading skills naturally emerge. Their knowledge of reading skills was ensured by their results in the posttest.

The Montessori language games hold significant importance in creating a joyful and engaging learning environment for children that affected positively the participant's performance. Games like Knock Knock and blind eyes were incorporated into the experiment knock. It was observed that these language games sparked a heightened interest in children, fueling their love for learning. For example, in blind eyes games, children would touch sandpaper letters to identify them based on their shapes, reinforcing their letter recognition skills. The positive experiences and successes in these games motivated children to actively participate and seek more opportunities to play and learn. Lestari's (2020) findings align with this notion, highlighting the transformative impact of Montessori language games on children's perception of literacy and their overall learning journey.

The present study's findings and interpretations align with previous research conducted by Sulazar (2013), Lnenickova (2015), Ahajani (2020), and Buldur and Gokkus (2021), which affirm the effectiveness of the Montessori method in facilitating early literacy

development, particularly in the English language. The method demonstrates consistent

positive impact across various age groups, as previously highlighted by Fero (1997), who

adds that Montessori classrooms prioritize individualized learning experiences designed to

the specific needs of each learner, resulting in comprehensive competence across all subjects.

This inclusive approach recognizes and addresses the unique consideration of every student

in the classroom. Nevertheless, despite the positive outcomes observed in the posttest, it is

clearly revealed that not all children attained the same level of proficiency in literacy skills.

While all participants actively participated in and benefitted from the Montessori-based

lessons, an external factor beyond our control, namely the spring holidays, certainly had an

impact. Although the school did not officially declare a break during this period, the parents

of the learners requested a pause in classes due to the holy month of Ramadhan in addition to

the absences of the two participants mentioned earlier. As a result, this interruption may have

affected the performance of some learners in the posttest.

Within the Montessori classroom, several notable behaviors can be observed. Firstly,

children display a keen enthusiasm for learning through the utilization of sensorial materials

specifically designed to fit their developmental needs and age (Montessori, 1912). Secondly,

children engage in a collaborative learning environment where they learn from one another's

mistakes, correcting their own errors by emulating the accomplishments of their peers. In

such instances, the role of the guiding teacher is limited, allowing children to independently

and accurately correct their own work. This aspect of mixed-grade classrooms proves to be

advantageous in fostering a cooperative and supportive learning atmosphere. Upon receiving

a communication from one of the parents, inquiring about the new teacher's performance in

teaching her daughter, the mother expressed appreciation of the teacher's diligent efforts. She

mentioned that her daughter initially possessed no prior knowledge of reading and writing in

English. However, the mother observed a remarkable transformation as her daughter began

spontaneously repeating words and writing them down on paper. Additionally, the child demonstrated an eagerness to attempt spelling any written word she encountered. In light of this feedback, the possibility of conducting a questionnaire for all parents to gather insights on their children's progress was thought of. It was acknowledged, however, that not all parents actively engage in monitoring their children's educational journey.

Regarding control participants, they demonstrated some improvements in terms of phonological awareness and knowledge of CVC words. However, their progress was relatively minor compared to the developments observed in the experimental group. It was evident that not all children in the control group were engaged or interested in learning. Although they initially paid attention at the beginning of the session, over time, they became noticeably bored and their level of engagement decreased beyond control. The teaching approach for the control participants involved using pictures of the target CVC words, initially emphasizing the name of the picture. Subsequently, the corresponding CVC word was written on the board and required the children to read it with the teacher. Then, those words were segmented into three constituent sounds. Each letter was highlighted for its specific sound, and the children were asked to repeat after the teacher multiple times to grasp the concept. Following this, worksheets were provided that focused on writing the letters and words repeatedly. This instructional process was applied consistently for all the target CVC words. As children did not encounter any previous knowledge in terms of writing and reading, only some of them showed a slow progress with a mean of 6.08. As for the rest, the literacy task was challenging for them especially when it came to writing on the worksheet. It was rather difficult for them to show a considerable development as the traditional method is too superficial and does not prepare the child for literacy skills as deduced by Fero (1997). Consequently, only 3 members showed improvement in literacy skills learning, which supports Tahzeem (2015) findings that introducing reading before writing is not

recommended for achieving mastery in both skills. It is more effective to first develop writing skills, as the process of segmenting words and understanding their units helps build a solid foundation for reading.

Based on all previous observations, the primary and secondary research questions are answered as follows:

- The Montessori method does affect learning and teaching literacy skills for CVC words for preschoolers to a high extent (90%).

- With a success rate of 90%, the Montessori method proves to be significantly more effective than the traditional method, which only yields a meager success rate of 40%.

- Teaching and learning writing and reading of CVCs literacy skills with the pink series had highly affected children from all age groups.

- The teaching of writing skills, indeed, had made a difference favoring the experimental group, while the traditional method did not show a remarkable difference.

2.3.2 Pedagogical Implementations

The findings of this study hold significant implications for educational leaders and curriculum designers, particularly in the context of elementary school language instruction, with a specific emphasis on English as it is a global language. These findings shed light on the effectiveness of the Montessori method in creating literate generations at a very young age (3 years old). Additionally, the literature review highlights various other Montessori principles that contribute to a comprehensive education, encompassing not only academic pursuits but also fostering respect, responsibility, and preparation for social interactions. In summary, the Montessori method should be regarded as a viable alternative to traditional educational approaches, as it harnesses the critical early years of a child's development to

foster a lifelong love for learning. By utilizing this method, children can become active and knowledgeable learners from the very beginning of their educational journey.

In the same vein, the Montessori method has to enjoy more familiarity in the Algerian educational contexts by affording Montessori training for teachers of languages; more precisely, primary-school teachers due to the critical nature of this stage of learning. Sensory education also could be considered as it fits almost all children's needs in learning. Besides, if the considerations of Montessori houses, kindergarten, magnet schools and children houses is quite unmanageable, considering only Montessori classrooms in terms of language, within public schools, would be more achievable. Moreover, teachers can effectively incorporate the Montessori method into their language classes, particularly when it comes to early literacy. Despite the fact that it is important to allow for a flexible timeframe to fully implement the Montessori method, it would be highly beneficial to apply the methods principles when teaching language; that is, provide sensorial activities along with language games in order to center every learner in the learning process. Doing so can yield highly favorable results.

As future teachers, our investigation of the Montessori method has significantly shaped our perspective on traditional teaching approaches, particularly those utilized in primary schools. Witnessing the remarkable achievements of preschoolers who had no prior exposure to reading or writing but were able to quickly acquire these skills, we have become wholeheartedly convinced of the transformative power of sensorial education as a pathway to literacy. Additionally, we now recognize the value of introducing writing before reading and the vital role of teachers as guides in nurturing a child's inherent curiosity and facilitating their learning activities. We also appreciate the significance of language games and other essential Montessori principles that promote willingness and foster a rich educational experience. if we were to secure positions as primary school teachers one day, we would be unable to adopt any teaching methodology other than the Montessori approach. From our

perspective, it truly serves as a lifeline for young learners as they are in the most sensitive period to acquire any knowledge, offering them the best opportunities for growth and development.

2.3.3 Limitations of the Study

Despite the acknowledgement of limitations in this research, there remains an optimistic outlook regarding the study's potential to offer valuable insights into the effective application of the Montessori method for teaching and learning literacy skills, particularly in the context of CVC words. The stubborn constraint of time had a significant impact on this work, as the allocated period for implementing the Montessori method was undeniably limited. This posed a particular challenge since the study aimed to explore both reading and writing aspects. Additionally, the limited number of participants hindered the possibility of piloting the pretest to identify any flaws. Another obstacle encountered was the difficulty in accessing the original Montessori materials, including Sandpaper Letters, LMA, and Pink Object Box. Furthermore, due to the relative unfamiliarity with the Montessori method in Tebessa's educational sectors, the research data collection relied solely on an experimental design. As a result, direct observations or gathering perceptions about the method were not feasible. Despite these challenges, there is a positive anticipation that this study will yield valuable insights into the effective implementation of the Montessori approach in teaching literacy skills.

2.3.4 Recommendations for Further Research

The findings of this research have generated several recommendations and suggestions for future investigations. Further research is necessary to explore additional aspects of language addressed through Montessori materials, such as the green and blue series, and evaluate their effectiveness. However, considering the current findings, it is advised that future investigations focus on examining a single language aspect in relation to

the Montessori method. This approach would provide a more accurate evaluation as it requires a significant amount of time to adequately measure the impact and outcomes of each aspect under investigation.

If the current study were to be replicated, it is recommended to narrow the focus and investigate either writing or reading as the primary aspect of language. By doing so, the pretest could include specific activities that measure knowledge related to only one aspect. This approach would enhance the reliability of the measurement tool and provide more accurate and meaningful data that can be compared and analyzed accurately.

The Blue and Green series can be successfully implemented in primary schools, particularly when English language instruction officially begins in the 4th grade. This approach offers a valuable opportunity for children aged 6 to 8 years to explore more intricate linguistic structures beyond basic CVC (consonant-vowel-consonant) words. The Blue and Green series encompass CVCC words, blends, digraphs, and sight words, as detailed in the second section of the initial chapter of the dissertation.

For further researches also, it is of utmost importance to increase awareness regarding the expenses involved in obtaining Montessori materials for the study. The budget allotted for this one included:

- LMA: 4000 DA.

- Sandpaper Letters (wooden material + sturdy paper): 1000 DA.

- Pink Object Box with the 10 objects: 800 DA.

- Prints (colored worksheets + pictures): 3000 DA

Conclusion

In this chapter, the results obtained from the pre and post tests were analyzed, discussed, and interpreted, referring to the research questions and hypotheses. Hence, it is clearly confirmed that the three research hypotheses concluded that the implementation of the

Montessori method in teaching and learning early literacy skills related to CVC words had positively and highly affected the performance of preschoolers across all age groups in the same way. Limitations, pedagogical implementations and recommendation for further research had been addressed.

General Conclusion

The choice of methods in terms of teaching and learning is an axial step that determines the future outcomes for any young learner in his educational journey. However, the traditional teaching methods employed in Algeria have proven to be inadequate in meeting the diverse learning needs of students, highlighting their inherent failures. Consequently, it is crucial to recognize the urgency for revising these outdated methods and replacing them with more effective alternatives that already exist. One of the most fruitful methods that had gained credits all along the past decade for its positive contributions is the Montessori method, which is the variable in question of this study. The current study aims to investigate the extent of effectiveness of the Montessori method in teaching and learning early literacy skills for CVC words.

To accomplish this objective, the researchers opted for a quasi-experimental research design, as it was deemed appropriate for investigating the effects of the Montessori method on the targeted language aspects. The study's target population consisted of 30 preschoolers from two schools, namely Polyglossia School at EL HAMMAMET and Excellence Academy at TEBESSA. The participants were evenly divided into two groups, with the experimental group comprising students from the former school and the control group consisting of students from the latter school. Regarding the treatment, the experimental group was exposed to the Montessori method for early literacy skills related to CVC words, utilizing Montessori pink series materials such as Sandpaper Letters, LMA (Large Movable Alphabet), and Pink Object Box. On the other hand, the control group received instruction on the same language aspect using the traditional method, specifically employing a 3rd-year primary school textbook. Both groups underwent pre-tests and post-tests to assess their proficiency in the target CVC words and associated literacy skills. To analyze the data and address the research questions, various statistical techniques were employed, including independent and paired

sample t-tests, effect size measurements, and a Two-way ANOVA. These analytical methods were utilized to analyze the findings quantitatively, and draw conclusions regarding the effectiveness of the Montessori method compared to the traditional method.

The findings and observations of this study provide conclusive answers to the primary research question, indicating that the Montessori method has a high positive impact on the teaching and learning of early literacy skills for CVC words. Furthermore, the secondary research questions were also addressed by the findings. Firstly, it was determined that the Montessori method outperformed the traditional method, demonstrating a substantial effect size of 90%. Secondly, the utilization of Montessori materials for teaching literacy skills related to CVC words proved to be effective across all age groups included in the study. Lastly, the implementation of the LMA (Large Movable Alphabet) and Sandpaper Letters in the Montessori method resulted in improved performance in writing and reading skills, while the traditional method did not exhibit a significant difference in enhancing these two skills. Consequently, it is clear that confirmed the three research hypotheses of the study.

The study's findings are consistent with previous research conducted in the same context by Fero (1997), Tahzeem (2015), Gormi (2022), and Soltani (2021). These studies have highlighted the high effectiveness of the Montessori method, along with its principles and materials, in fostering early literacy skills development. Building upon this existing knowledge, a series of recommendations and pedagogical implementations were discussed to shed further light on the Montessori method. It is proposed that Montessori classrooms should be considered, if not as a complete alternative, at least as an integrated approach within public schools. By incorporating elements of the Montessori method, public schools can enhance their educational practices and provide students with a more effective and comprehensive learning experience.

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Appendices

Appendix A

Test Used in the Pretest

Peoples Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Chahid Cheikh Laarbi Tebessi- Tébessa
Faculty of Letters and Languages
Department of Letters and English Language

Name :_____   Surname :_____   Age :_____

Hey little child!
Let's do some practice together!
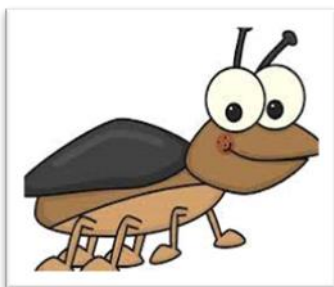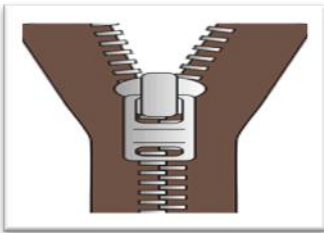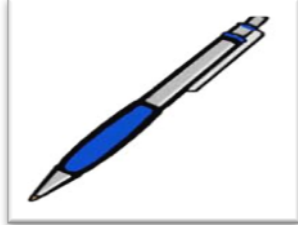
- **Task one:** SAY and WRITE the missing letters.

A   B   _   _   E   _
G   _   _   J   _   _   M
_   O   P   _   R   _   _
U   _   _   X   _   _

- **Task two:** LISTEN and TICK the box when you hear the word.

Go to the next page little champion

🔸 **Task Three:** READ the words and MATCH them with the correspondent picture

- **Dog**

- **Box**

- **Sun**

- Lip

- Hat

- Pin

- Leg

- Gum

- Wet

- Cat

Follow me !

Task Four:

-
-
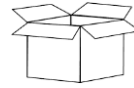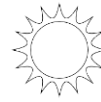
WRITE the missing word.
The pictures may help you!

The red _____.

A sun _____.

A big _____.

The _____ is sad.

The _____ is _____.

Appendix B

Test Used in the Posttest

Peoples Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Chahid Cheikh Laarbi Tebessi- Tébessa
Faculty of Letters and Languages
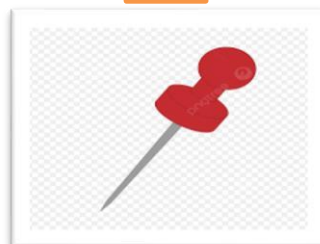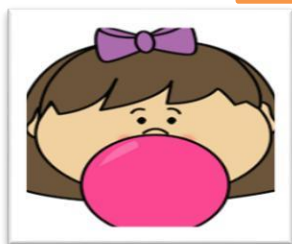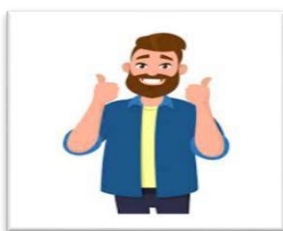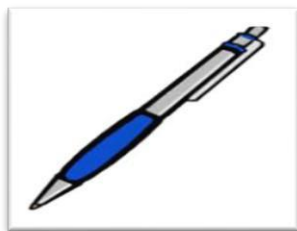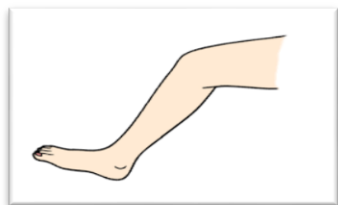**Department of Letters and English Language**

Name : _____   Surname : _____   Age   : _____

Hey little child!
Let's do some practice together!

- **Task one:** SAY and WRITE the missing letters.

- **Task two:** LISTEN and TICK the box when you hear the word.

Task Three: READ the words and MATCH them with the correspondent picture

- **Man**
- **Box**
- **Leg**
- **Hat**
- **Pin**
- **Hot**
- **Zip**
- **Gum**
- **Gun**
- **Pen**

Task Four:
- **WRITE the missing word.**
- **The pictures may help you!**

The red_____.

A sun _____.

A big _____.

The _____ is sad.

Yum Yum _____.

The_____is closed

This is a _____.

The cup is _____.

Appendix C

Lesson Plan Used for the Control Group

Lesson Title: Learning CVC Words & Alphabets
Level : Pre-Schoolers
Lesson 1: I listen, look, say, and write
Objective: Learners will be able to recognize and read, and write target CVC Words/ Alphabet
Lexis: CVC Words ()/ alphabets ( )
Materials: Whiteboard, markers, CVC word flashcards, worksheet, and 3rd year Book
Target Competency: Interaction, Interpreting, and production.
Time: 2 Hours

Time	Stage	Procedures
30 mns	Warming up Presentation	-T greets PPs and welcomes them -T set a suitable atmosphere for learning. -**Lead in**: Teacher introduces the concept of CVC words with the target alphabets and shows examples on the -board using colorful pictures. -**I listen and I repeat**: Teacher shows flashcards with CVC words and pronounces them, encouraging the students to repeat after her. -Teacher asks students to name words that they know which start with the same sound as the flashcard words(PPs repeat all together then individually) - Teacher plays the alphabet song and encourages the children to follow along and sing together. -Learners are asked to Point to each letter and asked to identify them by name.

45mns	Practice	-Learners are asked to work in pairs to practice reading CVC words with the target alphabets. -Each pair has a set of CVC word flashcards; One student shows a card to the other, and the other student reads the word; then each pair of students takes turns selecting an alphabet flashcard. -The student with the flashcard says the letter name or sound, and their partner identifies the corresponding uppercase or lowercase letter. -Students switch roles and continue until they have gone through all the cards.
45 mns	Produce	-Teacher hands out a worksheet with CVC words and alphabets and pictures that correspond to them. -Students are asked to identify the correct picture for each word with its target alphabet and color it. - Students are required to follow the worksheet instruction to write target alphabets.

Appendix D

Timeframe of The Experiment

N° of Session	Date of Session	Objective	Material
	Lesson Plan		
1	February 22nd , 2023	Three Letters per Session / 15 Sessions	_Sandpaper Letters _Language Games
2	February 27th, 2023		
3	March 1st, 2023		
4	March 6th, 2023		
5	March 8th, 2023		
6	March 13th, 2023	Writing, dictating CVC words	_LMA
7	March 15th,2023	_ Three words per session	
8	March 20th, 2023		
9	March 22nd, 2023		
10	April 5th, 2023		
11	April 10th, 2023	Activities of Pink object box	_ Pink Object Box
12	April 12th, 2023	_Sight words	
13	April 17th, 2023	_Writing, reading Three objects per Session	
14	April 19th, 2023		
15	April24th, 2023		
16	February 20th, 2023	Pretest	Worksheets
17	May 3rd, 2023	Post Test	

Appendix E

Gains of the Control Group

Group	Student Identity	Pre-test Mark	Post-test Mark	Gain
Control Group	1	3	3.5	0.5
	2	4.25	6	1.75
	3	4.25	5.45	1.2
	4	3.25	3.25	00
	5	00	00	00
	6	7	7	00
	7	3.5	4	0.5
	8	7.5	10	2.5
	9	3	3.5	0.5
	10	7	14	7
	11	6.5	13	6.5
	12	3.25	5.5	2.25
	13	2.5	6.5	4
	14	4	7.5	3.5
	15	3	5	2

Appendix F

Gains of the Experimental Group

Group	Student Identity	Pre-test Mark	Post-test Mark	Gain
Experimental Group	1	2.7	18.5	15.8
	2	4.1	18	14.1
	3	7	18.5	11.5
	4	4.5	13	11.5
	5	3.5	12.5	9
	6	3.3	14.4	11.1
	7	3.6	17.4	13.8
	8	2	8	6
	9	5.5	12.2	6.7
	10	0.7	9	8.3
	11	3	10.9	7.9
	12	6	19	13
	13	7	18	11
	14	4.8	19	14.2
	15	6.4	20	13.6

Appendix G

Paired Sample Correlations

Paired Samples Correlations		N	Correlation	Sig.
Pair 1	Pretest Control Group & Posttest Contro Group	15	.932	.000
Pair 2	Pretest Experimental Group & Posttest Experiment Group	15	.681	.005

Appendix H

Document of Authorization of Excellence Academy

الجمهورية الجزائرية الديمقراطية والشعبية
وزارة التعليم العالي والبحث العلمي
جامعة العربي التبسي تبسة
كلية الأداب و اللغـات
قسم الأداب و اللغة الإنجليزية

إلى السيد (ة): مدير مؤسسة والسلس

إذن بالدخـــــول

بعـد التحيـة و الإحـترام ،

لغرض إستكمال البحوث الميدانية لطلبة قسم الاداب و اللغة الإنجليزية يرجى منكم السماح للطلبة الآتية أسمائهم
بإجراء زيارات ميدانية بمؤسستكم : مؤسسة السلس الكاديمي

الطـالـب : حمشيشي مارية
الطـالـب : قواسمية فاطمة
التخصص: علوم اللغة الانجليزية

في الأخير تقبلوا منا فائق التحيـة و الاحترام

في : 13 - 02 - 2023

المؤسسة المستقبلة   رئيس القسم   الأستاذ المشرف

Le Directeur
ABBASSI Hichem

الجمهورية الجزائرية الديمقراطية والشعبية
وزارة التعليم العالي والبحث العلمي
جامعة العربي التبسي تبسة
كلية الآداب و اللغات
قسم الآداب و اللغة الإنجليزية

إلى السيد (ة): مديرمؤسسة إكسلنس

الموضوع : طلب إجراء تربص ميداني

بعـد التحية و الإحتـرام ،

لغرض إستكمال البحوث الميدانية لطلبة قسم الاداب و اللغة الإنجليزية يرجى منكم السمـاح للطلبة الآتية أسمائهم :

- قواسمية فاطمة .
- المشيشي رانية .

وذلك بغيـة التحضير لنيـل شهـادة المـاستر

في الأخير تقبلوا منا فائق الاحترام و التقدير

تبسة في : 13 - 02 - 23   تبسة في : 13 - 02 - 2023

المؤسسة المستقبلة   رئيـس القسـم   الأستـاذ المشرف

Le Directeur
ABBASSI Hichem

Appendix I

Document of Authorization of Polyglossia School

الجمهورية الجزائرية الديمقراطية والشعبية

وزارة التعليم العالي والبحث العلمي

جامعة العربي التبسي تبسة

كلية الآداب و اللغـات

قسم الآداب و اللغة الإنجليزية

إلى السيد (ة): ....بوقمة روسيا.........

المـوضـوع : طلب إجراء تربص ميداني

بعـد التحية و الإحتـرام ،

لغرض إستكمال البحوث الميدانية لطلبة قسم اللغة الإنجليزية يرجى منكم السماح للطلبة الآتية أسمائهم :

- ....قاسمية فاطمة..........
- ....عشيش أنية..........
- ..../..........

وذلك بغية التحضير لنيل شهادة   شهادة الماستر

في الأخير تقبلوا منا فائق الاحترام و التقدير

تبسة في : ....15 / 02 / 2023.......   تبسة في : ....2023 / 02 / 15.......

رأي المؤسسة المستقبلة   رئيس القسم

Résumé

Le développement du langage chez les jeunes enfants est crucial, en particulier en ce qui concerne les compétences en littératie, c'est pourquoi il est nécessaire d'utiliser des méthodes d'enseignement adaptées à cette étape. Malheureusement, les approches actuelles d'enseignement des langues, en particulier l'anglais, dans les écoles primaires, sont souvent critiquées pour leur manque d'efficacité et de profondeur dans la prise en compte des intérêts et des besoins des apprenants. Cependant, en 1907, le Dr Montessori a introduit une méthode reconnue pour sa focalisation sur les étapes de développement essentielles et son enseignement adapté aux besoins de chaque apprenant. L'étude actuelle vise à examiner à quel point la méthode Montessori est efficace pour enseigner et apprendre les compétences d'alphabétisation précoce liées aux mots CVC comme alternative aux méthodes traditionnelles utilisées dans les écoles primaires Algériennes. Pour atteindre cet objectif, une approche quantitative est adoptée et une méthode de recherche quasi-expérimentale est menée dans les écoles Polyglossia - El Hammamet - et Excellence Academy - Tebessa - sur deux groupes (groupe expérimental et groupe témoin) de 15 participants. Les deux groupes ont passé le même prétest et post-test sur l'aspect ciblé. Il est supposé que la méthode Montessori améliorerait les performances de l'apprenant en matière de compétences d'alphabétisation quel que soit son âge (3, 4 ou 5 ans), par rapport à la méthode traditionnelle et les résultats ont confirmé cette hypothèse, indiquant un développement significatif des compétences liées aux mots CVC parmi les participants du groupe expérimental, avec une mesure d'effet de 90%. Ceci est attribué à la mise en œuvre de la méthode Montessori, en utilisant du matériel sensoriel. Les résultats obtenus avec la méthode traditionnelle indiquent une amélioration moindre (40%). Sur base d'analyse complète, il est recommandé d'adopter la méthode Montessori totalement ou partiellement dans les classes de langues, car elle s'est avérée avantageuse pour l'enseignement des compétences en littératie précoce.

ملخص

تطوير اللغة في الطفولة المبكرة أمر حاسم، خاصة عندما يتعلق الأمر بمهارات القراءة والكتابة، ولذلك يجب استخدام أساليب تعليمية مناسبة خلال هذه المرحلة. ومع ذلك، فإن النهج الحالي لتعليم اللغة في المدارس الابتدائية، خاصة عند تدريس اللغة الإنجليزية، يتعرض في كثير من الأحيان للانتقادات بسبب قصوره وعدم توفره لعمق في معالجة اهتمامات ومتطلبات المتعلمين. ومع ذلك، في عام 1907، قدمت الدكتورة مونتيسوري طريقة اشتهرت بتركيزها على المراحل الانمائية الحاسمة والتعليم المخصص المصمم لتلبية الاحتياجات الفردية لكل متعلم. تهدف الدراسة الحالية إلى التحقق من مدى فاعلية طريقة مونتيسوري في تعليم وتعلم مهارات القراءة المبكرة المرتبطة بالكلمات ذات البنية الحرف-صوت-حرف كبديل للأساليب التقليدية المستخدمة في المدارس الابتدائية الجزائرية. لتحقيق هذا الهدف، تم اعتماد نهج كمي وإجراء دراسة شبه تجريبية في مدرسة بوليغلوسيا ـ الحمامات وأكاديمية التميز ـ تبسة ـ على مجموعتين (مجموعة تجريبية ومجموعة ضابطة) تضم كل منهما 15 مشاركًا. خضعت كلا المجموعتين لنفس الاختبار الأولي والاختبار النهائي بخصوص جانب القراءة والكتابة المعني. يفترض أن طريقة مونتيسوري ستعزز أداء المتعلم في مهارات القراءة والكتابة، بغض النظر عن عمره (3 أو 4 أو 5سنوات) مقارنة بالطريقة التقليدية؛ وأثبتت النتائج أن ذلك صحيحًا حيث تشير إلى تطوير ملحوظ في مهارات القراءة والكتابة المرتبطة بالكلمات ذات البنية الحرف-صوت-حرف بين المشاركين في المجموعة التجريبية، بحجم تأثير يبلغ 90٪. يُعزى ذلك إلى تنفيذ طريقة مونتيسوري باستخدام المواد الحسية. تشير النتائج المتعلقة بالطريقة التقليدية إلى تحسن أقل (40٪). استنادًا إلى تحليل شامل للنتائج، يُوصى باعتماد طريقة مونتيسوري جزئيًا أو كليًا في دروس اللغة، حيث ثبتت فوائدها في تعليم مهارات القراءة المبكرة. الكلمات المفتاحية: طريقة مونتيسوري، الكلمات ذات البنية الحرف-صوت-حرف، القراءة المبكرة، المواد الحسية.