A Learning Styles-Based Literacy Curriculum

For the Charter Elementary

Montessori Classroom

by

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The Project has been Accepted by the Project Committee
in Partial Fulfillment of the Requirements
for the Degree of

Master of Arts
in
Education

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Date of Successful Defense – December 5, 2011
Abstract

This project presents a learning-styles based literacy curriculum as a thematic unit on Africa for a 2nd and 3rd grade Charter Montessori classroom. Guiding questions for the project included whether specific materials typically found in the Montessori classroom could be matched with Willis and Hodson’s Learning Styles Profiles, and which specific curricular elements best support the needs of each learning style.

A direct connection between materials and specific learning styles was difficult to ascertain; both the literature review and development of lesson plans suggested the most likely formula for success is creating sufficiently broad lessons that include elements designed to appeal to all learning styles. Recommended follow-up to this project includes field research to investigate whether learning styles-based thematic units such as the one proposed herein actually result in improved academic performance.

*Keywords*: charter school, curriculum, learning styles, literacy, Montessori school, reading styles
Acknowledgments

I would like to express my appreciation to my Project Chair, Dr. Laurie Stowell, for her invaluable guidance, suggestions, and creative input during the development of this project. I would also like to thank Dr. Anne Rene Elsbree for her help in planning the research and formatting the final paper. My thanks also to Dr. Erika Daniels for inspiring my passion for children’s literacy in the first class I took at CSUSM.
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Chapter One – Introduction

This project is designed to support children in a public Charter Montessori elementary school to maximize their ability to read and write by implementing a curriculum based on the child’s learning style. Chapter One will discuss the purpose of the project and the guiding questions on which it is based, preview the literature in the field of learning styles, provide an introduction to the methodology and significance of the project, and define key terms that are helpful in understanding the project.

Purpose of Project

Current research shows that curricula based on learning styles produce enhanced learning outcomes among university students in technology-related courses with online components (Kinshuk, Liu & Graf, 2009), however to date no empirical evidence exists for the efficacy of learning style based-curricula in a Montessori learning environment. Traditional wisdom in Montessori classrooms has been to give the child virtually unlimited freedom to pursue studies and choose materials based on his or her interests (Montessori, 1964). While this strategy feeds into the sense of self-education and intellectual freedom for which the Montessori system is renowned, it may not be the best way to focus the attention of children on the skills needed to acquire literacy.

The purpose of this project is help second and third grade students in a Charter Montessori elementary school improve their reading comprehension and writing composition skills through a curriculum based on the child’s learning style, as defined by Willis and Hodson in their book Discover Your Child's Learning Style (1999). The project will attempt to answer the following questions:
1. How can the materials in a public Montessori classroom be matched with Willis and Hodson’s Learning Style Profiles to strengthen reading comprehension and writing composition skills for 2nd and 3rd grade students?

2. What are the specific elements of the curriculum – such as schedule, activities, procedures, materials, lesson plans, assessments, and observations – that best support the needs of each learning style?

**Preview of Literature**

A wide variety of research has been conducted on how children learn, including efforts to establish a correlation between a child’s personality traits and the way he or she acquires the skills needed to learn to read and write. Though the concept may seem straightforward – find the things that resonate most powerfully in the child’s mind, and use them to create effective curricula – efforts at real-world implementation of learning styles-based instruction have shown mixed results.

A divergence of scholarly opinion exists about the definition of learning styles; the best way to measure a child’s learning style, and the most effective way to translate that information into a meaningful classroom experience. This project uses the Learning Styles Profile of Willis and Hodson (1999) which is based largely on the work of Rita Dunn (1975, 1984), one of the pioneers in the field of learning styles. The concept of Reading Styles, a derivative of learning styles, will also be examined. The literature review concludes with a discussion of the work of Cassidy (2004), Ivie (2009), and Pashler, McDaniel, Rohrer and Bjork (2009) who cast doubt on the validity of learning styles as an effective means of understanding how to help children learn, as well as Dunn,

**Preview of Methodology**

The project was based on the Learning Styles Inventory, an on-line instrument developed by Willis and Hodson. The results were tabulated and each child’s learning style was noted. All children in the class were given a baseline assessment to measure their reading comprehension and writing composition ability. The reading assessment included the state standardized site word list for reading comprehension, and the writing assessment was largely based on the Writer Workshop integrated with 6+1 Traits Writing; two well-known processes to help students learn to write.

The class was divided into groups based on their learning style, and each group was presented with a lesson matching the resources of the Montessori learning environment to the individual learning style. The lesson plans included classroom materials, activities, processes/procedures, and observations. The project was conducted in two phases – Mid September to Mid October, and Mid October to Mid November.

**Significance of Project**

Montessori teachers are instructed to allow the child complete freedom in the selection of classroom educational materials and resources. Furthermore, the concept of learning styles is virtually unknown in the Montessori world, where formal assessments are generally kept to the bare minimum that state law requires. The popularity of learning styles originated in the home-school environment; parents were encouraged to test their child’s learning style online and then configure the home schooling environment
accordingly. However, as more students with a home-school background enter Montessori classrooms, these two worlds are beginning to merge.

This project will help Montessori teachers use and interpret the Willis and Hodson Learning Styles Inventory and help students make the best possible choices from among the full range of educational materials in the Montessori classroom.

**Summary**

This project will develop a literacy curriculum for a public Charter Montessori Elementary school targeted to the students’ learning styles as defined by Willis and Hodson (1999). The project matched the materials in the Montessori learning environment with the Willis and Hodson learning Styles and developed additional curricular elements that best support the needs of each style. The project will help Montessori teachers integrate the concept of learning styles into the classroom and provide guidelines on how to structure lesson plans that best leverage the child’s learning style to support the development of literacy. A wide range of scholarly research exists about the validity of the learning styles concept itself, and also the efficacy of using learning styles as a basis for classroom instruction, with highly-regarded scholars lining up on both sides of the issue. This research will be discussed in greater detail in Chapter Two.

**Definition of Terms**

**Charter School**

A Charter School is a public, state-funded school that is not subject to some of the same rules, regulations, and laws that apply to other public schools in California. In return for this autonomy, Charter Schools are held accountable to high standards of
academic achievement and fiscal management defined in the school’s charter. Charter Schools administer and report results on all state-mandated tests required by the No Child Left Behind Act.

**Montessori School**

A Montessori School provides instruction based on the theories of Maria Montessori, an Italian educator and doctor. The Montessori learning environment is characterized by mixed-age classrooms with students from several grade levels, freedom for the student to pursue subjects of interest and choose from among various learning materials, and long, uninterrupted periods of work time.

**Learning Style**

A learning style is a method of classifying or describing how an individual learns. For example, theorists postulate that some people are “visual” learners while others prefer “hands-on” or experiential learning techniques, and still others learn best by reading and writing.

**Reading Style**

A Reading Style is an adaptation of the Dunn and Dunn Learning Styles Inventory focused specifically on the way children learn to read.

**Curriculum**

Curriculum is the set of courses, course work and content offered at a school. In California, the state Department of Education establishes the required curriculum for public and Charter schools.
The concept of learning styles has been the subject of extensive scholarly research during the past forty years. A wide diversity of definitions exists about learning styles and an equally impressive array of instruments has evolved to help teachers identify their students’ learning styles and implement appropriate classroom strategies. This chapter discusses the work of several noted researchers in the field of learning styles, presents the construct of “reading styles” as an extension of the Dunn and Dunn Learning Styles Inventory, and identifies an alternative point of view from several researchers who cast doubt on learning styles as an effective method for helping teachers improve their students’ learning outcomes.

Learning Styles

Numerous researchers have proposed ways of measuring a child’s learning style and using the results to enhance learning outcomes. Much of the early research into learning styles focused on accurately discerning the student’s learning style and then attempting to match the learning environment, course content, and study materials as closely as possible to that style.

The pioneering work in this area was conducted by Rita Dunn, professor and Director of the Center for Study of Learning and Teaching Styles at St. John’s University in New York. Dunn, Dunn, and Price (1975) developed the model of understanding and measuring learning styles that has perhaps gained the greatest popularity in the United States. Their Dunn and Dunn Learning Styles Inventory (LSI) is a 100-question instrument for children in grades 3 through 12. The LSI measures 21 different aspects by which a student’s learning style could be identified, as categorized in the following groups:
1. Environmental factors like sound level, light, and temperature
2. Emotional factors – structure, motivation, persistence and responsibility
3. Sociological factors such as the child’s interaction with peer group and adults
4. Physical factors like sight, hearing, touch, and time of day
5. Psychological factors such as global vs. analytic, impulsive vs. reflective, and another construct they termed “cerebral dominance”

Figure 1, shown below, is a visual representation of these five groupings:

![Dunn and Dunn Learning Styles Model](image)

Dunn and Dunn’s work has refined and amplified over the past 35 years, and several simplified versions of the LSI have been developed. This project is based on a
simplified version of Dunn and Dunn’s LSI introduced by Willis and Hodson in their book *Discover Your Child’s Learning Style* (1999). Willis and Hodson commercialized a quick, user-friendly online instrument that measures disposition, talents, interests, modality and environment to discern the following five learning styles:

**Performer**

Performers enjoy educational experiences that are challenging, entertaining, and hands-on. They prefer unstructured learning environments with plenty of room to move. These children are risk-takers who are fun and entertaining to be around, however they tend to be weak at scheduling, planning, problem solving, and have a relatively short attention span. The Performer is very spontaneous and wants to be center-stage. The ideal curriculum for this learning style emphasizes designing and building things as well as physical activities such as sports.

**Producer**

Producers are extremely well-suited to the traditional public school learning environment. These children enjoy structured activities with sequential, ordered components such as workbooks. They prefer a quiet, orderly, secure and predictable learning environment such as a classroom. Producers are focused and diligent with a natural inclination to follow the rules, however they can lack spontaneity and become overly concerned about being on time. Their ideal curriculum is reading and writing, workbooks, and activities where they can summarize, categorized, diagram, and dissect.

**Inventor**

The most intellectual of the learning styles, Inventors love to experiment, question, design, and discover the world around them. They prefer working
independently and like a learning environment with lots of space and time for experimentation and exploration. Students with this learning style are enthusiastic and independent but have a tendency to be poorly organized and lack interpersonal skills. The ideal curriculum for Inventory offers opportunities to experiment, compute, diagram, formulate, generate, invent, and originate.

**Relater/Inspirer**

Children with this learning style “wear their heart on their sleeve”. Social by nature, they are always on the lookout for opportunities to interact with others. This cooperative, sensitive child works best in small groups where their strong personality helps build team spirit. Relater/Inspirers are not as skilled as some other learning styles in working independently, may be poorly organized, and are easily sidetracked. Sensitive and talkative, they have a high need for approval from those around them. Their ideal curriculum emphasizes opportunities to be creative and to work in a group environment.

**Thinker/Creator**

The Thinker/Creator is the “artistic” learning style. These children work best alone and need time and space to read, think, create, formulate, and escape into their own world. Their vivid imagination brings a sense of wonderment about the learning process; however they work poorly in groups and may be perceived as moody or inconsiderate by peers. Internally focused, these children tend to be “loners” and can easily become depressed. Theirs is the world of literature, art, and poetry, where opportunities to write, create, visualize and invent are highly valued.
Kolb (1976) focused his research on experiential learning theory and believed that learning styles develop over time based on one’s experiences and interactions with the surrounding environment. Kolb identified four basic learning modes:

1. Concrete Experience (CE), which favors learning by experimentation and hands-on activities.
2. Reflective Observation (RO), a thoughtful process by which the task itself and many potential solutions are carefully considered before one is selected for action.
3. Abstract Conceptualization (AC), the process of achieving understanding through analytical and conceptual study.
4. Active Experimentation (AE), which refers to learning through trial and error.

Kolb used these modes to form two bipolar dimensions of learning that he termed prehension and transformation. He defined prehension as how one gleans information from experience, and measured it on an axis from CE to AC. Kolb defined transformation as the way information is internally processed once it is obtained; he measured it on an axis from RO to AE. Positioning along these two axes determined Kolb’s four learning styles:

**Convergence**

The convergent learner “uses abstract conceptualization to drive active experimentation” (Cassidy, 2004). The learner develops an abstract understanding of a task and carefully considers how it might be solved.

**Divergence**
Divergent learners begin by reflectively observing their environment, and then engage concrete experience to creatively solve a problem.

**Assimilation**

Assimilators are concerned with explaining the things that they learn. People with this learning style process information through both abstract conceptualization and reflective observation.

**Accommodation**

Accommodators combine active experimentation with concrete observation. These individuals are hands-on learners.

Kolb introduced and refined various instruments for measuring the characteristics described above. His Learning Styles Inventory (1991) is one of the most widely-used instruments to assess learning styles, particularly in the United Kingdom (Bostrom and Lassen, 2006).

Felder & Silverman (1988) developed a learning style model focused on the following dimensions:

**Active/Reflective**

Active/Reflective refers to exactly the same axis of Active Experimentation and Reflective Observation developed by Kolb (1976).

**Sensing/Intuitive**

The Sensing/Intuitive dimension refers to the way a person extracts information from his experiences and environment. People who are “sensors” gather information through their senses; they observe, listen, discuss, write, read, and are comfortable drawing conclusions and meaning from these things. The “intuitors”, on the other hand,
are the imaginers, the dreamers and the inventors. Their focus is more internal than
eexternal, listening to their own inner voice imagining how things should be, rather than
concentrating on how they actually are.

**Visual/Verbal**

Felder and Silverman believed there are two categories (also known as
modalities) for how people perceive information: visual and verbal. Visual learners
remember best what they see – for example pictures, graphs, demonstrations and the like.
Those with a preference for verbal learning respond best to written and spoken words.

The authors point out that most students are visual learners however most
traditional classroom instruction is verbal. Montessori education seeks to bridge this gap
by providing a wealth of opportunities for students to learn visually through materials
such as pictures, charts, diagrams, maps, presentations, field trips, games, and puzzles.

**Sequential/Global**

At all grade levels in a traditional classroom setting, course material is generally
taught in a sequential fashion. The teacher begins with the most elementary material first
and as students master the basic levels they are introduced to more advanced concepts
and applications. Students are expected to learn the material in sequential units, receive
assessments on each section of the syllabus, then move on to the more difficult materials.

Felder and Silverman believed this scenario works well for the majority of
students, whom they termed Sequential learners. Global learners, on the other hand, are
not as skilled at processing information sequentially. These students may struggle with
elementary concepts until they suddenly see the “big picture” and are able to integrate all
the material together to form one whole level of understanding.
In a later article, Felder & Solomon (1997) introduced a learning styles questionnaire consisting of 44 questions. The unique feature of the Felder and Silverman model is that it identifies not only a student’s preferred learning style, but also the strength of that preference. For example, the questionnaire might show that a student is a visual learner and has visual rating of +9 on the Felder and Solomon scale of -11 to +11. Another student could also be classified as a visual learner but may only have a visual rating of +2 on the same scale.

Although both students are classified as visual learners, the student with a rating of +9 has a greater “strength of preference” for visual learning than the student with a rating of +2. This “strength of preference” element has influenced subsequent researchers including Kinshuk, Liu & Graf (2009) and Franzoni & Assar (2009) to choose Felder and Silverman’s model in studies that customized the online learning components of university courses based on the learning styles of students.

Hunt, Butler, Noy & Rosser (1978) developed a Conceptual Level (CL) to differentiate students who need a structured learning environment from those who are comfortable in a more open, unstructured environment. The former they termed low CL and the latter, high CL students. The purpose of the research was to match students with the teaching strategy that best suits their own Conceptual Level. To test for CL, the authors developed a Paragraph Completion Test where students were given incomplete sentences and told to complete them and use them in a larger piece of expository writing. The scoring is subjective, and Cassidy (2004) cites De Bello (1990) as pointing out that a major weakness of this model is the need for specialized training to evaluate the test.
The plethora of definitions, instruments and methodologies employed in the field of learning styles has led some researchers to dedicate themselves to explaining and classifying the work of others. For example, Cassidy (2004) created a “Taxonomy of Learning Style Models” that broadly classified some of the most significant research along several key dimensions including those suggested by Curry (1987), who classified learning styles based on instructional preferences, social interaction, information processing and cognitive perception, Riding & Cheema’s (1991) holistic/analytic model, and Rayner & Riding (1997), who described learning styles as either personality-centered, cognitive centered, or learning-centered.

The result is a matrix that describes a given model along two or more of the above-mentioned axes as shown in Table 1 below.

Table 1.
Cassidy classified Hunt’s model as Information Processing according to Curry’s definition and Learning Centered per the Rayner and Riding construct. Cassidy classified the Dunn and Dunn model as assessing both Instructional Preference and Social Interaction as defined by Curry, and also as a Learning Centered model according to Rayner and Riding.

**Reading Styles**

Carbo (1987) adapted the basic structure of the Dunn and Dunn model to analyze how teachers can more effectively help their students learn to read. Carbo studied under Rita Dunn at St. John’s University and later collaborated with her on numerous research projects related to learning styles. Carbo challenged the widely-held notion that Phonics is the optimal method of reading instruction for most elementary students, instead suggesting that “reading styles” could be used to fit instructional techniques and materials more closely to the individual learning styles of each student.

Carbo’s Reading Style Inventory (1992) divides students into those with analytic concentration tendencies (who learn best in a quiet, well-lit, formal classroom environment without food or drink and are motivated to study because the assignment is required), and those with global concentration tendencies who learn better with background music or conversation, in soft light, with informal seating arrangements and with intake of food and drinks. Dunn & Honigsfeld (2006) said those with global concentration tendencies are motivated to study by “stories, anecdotes, and humor that relate the content to their lives and interests” (Pg.3).

The two principal categories were then further divided into groups of students based on auditory, tactile, visual, and kinesthetic learning preferences, to form a total of
eight sub-groupings. For each major category and sub-grouping, Carbo developed a profile of students’ typical perceptual strengths, decision-making processes and environmental preferences, along with recommended teaching strategies and materials that fit best with the students’ reading styles.

Dunn & Honigsfeld (2006) used Carbo’s Reading Style Inventory to group students into the above-mentioned categories, and developed specific learning activities targeted to each sub-grouping. The authors point out that phonics, the most popular method of reading instruction currently employed in US public schools, is best suited for students in the analytic/auditory sub-group. However, over 80% of elementary children fall into the kinesthetic, global, and tactual groupings and are therefore not well-suited to learn reading primarily through phonics. The Montessori learning environment attempts to address this incongruity as discussed in a later chapter.

An Alternative Viewpoint

Learning styles is a field of study that, since its inception, has been subject to a variety of definitions, research techniques, assessment instruments, and interpretations. Indeed, Cassidy (2004) noted that “there exist almost as many definitions as there are theorists in the area”. These variations have in turn led to a healthy debate among academics about (1) whether the concept of learning styles is helpful in understanding the processes by which children learn, and (2) whether classroom instruction based on learning styles has produced statistically significant increases in learning outcomes.

A notable development in the fields of both learning styles and reading styles is the extent to which these subjects have left the realm of purely academic research and entered the commercial market. Indeed, an entire industry of books, DVDs, seminars,
and e-commerce websites has grown up around the concept of discovering the learning style of children through assessment instruments that are easy to sell, administer, and score online.

Writing in the *Australian Journal of Education*, Scott (2010) argued that the validity of learning styles as a field of academic study has been weakened by incompatible definitions of the core concept, a plethora of assessment instruments measuring different things, and a lack of solid empirical evidence about the effect of learning styles on teaching practice. She believed the commercialization of learning styles has perpetuated the awareness the concept far beyond what it deserves on its own merits. Scott also pointed out that much of the founding research of learning styles has “slipped below the horizon, a process encouraged by the expectation that scholarly writing consulted and cited should be less than about seven years old.”

Ivie (2009) took issue with the Dunn and Dunn model, which he terms “long, cumbersome, and ambiguous” and “an elaborate web of disjointed ideas”. Ivie believes the classification of students into categories such as global and kinesthetic is dangerous because it makes children believe they can only learn one particular way, whereas Ivie argues that children should be able to employ a variety of different learning techniques depending on the situation. He casts doubt on the validity of the Dunn and Dunn LSI as an effective tool for assessing learning styles and dismisses as substantially flawed the Dunns’ own attempts at statistical validation, describing the model as “an elaborate tautology whose logic runs in a circle.”
Pashler, McDaniel, Rohrer & Bjork (2009) took a somewhat less emotional and more balanced view. Their principal issue with extant research on learning styles is a lack of direct statistical evidence showing that:

students with one learning style achieve the best educational outcome when given an instructional method that differs from the instructional method producing the best outcome for students with a different learning style. In other words, the instructional method that proves most effective for students with one learning style is not the most effective method for students with a different learning style. (Pashler, McDaniel, Rohrer & Bjork, 2009, p. 105)

The authors termed the divergence between the enormous popularity of the concept of learning styles and the lack of an acceptably supportive statistical framework “striking and disturbing”, and concluded that further study would be required to demonstrate whether the classification of students’ learning styles has useful application in a classroom environment.

Allcock & Hulme (2010) noted the pedagogical popularity of learning styles against a background of conflicting evidence about the efficacy of the concept in actual classroom practice. They investigated whether differentiating students based on learning styles would produce better learning outcomes than differentiating based on the student’s ability. The study found that both groups improved at almost the same rate, and that differentiation based on learning styles had no significant impact on the learning outcome for a group of college psychology students.

Landrum & McDuffie (2010) argued for the value of individualized and differentiated instruction in today’s increasingly diverse and heterogeneous classroom environments, yet they reject targeting instructional methodologies to students’ learning styles because, in their opinion, the research does not support such a practice.
The studies cited above that opposed the Dunn and Dunn LSI were all written during the past several years, yet criticism of the model has appeared in academic journals since shortly after its introduction in 1975. Dunn et al. (1995) defended both the concept of learning styles and the Dunn and Dunn Learning Styles Inventory as an effective instrument for discerning learning styles that made a statistically-significant impact on children’s learning outcomes.

The authors evaluated 36 studies of the LSI between 1980 and 1990 that investigated the connection between learning styles-based instruction and student achievement in the classroom. Through meta-analysis of the data from these studies (sample size n = 3,181) the authors determined that the achievement of students whose learning styles were accommodated in classroom instructional activities would be 75% of a standard deviation higher than the achievement of students whose learning styles were not accommodated. In addressing critics of learning styles, Dunn, Griggs, Olson, Beasley & Gorman (1995) wrote,

… the Dunn and Dunn Model has elicited many practitioners’ reports citing significantly increased achievement and attitude test scores as a result of its implementation with underachieving and special education students… providing educational interventions that are compatible with students’ learning-style preferences is beneficial… we found that individualizing instruction to match learning-style preferences improved students’ academic achievement and attitude toward learning. (Dunn et al, 1995)

As the preceding discussion illustrates, the validity and efficacy of learning styles have attracted a significant amount of well-reasoned, highly informed research on both sides of the issue. Filtering this academic ambiguity through my own classroom experience during the past three years, I personally believe that knowing a child’s
learning style is a valuable tool for teachers because I have seen the improvement in my students’ achievement when I tailor the classroom experience to accommodate their learning styles. I also believe the Willis and Hodson online Learning Style Inventory is a valuable means of assessing learning styles and I encourage my students to take the assessment.

Summary

The research reviewed in this chapter traces the development of learning styles through the work of many scholars over a period of nearly 40 years. Willis and Hodson’s LSI is interesting and valuable as a stand-alone product, yet the research shows it exists not in a vacuum but on a continuum of ideas that sprang from Dunn, Kolb, Carbo and Felder among others. The research also demonstrates that there are no absolutes in the field of learning styles, there is no black and white, the topic has been controversial for decades and the controversy will likely continue.

As a teacher, I have seen that a child’s learning style is but one of many elements – including family history, cognitive development, language acquisition, personality traits, relationships with peers and adults – that bear directly on academic achievement. The Montessori learning environment takes a holistic approach to nurture talents in children in ways that will help lead to a successful adult life. Producers, for whom all classroom environments (including Montessori) are the most natural fit, need sufficient opportunities to create meaningful, interesting work. Those with other learning styles need curricular elements that support their academic achievement in accessible ways -- and potentially help them adopt a few Producer traits along the way. The methodology discussed in Chapter Three seeks to integrate the concept of learning styles appropriately,
successfully, and holistically with the other elements of the classroom experience to help maximize learning outcomes for all students.
Chapter Three – Methodology

This project introduced a Montessori curriculum taught at the 2nd and 3rd grade levels, and demonstrated how the curriculum can be adapted to target the five learning styles identified in the Willis and Hodson Learning Styles Inventory (LSI) (1999). The guiding questions for the project were how to match the materials in a Charter Montessori elementary classroom with the Willis and Hodson LSI to strengthen reading and writing skills among 2nd and 3rd grade students, and how to define the specific elements of a curriculum that best support each learning style.

This chapter discusses the design of the project in greater detail and describes the typical participants and setting for which the project was developed.

Design

This project is a 2nd and 3rd grade Thematic Unit about the biomes, people, ancient history, animals, geography, and water cycles of Africa. The duration of the unit is eight weeks, from early September through the end of October.

The Unit consists of seven lessons that vary in length from three days to three weeks. Due to the nature of the Montessori learning environment, where teachers follow the child’s interest and needs based on prescribed guidelines and boundaries, there are frequently two or three lessons ongoing at the same time and all students may not complete the first six lessons in the same sequence. All students will work together on the final lesson, the African Country Project, to create a diorama integrating the material learned in the rest of the unit.
Participants and Setting

This curriculum is designed for 2nd and 3rd grade students in a small Charter Montessori learning environment. Fifteen percent of the students are English language learners and the rest are native speakers. The students have attended one or two years in a Montessori classroom setting prior to their current school year. Parents of the English-language learners are college graduates and are fluent and intellectual in both English and their native language. There are 15 boys and 10 girls in the class. Ethnicity includes three mixed-race Caucasian African-Americans, one mixed-race Caucasian Hispanic, two Hispanics, one Asian, two mixed-race Caucasian Asians, one Caucasian South African, one Indian, one mixed-race Indian American, and 13 Caucasians. Though there is a rich dynamic of nationalities in this learning environment, the criteria of this charter school and the family background surveys did not identify any of the students as English language learners.

There is one teacher holding a California teaching credential and a Montessori teaching credential for each 25 students. Three mornings per week, an Assistant Teacher is also in the classroom; Assistant Teachers have experience working with Montessori students and either possesses a college degree or are currently attending college. As a publicly funded institution, the school does not charge tuition however parents are encouraged to volunteer their time assisting in the classroom, and contribute financially to periodic fund-raising activities.

The colorful, inviting classroom environment includes natural light and handmade materials of wood and other natural substances. The architectural design and layout
promotes both independence and responsibility from the students as they share in taking care of the classroom. See photographs of the project setting classroom below:

Photos of Project Setting Classroom

Student Work Area

Materials Area #1

Materials Area #2

Materials Area #3

Cards
Country Flags

World Map Puzzles
The work schedule allows the students to move freely about the classroom, conference one-on-one with the teacher and with their fellow students, and voice their opinion when something bothers them by using Positive Discipline tools. Students may eat a snack, get a drink of water, or go outside to get a breath of fresh air whenever they need to, using a sign language code as a signal when the teacher is busy working with other students.

The three-hour morning work cycle permits students to continue their thoughts and learning processes without interruption as they pursue academic subjects such as astronomy, zoology, botany, geometry, math, history, and creative writing. In the afternoon the students have lessons in yoga, Spanish, music, art, and physical education that helps foster their holistic development. The school is in session five days per week except for the last Friday of each month, which is a teacher in-service training day. The other three Fridays of each month are half-days and parents are encouraged to engage the student in outdoor activities and field trips to supplement the classroom learning experience.

The Charter Montessori school environment allows students to benefit from a small, tightly-knit community at school, promotes parental involvement in the classroom, and provides opportunities for special events such as guest speakers and whole-school field trips. The environment also supports and encourages students to develop their own individual personalities with greater emotional security and less peer pressure than is typical of larger public schools where I have worked.

Each Montessori classroom has a small garden where students can grow seasonal vegetables and harvest them to make salad or vegetable dip. Through these hands-on
activities, students learn practical life skills such as setting up compost bins, watering the garden, or simply learning the joy of chopping vegetables they grew by themselves.

**Instrumentation**

The primary instrument used in this project was the Willis and Hodson Learning Style Profile. It is available online at [http://learningstyleprofile.com/](http://learningstyleprofile.com/) for a cost of $35 if purchased on an individual basis. The Learning Style Profile is actually a collection of five separate assessments: Disposition, Talent, Interest, Modality, and Environment. The characteristics of each assessment are as follows:

**Disposition** – This section includes 10 multiple-choice questions, each of which has five possible responses. The child is instructed to place a 5 next to the response that best describes him/her, a 4 next to the remaining response with which he/she most closely identifies, and a 1 next to the least-favorite response.

**Talent** – Twelve lists of activities. Each list contains 10 different items with a check box adjacent to each item in the list. The child is instructed to place a check mark next to each activity that is easy for them to do, then the parent will add up the number of check marks in each list, multiply that number by 10, and transfer the information to the Talent section on the Summary Form.

**Interest** – In Part 1 of this assessment the child is presented with an Interest Priority Scale, essentially a blank list numbered 1 through 10, and is instructed to list his/her interests ranked from 1 (least interested) to 10 (most interested). The choices are then transferred to the Interest section on the Summary Form. In Part 2, the child writes down what he “really cares about” at home, in the neighborhood, at school, in his town, and in the world. He is asked to write a sentence describing how he can take care of the
things he cares about, and a sentence about the things he would like to do during his lifetime.

**Modality** – Part 1 of this assessment is a series of eight multiple-choice questions about activities in which the child prefers to engage. In Part 2, the child selects his/her top three choices from a list of 12 ways to receive information (for example, reading a book or drawing a picture).

**Environment** – Part 1 asks the child to select from a list of preferences on sound, interaction, body position, and lighting. Part 2 presents similar choices about temperature and food, and in Part 3 the child completes sentences relating to color and time.

After the child completes all of the online assessments, the information is automatically entered in the Summary Sheet, which is then tabulated to reveal the child’s learning style.

**Lesson Plan Template**

This project uses a lesson plan template that identifies the curriculum area and grade level, assessments, California content standards, and multicultural objectives of the lesson. Additional sections of the template address the materials, student activities, learning style focus, and instructional strategies included in the lesson as well as the resources and theoretical framework on which the lesson is based.

**Procedures**

**Learning Styles**

To prepare for this project, in the Spring of 2010 I attended a presentation about the Willis and Hodson Learning Styles Inventory offered by colleagues at the school where I work. Though not specifically a part of the Montessori educational system, the
Willis and Hodson LSI is extensively used at the Charter school where I work, and all teachers are required to be knowledgeable on how to administer and interpret the instrument. My colleagues who presented the seminar had studied directly with Willis and Hodson at their Learning Success Institute in Ventura, CA. The training discussed some of the theoretical underpinnings of the learning styles concept and introduced how to use learning styles in the classroom. The presenters gave many examples illustrating the different ways that children process information, and I could imagine many of the students I have had in my career as a teacher and thought about which learning style categories might apply to them.

Based on this introduction, I undertook a thorough study of the subject of learning styles, I read the Willis and Hodson book, and began looking at some of the research on this subject conducted by a number of scholars over the past 40 years. Through this process, I came to believe in the relevance of the learning styles concept and started thinking about a project based around this concept. I decided to choose a major thematic area of Montessori curriculum and develop specific lessons that would push the “hot buttons” of each learning style. The goal was to help students improve their reading and writing skills in impactful, interesting ways based on their learning style profile.

I analyzed the material in the Willis and Hodson book and created an Excel spreadsheet noting the learning characteristics, ideal setting, and ideal curriculum for each learning style. I also took note of the material the authors included on the interpersonal conflicts and contributions of each style along with areas that could be targeted for future growth. Based on what I learned about the Willis and Hodson model, I created the spreadsheet presented in Figure 2 below,
I then set out to determine the thematic setting for the project using the following criteria:

1. It should be a major lesson from the Montessori curriculum that also met California subject-matter requirements in an academic area such as History, Geography, Mathematics, or Science.

2. It should be a multi-faceted subject large enough in scope to allow customization of various lesson options structured for each learning style.

3. It should provide abundant opportunities for students to use various classroom materials typical of the Montessori learning environment. This was a key area because I intended to select specific materials targeted to each of the five Willis and Hodson learning styles.

After much reflection and study, I decided to focus the thematic portion of the curriculum on a study of Africa. Study of the Continents is a component of the typical Montessori curriculum in the Lower Elementary grades and also meets California education standards.
subject-matter content standards. Africa is a somewhat “foreign” land in the minds of many young children, and I felt that this offered numerous opportunities to enrich the students’ knowledge of this dynamic, diverse region while promoting the underlying goal of helping students learn to improve their reading and writing skills.

**Materials**

Once Africa was selected as the thematic framework of the project, I developed a detailed listing of the materials in a typical Montessori learning environment and planned how they could be used in the project. I began to plan how the classroom materials and other curricular elements could simultaneously support subject-matter learning about Africa, provide opportunities for improved skills in reading and writing, and appeal to the learning styles of the students. I also dug deeply into the wealth of resources I had accumulated over the years of teaching reading and writing in both the Montessori and traditional public school environments.

**Assessments**

I thought about the kinds of assessments that could be used in a classroom environment to understand the impact that a learning styles-based literacy curriculum could have on the students. I imagined that both authentic and data-driven assessments might be useful, and could be structured as oral presentations, reflection journals, group presentations, Think-Pair-Share sessions, and classroom share-time.

**Lesson Plans**

The final procedure I undertook to develop this project was to plan in detail the specific lessons that would be included. Areas of development included how the thematic material would be divided, the number of lessons in the unit, the learning
objectives for each lesson (both in terms of Africa-related content and reading/writing practice), the physical setting of the lessons, and the adaptations that would be required to modify the lessons to appeal to the five different learning styles described in the Willis and Hodson book. Activities associated with this task included:

1. Making an extensive list of potential lessons on the theme and eliminating those that were not suitable.
2. Creating lesson plans using the template described above.
3. Taking pictures of the related materials to document and describe the classroom experience as thoroughly as possible.
4. Creating folders for each lesson where all of this information could be stored in a way that was well-organized and repeatable in different classroom settings.

Summary

This chapter discussed the formulation, target audience and ideal setting for the project along with the instruments and procedures by which it was developed. Chapter Four will introduce the lesson plans, materials, and resources that comprise each individual classroom session.
Chapter Four – Project Presentation

**Study Unit: Africa**
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Lesson 7: African Country Project ..................................................................... 65
Project Overview

This project introduces a curriculum to improve the reading and writing skills of 2nd and 3rd grade students in a Charter Montessori learning environment. The project seeks to determine how the materials in a public Montessori classroom can best be matched with the Willis and Hodson Learning Styles Profiles and to identify curricular elements that best support the needs of each learning style. The project addresses these criteria through a broad-based, seven-lesson study unit focusing on Africa. The plan for each lesson identifies the materials to be used and outlines the specific elements of the lesson designed to appeal to one or more of the Willis and Hodson profiles.

The learning styles inventory would be administered at the beginning of the school year. After analysis of each student's learning style had been conducted I would encourage students to choose a mixture of activities designed for their own learning style as well as other styles based on the child’s cognitive development as well as the essential skills that each student needs to become a responsible learner and a resourceful citizen.

For example, Student A is a Performer according to the Willis and Hodson LSI yet he is strong and well-rounded academically, capable of “producing” when given a limited time frame. I would give Student A the freedom to choose his own activities, knowing he will mostly select those designed for Performers, and I would occasionally ask him to accept a Producer-type task.

Student B is a Thinker/Creator and of average academic performance. His preference is to spend the whole day thinking, creating, and experimenting. Left to his own devices this student will only choose Thinker/Creator type activities, but never meet any deadlines and never have a product to share with the class. In this case some gentle
guidance from the teacher is essential to provide this child the structure he needs. I would encourage him to finish his projects and show me the results so he can practice performing and sharing his work with the class.

Student C is an Inventor, but he doesn’t generate an acceptable quantity or quality of work and his academic performance is below grade level in key areas. This child likes to invent things and apply them to his own understanding and learning processes; however he is still writing letters backward and does not use proper spacing between words. To become an independent learner and develop age-appropriate life skills, Student C must improve his ability as a Producer. In this case I would still allow the student to select activities designed for Inventors, but I would work closely with the student and modify the activities to include practice with writing, constructing sentences, and putting letters and numbers in the proper format. The end result is a negotiation between teacher and student to allow a modified freedom of choice while addressing the areas in which the student exhibits deficiencies.

Lesson Structure

Lesson 1 focuses on cultural geography as presented through a puzzle map where students learn the names and locations of five countries on the African continent. Lesson 2 discusses the animals of Africa as taught through a combination of poetry, art, and a research project. The focus of Lesson 3 is science; students study one of the biomes of Africa culminating with a five-sentence paragraph describing the biome they chose.

The fourth lesson introduces the African Savannah – a large grassland area teeming with many different species of wildlife – as an interesting way of presenting a lesson on grammar and parts of speech. Lesson 5 is on Ancient Egypt; students create
their own “Personal Pyramid”, a writing project contrasting modern civilization with that of the ancient Egyptians. Lesson 6 takes the students through the “History of Writing”, integrating a discussion of Egyptian hieroglyphics and Sumerian cuneiforms with practice writing an expository paragraph. Lessons 1 through 6 should each take between three and five days to complete, thus comprising the first five weeks of the eight-week study unit.

Lesson 7, the Africa Country Project, recaps and integrates the skills learned in lessons 1 through 6. This lesson occupies the final three weeks of the study unit. Students write research reports about an African country and animals, and then create a diorama – a pictorial, three-dimensional model of a diorama. Students give a presentation to the class about their diorama and discuss what they have learned about Africa.

Three methods can be used to assess student performance in this study unit. The first method is to use authentic observational anecdotal notes and make notes in learning portfolios on a weekly basis, and then use the rubric included in lesson #7. The second method is to select several lessons from the study unit and develop rubrics for each of these lessons with the students. The third method of assessment is to develop teacher-created rubrics for each of the seven lessons, and then grade the students’ work based on these rubrics. As the study unit is designed for a Montessori learning environment, my recommendation is to record authentic observational anecdotal notes as this is most in keeping with the Montessori philosophy on student assessments.
**Study Unit:** Africa  
**SUBJECT:** CULTURAL GEOGRAPHY  
**Lesson 1:** Africa Wooden Puzzle Map

<table>
<thead>
<tr>
<th>Curriculum Area &amp; Grade Level:</th>
<th>Assessment(s)</th>
</tr>
</thead>
</table>
| Cultural Studies - 2nd & 3rd Grade | • Making a Map of Africa  
• Group Discussion  
• Group Lesson |

**Common Core Standard(s)**

http://www.corestandards.org/the-standards  

- Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.  
- Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

**Multicultural Objectives**

- Identify the difference between North America and Africa  
- Identify the difference between the United States and other countries in Africa.

**Materials**

Colored markers - Blue bulletin board paper - Colored construction paper - Push pins - Glue sticks - Pencils - Paint brushes (small, medium, large) and paint pallet - Pre-cut African flag pictures - Pre-cut African landmarks - Wooden puzzle map of Africa - Paper puzzle map of Africa both mute one and one with control of error - Laminated continent research guide - Laminated Africa fact sheet - Two books about the Continent of Africa - Children’s Atlas of the World - Math Journal - List of students’ names

**Student Activities**

- Group Lesson - Group Discussion - Making a Map - Painting a Map - Coloring a Map - Matching Country on Control Map - Matching Country with Flags - Matching Landmarks with Countries - Writing an Analyzing paragraph - Math Connection

**Learning Style Focus**

This lesson is designed with different activities to serve all learning styles. Students are allowed to choose the activities that suit their interest and help them learn best. However, all students are asked to take on the challenge of writing a research paragraph even if he/she is not a producer. Students who are producers are provided with resources to take them off to the level of as much writing as they want to do.

My experience teaching in a Montessori classroom in the past three years shows that the writing element comes out so much more easily and naturally for students who are not Producers after they are engaged in all the activities of the lessons. Their brain is front-loaded with information and they have numerous opportunities to interact and perform. Therefore, it is less challenging for these students to produce a five-sentence paragraph.
Instructional Strategies

1. Teacher will begin lesson by gathering a group of eight students sitting on the floor around a cotton rug that has wooden puzzle maps of the Earth and of Africa. Teacher starts the lesson by asking students three questions such as: “Can you name all the continents that we have ‘traveled’ to from last year?” “What is the name of the continent that we are living on?” “What country would you like to visit if you were to be invited to travel to Africa?”

2. Teacher writes down the answers of different countries from students on a small lap board. Teacher then makes a K-W-L chart of what students know, what they want to learn, and leaves space for what they learned after the lesson is done.

3. Teacher models how to move a country from the wooden puzzle to match with the name of that country on the paper map. As teacher models this, she/he can reveal some interesting information about Africa to capture students’ interest and engage them in the activity.

4. Teacher tells students to each choose five countries to match on the puzzle and take turn work with group mates. Teacher asks students to say the names of the countries as they are matching them so all students in the group can benefit and familiarize themselves with names of different countries in Africa.

5. Teacher explains the goal of the lesson is for students to learn and position at least five countries in Africa. Student can choose the smallest country, the largest one, the ones that they have heard about, or have heard from family members or people they know who have traveled there. Teacher continues to repeat the lesson three times to present to all students in class.

6. Teacher presents different choices of making the African map to students. The tone of voice when explaining the activities is very important. Students need to feel motivated, excited, and clear on what to do so they can choose one activity that fits their learning style.

7. Performer and Relating/Inspiring students will choose to work in pairs or in a small group to match the wooden puzzle pieces with the corresponding flag of the country. These two learning styles like this activity and if they are allowed to get a little competitive, after working, playing and discussing they will memorize the majority of the names of the countries as well as flags. They will be able to tell the difference between the patterns and colors of the flags. They can list the countries in alphabetical order and by size.

8. Inventor and Thinking/Creating students will choose to paint the map using water color and paintbrushes.
9. Producers will trace the wooden puzzle pieces on colored construction paper and use a long push-pin to poke the map pieces and glue them on blue bulletin paper.

10. In the next sitting, teacher presents the landmarks using the the Three-Period Lesson to three different groups just like the first lesson that introduced the geographical map of Africa.

11. Teacher shows students the Continent Research Guide and the Africa Fact Sheet. Students can do choral reading or independent reading based on each student’s reading level, to collect data to answer the questions on the research guide. Teacher models how to form a paragraph after students gather all the answers for the questions. Teacher reminds students of the “sandwich model” when writing their research.

12. Students of all learning styles are expected to write a paragraph. Those who are not Producers will write a paragraph of three or four sentences. Producers will write a longer piece.

13. Teacher introduces a computerized game called The World Geography Challenge where students are presented with a map of Africa. The countries are drawn on the map but there are no names. The game asks the student to find a country, for example Somalia. The student moves the mouse to the country they think is Somalia and click the mouse. The computer tells the student of the answer is correct. The game has 10 questions, and then the student has the option to play again and try to find another 10 countries. Students can use resources such as a globe when they play the game, this helps reinforce the geographical position of the countries of Africa.

14. Teacher models word problems using mathematical concepts such as multiplication, addition, subtraction and division with data related to the continent of Africa. The word problem can be introduced after the first lesson is given. For example, there are eight students in a group and the wooden puzzle map of Africa has 53 pieces. In order to play the game fairly, how many pieces should each student receive?

Work Cited

http://www.geographyzone.com/
Study Unit: Africa  
SUBJECT: POETRY & ANIMAL RESEARCH through ARTS  
Lesson 2: African Animals

<table>
<thead>
<tr>
<th>Curriculum Area &amp; Grade Level</th>
<th>Assessment(s)</th>
</tr>
</thead>
</table>
| Arts, Science, Language Arts - 2nd & 3rd Grade | - Drawing African animals using basic shapes, negative/positive space concept, and colored pencil coloring technique  
- Painting pictures of animals  
- Group Discussion  
- Acrostic Poem  
- Animal research report |

<table>
<thead>
<tr>
<th>CA Content Standard(s)</th>
<th>Multicultural Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Compare and contrast the differences between animals of African and America</td>
</tr>
</tbody>
</table>

Materials  

Student Activities  
Group Lesson - Group Discussion - Freely Designing a Pictures Using Basic Shapes - Drawing an Animal of Choice among Five Animals of Africa using Basic Shapes and/or white chalk on black construction paper or black crayon on white construction paper - Paint Pictures of Animals - Write Animal Research - Write Acrostic Poem - Math Connection

Learning Style Focus  
This lesson is designed for a week. There are many bridging lessons so teachers are asked to be flexible and change the order to make the most sense for each classroom. In this lesson plan, the art component is introduced to the students first as a lesson in colored pencil technique, in shapes, and then perspective. The writing component is added afterward. The teacher will find that motivates and ignites interest in all learning styles if Art is introduced first before writing.
Instructional Strategies

1. Teacher gathers a group of eight students to introduce the animals of Africa using pre-cut three part cards of the animals. Teacher models the pronunciation of animals. Students take turn naming the animals. (10 minutes)

2. Teacher explains that students will start a project where they use different art media to illustrate acrostic poems and animal research reports for the animals of Africa.

3. Teacher reads the first five pages from the book “How Artists Use Shapes in Painting” and then does a picture walk through the book. Teacher asks students to imagine they are using the basic shapes of the Metal Insets Material (see picture) to create a painting of their own, and to imagine what their painting would look like. Teacher reminds students to stretch their imagination and tells them “your painting could be however and whatever you would like it to represent”. Teacher uses the teachable moment to review naming basic shapes to make a connection with Geometry (25 minutes)

4. Teacher repeats lessons for all three groups. Teacher allows students to take time with their creativity because this bridging lesson helps get students’ minds ready for designing their own animal painting using basic shapes during the next lesson. Students paint their design and use oil pastel for the background. Teacher reminds students to use the different techniques such as colored pencils (burnishing, stippling, and hatching) that they have learned, and apply these techniques while using pastel. Teacher makes use of all teachable moments to provide students with academic vocabulary.

5. Teacher instructs students to choose an animal from among elephant, lion, cheetah, giraffe, or ostrich and use basic shapes from Metal Inset to draw their animal of choice. Teacher tells students to close their eyes and imagine what an ostrich’s body looks like. Would you use an oval or an ellipsoid to draw the body of the ostrich? Teacher ignites students’ imagination by asking questions reiterating how the shapes can be used to provide baby step to the task. Students sketch their own animal, using oil pastel to burnish the animals. This lesson can be done outside to stimulate students’ imagination. Let the fresh air, the breezes, and trees help the young artists to create magic!

6. Teacher reads the first five pages of book “Perspectives” and does a picture walk through the rest of the book. Students use concept of perspective to draw the background for their African animal sketch. Students then paint their pictures. Teacher repeats lessons for all three groups (25 minutes)

7. Students start their research report by making K-W-L chart. Students list what they already know about the animal, what they want to know and what they learned after reading the animal card. Students combine their list of questions with the questions from the Animal Research Guide to construct a 5-sentence paragraph for their reports. (30 minutes)
8. Teacher gathers a group of 12 students. Teacher gives information charts on six basic types of poems (Acrostic, Cinquain, Free Verse, Haiku, Limerick, and Quatrain). Students work in pairs discussing what needs to be done “first”, “next”, and “finally” as described in the chart for poets to write different kinds of poems. (15 minutes). Then teacher distributes rings of sample poems; students read with their partner and choose a poem to share with the whole group (5 minutes). Teacher then invites students to do a round-robin share out. (10 minutes).

9. Teacher explains to students that the above activity was to help them get acquainted with different fun ways to write poems, but students will start by writing an acrostic poem for Zebra, Giraffe, or Elephant. Teacher has students choose an animal from among the three. Teacher repeats the lesson for all students. Teacher then re-groups students in three groups: group 1-Zebra Acrostic poem, group 2-Giraffe, and group 3-Elephant. Teacher uses the book Draw-Write-Now to teach a directed drawing lesson to each of the three groups based on the animal students chose for their Acrostic poems.

10. Teacher gathers the whole class and uses grammar chart to review with students what a verb/adjective/noun/adverb is. Teacher facilitates students to brainstorm a chart with these parts of speech with their symbols on the chart (a noun is symbolized by a black triangle, an adjective by a dark blue triangle, verb by a red circle, and an adverb by an orange circle--these are symbols used in a Montessori classroom). Students provide teacher with a word about one the animals and let teacher know the part of speech of the word. Teacher writes the word down in corresponding column (see pic). (25 minutes)

11. Students work independently using resources: parts of speech word list (hanging on the wall in classroom), books about animals they chose, dictionary, and thesaurus to complete their Acrostic poems. (20 minutes)

12. Teacher uses editing chart to meet students in group of 12 to teach them how to do peer editing before sending them out in pairs to practice this skill. Teacher facilitates and helps students while they do this. (10 minutes)

13. Students share their poems. This is the fun part!!

14. While the Producers will want to do both the animal research and Acrostic poem, teacher will find that the Thinking/Creating, Invent, and Relating/Inspiring students find Acrostic poems their forté.
Work Cited


### Study Unit: Africa

**SUBJECT:** SCIENCE/AFRICA BIOME MAP

**Lesson 3: Elements of a Biome/Africa Biome**

<table>
<thead>
<tr>
<th><strong>Curriculum Area &amp; Grade Level:</strong></th>
<th><strong>Assessment(s)</strong></th>
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<tbody>
<tr>
<td>Cultural Studies - 2nd &amp; 3rd Grade</td>
<td>• Using K-W-L Chart in Group Lesson</td>
</tr>
<tr>
<td></td>
<td>• Biome Guessing Game</td>
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<tr>
<td></td>
<td>• Biome Analyzing Paragraph</td>
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<tr>
<td></td>
<td>• Painting a Biome</td>
</tr>
<tr>
<td></td>
<td>• Post assessment: List of questions “What do you know about the desert?”</td>
</tr>
<tr>
<td></td>
<td>• “What do you know about the grasslands?”</td>
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</tbody>
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<thead>
<tr>
<th><strong>Common Core Standard(s)</strong></th>
<th><strong>Multicultural Objectives</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.corestandards.org/the-standards">http://www.corestandards.org/the-standards</a></td>
<td>• Compare and Contrast Biome of Africa with those of America</td>
</tr>
<tr>
<td></td>
<td>• Compare and Contrast basic characteristics of climate between Africa and America</td>
</tr>
</tbody>
</table>

### Materials

- Glue sticks
- Crayons
- Sharpie
- Pencils
- Paint brushes (small, medium, large) and paint pallet
- Stencil of Shape of Africa
- White construction paper
- Waseca Biome of the World Mat
- Pre-laminated cards of definitions of different biomes of the world
- Wooden puzzle map of Africa
- Paper puzzle map of Africa both mute one and one with control of error
- Picture of Sandwich Paragraph
- Editing Guide
- Scholastic books of Desert/ (check on Scholastic website)
- Children’s Atlas of the World
- Math Journal

### Student Activities

- Group Lesson
- Group Discussion
- Tracing a Biome Map
- Outlining different biome regions base on assigned colored keys
- Painting a Map
- Writing an Analyzing paragraph
- Math Connection

### Learning Style Focus

This lesson is designed for all learning styles but teacher needs to be flexible and feels ready to modify certain activities and grouping methods so all learning styles feel engaged and interested. This lesson takes approximately 3 hours.
Instructional Strategies

1. Teacher chooses a sunny warm morning and gathers a group of eight students outside in an area of the school yard with grass and trees. Teacher asks students to take a two-minute walk around the ‘backyard biome’. Teacher asks students what they see and if they feel heat/warmth from the sun. Teacher guides discussion so students learn all the elements of a biome (soil, plants, animals, energy, and air). Teacher repeats lesson for all groups.

2. Teacher unrolls the Waseca World Biome Mat. Teacher uses K-W-L chart to record what students already know about different biomes around the world and what they want to learn about this topic.

3. Teacher refers to map of the Earth, reviews the seven continents, points out where the equator, Tropic of Cancer, and Tropic of Capricorn are. Teacher draws students’ attention to Africa and asks questions: “Where on the African continent does the Equator pass?” “What do you think the weather is like in Africa since a lot of the land mass is so close to the equator?” “What are the biomes of Africa?” “What is the primary biome on this continent?” “Imagine you plan a trip to Africa for a research project, what would you bring to help you cope with the weather? What plants and animals will you encounter?”

4. Teacher facilitates students’ discussion of the above questions in groups of three. Teacher lets students share. Teacher gathers group of 8 and introduces lesson “Parts of a Biome” using Waseca three-part card materials. (See picture) Teacher repeats lesson for all groups.

5. Teacher introduces an activity on tracing and outlining the different biomes in Africa using an African biographical map stencil (pre-cut using cardboard). It is best to have this lesson in a group of five so teacher has sufficient time to interact with all students and engage them in learning the academic vocabulary acquired in item #4 above.


7. Students create their own symbols for different biomes of Africa while staying consistent with the pre-assigned colors from the fabric biome map. Students use the sandwich paragraph model to write a five-sentence analysis paragraph on notebook paper and glue it to the bottom of their painted map.
8. Producers will love this lesson because of the balance of painting and writing. Inventor and Thinking/Creating students will choose to paint the map using water colors or make a map out of clay. I normally do not encourage clay for this activity since it takes much longer. I would rather use water color and group students in heterogeneous groups of different learning styles; this way the Producers can work independently while I interact and engage with the Inventors and/or Performers.

9. Students use editing chart to self-edit or peer-edit their paragraphs. Students play the guessing game “What Biome Am I?” Students get in groups of three and use the Biome Definition information cards to describe a random biome and have their group mates guess the name of the biomes. Teacher will notice the Performers love this game!

Work Cited

http://www.wasecabiomes.org/

Life in the Desert by Gerald Legg (Scholastic)
<table>
<thead>
<tr>
<th>Curriculum Area &amp; Grade Level: Cultural Studies - 2nd &amp; 3rd Grade</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Making a book to learn the differences among grasslands, savannah, and pampas</td>
</tr>
<tr>
<td></td>
<td>• Using provided word cards that are categorized based on their parts of speech and wooden puppet animals write stories about the savannah biome of Africa</td>
</tr>
<tr>
<td></td>
<td>• Creating 3-D objects for the biome to turn stories into plays</td>
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<td>• Presenting plays to the whole class</td>
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<table>
<thead>
<tr>
<th>Common Core Standard(s)</th>
<th>Multicultural Objectives</th>
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</thead>
<tbody>
<tr>
<td><a href="http://www.corestandards.org/the-standards">http://www.corestandards.org/the-standards</a></td>
<td>• Identify the difference between American grassland biome and African savannah Biome</td>
</tr>
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<td></td>
<td>• Compare and Contrast the differences among the animals of these two biomes</td>
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<tr>
<th>Materials</th>
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<tbody>
<tr>
<td>General: Colored pencils/crayons - Glue sticks - Pencils - Scissors - Rulers - Scrap paper (plain and color construction) - Ink pad</td>
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<tr>
<th>Student Activities</th>
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<tbody>
<tr>
<td>Group Lesson - Dramatic Enactment and Sequencing - Storytelling - Tracks of Savannah Animals - Grammar Sentence and Story Construction - Math Connection</td>
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</tr>
</tbody>
</table>
**Instructional Strategies**

1. Teacher introduces concept “A savannah is a grassland habitat” by reading African Savannah by Donald Silver. Teacher talks to students about plants on the Savannah and introduces grasses that are ‘perennials’ or ‘annuals’. Students read provided paragraph on page 65 of Evan Moor book about Habitats and do a matching activity.

2. Teacher brings a box that contains the African Savannah Theatre to a table and gathers a group of eight students for the Dramatic and Sequencing Presentation. Teacher tells students that there is a story inside about the grasslands of Africa. Teacher takes out the scenery fabric board. Teacher discusses with students:
   - The grasslands get very little rain, not enough for trees to grow but enough for grasses.
   - Grasslands in Africa are tropical because they are near the equator. Tropical grasslands are called savannah.
   - Some animals migrate for miles to find water at rivers and watering holes.

3. Teacher takes out wooden animals and identifies each one, puts picture cards in sequential order, and refers to text cards while telling the story “The African Savannah”. Teacher invites each student to act out the story with the animals as the story is being read. Students may refer to the pictures and reenact the story on their own.

4. Teacher introduces to students that the Masai are an indigenous people who live in the grasslands of Africa. Teacher tells students to imagine one morning the Masai were out at the waterhole and found the tracks of the animals that had been there. What would the tracks look like, and what story would they tell?
   - Teacher provides students a copy of the waterhole map that corresponds to the fabric grassland scenery. Teacher tells students this is the bird’s eye view of the scene.
   - Teacher asks students to look at the chart provided and match each set of animal tracks with the animal they belong to. Teacher asks students questions: “Who came to the waterhole first in the story that they performed?” Students stamp the track using wooden stamps and ink pad to show how the animal came to the watering hole. “What happened next?” “What did the animals do?”
   - Students complete their map of animal tracks. Students discuss who was the bravest animal and if some of them waited until everyone had taken a drink and left. Did some animals come in herds/groups?
   - Teacher ends this activity by teaching students how to use collective nouns when talking about animals such as “a herd of elephants” or “a pride of lions”. Teacher pulls out Montessori material called the Grammar Box and teaches a collective noun lesson from box #2. See the attached Collective Noun card.
5. Teacher lets students know that like other Waseca materials, the African Savannah Mat comes with grammar cards for all the parts of speech.
   - Teacher takes out noun cards and matches them to the things and places they name. After matching noun cards, teacher takes out article cards and reviews with students the difference between a/an and the (indefinite and definite articles). Teacher models how to match each noun with an appropriate article.
   - Teacher takes out adjective cards, reads them, and asks students if they describe any of the nouns. Have students place the adjectives with the matching article and noun to make a noun phrase. Students are asked to experiment with the placement to see if it makes sense.
   - Teacher takes out verb cards and has students perform an action like walking, kicking, or jumping. Teacher reads a verb and asks students who or what performed the action the story “The African Savannah”. Teacher asks students to find a noun to match the verb and add an article and adjective to make a sentence.
   - Teacher chooses an animal and places the animal in various positions in relation to the waterhole on the scene (for example in, at, in front of, behind). Teacher tells students these words that tell you the position of the animal are called prepositions. Students make a sentence such as “The cub is in the waterhole.” Students change the preposition and change the position of the animal to match. Students choose another action verb and experiment with other prepositions.
   - Teacher takes out the adverb cards. Teacher models building a sentence beginning with the action word, adding a subject—who or what performed the action. Next, teacher adds an adverb—how, when, or where was the action performed?
   - Teacher takes out the first picture card from the set of sequential cards of the story. Teacher asks who was drinking at the waterhole. Teacher makes a list using the conjunction “and”. Teacher reads the sentence and notes to students how many times the conjunction “and” was used. Teacher shows students how all of the “and” conjunction cards except the last one can be replaced by a comma. Teacher guides students to experiment with joining phrases, verbs, and whole sentences with conjunctions. Students are asked to practice this activity making their own sentences to describe the story or some imaginative adaptations of the story and use grammar symbols to symbolize the sentences.

6. After students have practiced reenacting the story, studied the parts of speech, and joined phrases with conjunctions and verbs to make sentences, teacher invites students to write their own stories about the animals of the African savannah. Students’ imaginations are stimulated by beautiful wooden animal puppets and fabric scenery; teacher should prepare to be surprised by the stories that the children come up with when they are allowed to be freely creative using simple materials such as paper, scissors, string, and cardboard!

7. Producers can make a “What Am I” book to reinforce the differences among grasslands, savannah, and pampas.
Work Cited

- Grasslands by Rose Pipes (Raintree Steck-Vaugh, 1998)
- Prairie by Dorothy Henshaw Patent (Holiday House, 1996)
- African Savannah by Donald Silver (Learning Triangle Press, 1997)
- Habitats Science Works for Kids Grade 1-3 (Evan Moor Corp)
### N2

**2 white cards reading:**

Collective noun | Plural noun
---|---
Pod | Whales
School | Fish
Herd | Elephants
Pride | Lions
Batch | Cookies
Cache | Jewels
String | Pearls
Flock | Sheep
Troupe | Actors
Bunch | Bananas
Crowd | People
Pack | Cars
Kindle | Kittens
Litter | Puppies
Colony | Ants

**30 gray cards reading:**

Collective noun | Plural noun
---|---
Pod | Whales
School | Fish
Herd | Elephants
Pride | Lions
Batch | Cookies
Cache | Jewels
String | Pearls
Flock | Sheep
Troupe | Actors
Bunch | Bananas
Crowd | People
Pack | Cars
Kindle | Kittens
Litter | Puppies
Colony | Ants
### Curriculum Area & Grade Level:

**History and Social Science - 2nd & 3rd Grade**

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### Assessment(s)

- K-W-L Chart of basic Ancient Egypt Info
- Writing the current year, students’ date of birth using Ancient Egypt Number Chart
- Venn Diagram comparing fundamental needs of Ancient Egyptians and students’ daily life
- Making a Personal Pyramid

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### Common Core Standard(s)

- [http://www.corestandards.org/the-standards](http://www.corestandards.org/the-standards)
  - Earth is made of materials that have distinct properties and provide resources for human activities
  - Differentiate between things that happened long ago and things that happened yesterday
  - Describe the physical and human geography and use maps, tables graphs, photographs, and charts to organize information about people, places, and environments in a spatial context

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### Multicultural Objectives

- Students compare and contrast the fundamental needs of modern human beings with the Ancient Egyptians.

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### Materials

**General:**
- Elmer’s Glue
- Construction paper
- Tempura paint
- Ruler
- Scissors
- Scrap paper
- Markers
- Colored pencils
- Watercolors
- Acrylic paints
- Permanent markers
- Heavy card stock
- Clear acrylic spray
- Binding machine

**Provided Resources:**
- margarine tubs or cups, spoons,

### Student Activities

- Front-loading Info Lesson
- Completing Venn Diagram Handout
- Making a Pyramid out of cardboard/construction paper
- Drafting the writing for each pyramid face
- Peer Editing
- Presenting Pyramid to small group then whole class.

### Learning Style Focus

Because the nature of this lesson, performing, inventing, as well as thinking/creating students are attracted to its activities. However, the goal is to expose all students to performing in front of a big group so teacher is asked to help students who are not performers to take baby step to achieve this goal.
**Instructional Strategies**

1. Teacher starts a group lesson with eight to 12 students by using a K-W-L chart. Students brainstorm what they know about Ancient Egypt while Teacher records the information. Students then share what they would like to know about Ancient Egypt.

2. Teacher lays out the pre-made cards/Ancient Egypt nomenclatures. Students take turn reading the information cards and matching each card with its corresponding picture. Then students play a guessing game in pairs, one student reads the information while the other student matches it with the right picture.

3. Students choose a card to research. Students come up with a list of five questions about the particular concept from the picture they selected. Teacher groups students based on the pictures they chose, then uses the history research guide questions and the students’ questions to support them in writing their research paragraph. Teacher provides numerous books and other resources such as an encyclopedia, dictionary, and charts to help students write their paragraph, self-edit it, and then peer-edit in pairs.

4. Students share their research. Students then watch a National Geographic video called Ancient Egypt. Teacher introduces the Ancient Egypt Number Chart. Students then write their date of birth using Egyptian numbers.

5. Teacher hands out the Venn-Diagram and asks students to brainstorm in groups of three on the differences between the fundamental needs of Ancient Egyptian and those of modern humans. For example, what did the Egyptian wear? How did they cure diseases? How did they travel? Why did they do mummification?

6. The next day, teacher begins a discussion with the whole class about pyramids and their importance to the Ancient Egyptian. Teacher lets students know that they are going to make a “Personal Pyramid”.

7. Teacher downloads the instructions for this project here [http://www.dia.org/education/egypt%2Dteachers/]
8. This project takes about a week to finish making a pyramid and rough draft for the writing. Students then will take another two days to self-edit/peer-edit their writing and practice their presentation.

9. Students present their personal pyramid to their classmates.

10. Students use the “Personal Pyramid Evaluation” that is included with this lesson plan to evaluate their peer’s project. It is important that teachers model the appropriate language and ways to make comments before students start the evaluation. Students should be trained to be critical in a positive way. I teach the students to use “Three Glows and One Grow.”

Work Cited


### Curriculum Area & Grade Level:

**History and Social Science - 2nd & 3rd Grade**

### Assessment(s)

- K-W-L Chart of “What is History/Recorded History? What is Archeology?”
- Differentiating pictograms, ideograms, and oral stories—tell an oral story
- Drawing a Hieroglyphic Message on Corn Husk
- Making a Cuneiform Tablet out of Clay
- Writing an expository paragraph
- Deciphering and Responding to a Code/Message

### Common Core Standard(s)


- Earth is made of materials that have distinct properties and provide resources for human activities
- Differentiate between things that happened long ago and things that happened yesterday
- Describe the physical and human geography and use maps, tables, graphs, photographs, and charts to organize information about people, places, and environments in a spatial context

### Multicultural Objectives

- Students compare and contrast the fundamental needs of modern human beings with the Ancient Egyptians.
- Students learn about the different materials the ancient people used to make tools and written records.
- Students are exposed to the nomad lifestyle of the Egyptians along the Nile River.

### Materials

- **General:** Ruler - Scissors - Markers - Colored pencils - Permanent markers - Colored Flair Pens
- **Provided Resources:** Pre-cut cardboard pieces - Gray Clay - Corn Husk - Manila folder – Handouts

### Student Activities

- Front-loading Info Lesson - Putting on and Presenting a Skit - Making a Cuneiform - Drawing a corn husk Hieroglyph message - Weighing Cuneiform tablets - Comparing Weight of different materials used for ancient writing - Writing an expository paragraph - Peer Editing

### Learning Style Focus

Because the nature of this lesson, performing, inventing, as well as thinking/creating students are attracted to its activities. This lesson lasts about 9 hours and should be divided into three separate sittings/sub lessons.
**Instructional Strategies**

1. Teacher starts the lesson by inviting students to imagine they are living in an ancient village near the Nile River. People in this village cook with clay pots, children play with a little clay model of an ox hitched to a cart, and men hunt with metal blades. One day a modern scientist came along, discovered the deserted ancient village, and excavated these artifacts from underground. The modern scientist learned that people used to live in ancient Egyptian village on this spot. The scientist had discovered the history of this particular village, and the study of human history is called Archeology.

2. Teacher tells the story of the time line of writing using the information attached to this lesson plan “The Time Line of Writing”. When teacher finishes telling the story, read students the book “The History of the Computer”.

3. On the following day, teacher shows students the Hieroglyph Alphabet that was made out of papyrus paper. Teacher shows students a picture of the papyrus plant. Teacher hands out a folder that has information for students to do research on Hieroglyphics and Cuneiform. See package in the resource section of this lesson plan.

4. Students get into a group of four with a parent helper, a teacher, or teacher assistant to facilitate an activity. Students will listen to the story “Hieroglyph and Cuneiform" read to them by the adult facilitator. The adult also reads the story “Marks in Mud” to students. Students then look at the map of Egypt and Sumer and the picture of “Carving Hieroglyphs”. Students then do a little skit where two of them pretend to be the Sumerians and the others are Egyptians. The Sumerians come down to the Nile River to trade animal skins for clay pots. Then the Egyptians accused the Sumerians of not giving them enough animal skin for the clay pots that they took. There nothing to prove how many clay pots were given and how much animal skin was left. They got into a dispute and they decided that they need a method to keep track of their trading--that is how writing began!

5. Teacher hands out the Cuneiform and Hieroglyph Chart to the students. Students then use the handout “Got the Message” to write their own messages in Cuneiform or Hieroglyph for their peers to decipher. Students then share with the whole class. Teacher provides guidelines for appropriate language in class for this activity because male students tend to get out of control and silly.

6. The following day, teacher starts a discussion with the whole class about the importance of writing and asks students to imagine the world without writing. Teacher explains that students are going to use grayish-white clay to make a cuneiform table and then weigh the clay to see how heavy each tablet is. Teacher invites students to make two tablets, one to take home and the other to keep at school so teacher can use it to leave outside for a weathering experiment.
7. Teacher also sets up another table where students will use markers or flair pens of different colors to draw student’s first and last names using Hieroglyphs on corn husks (corn husks have a texture that is identical with papyrus paper). Teacher also has two extra samples made for weathering experiment. Teacher leaves the cuneiform tablets and corn husks outside for about a week and asks students to observe which one get damaged faster. Teacher has students write an expository paragraph about how they made their Cuneiform tablet and papyrus writing corn husk. Students then compare and contrast the longevity and weight of the two materials.

Work Cited


Study Unit: Africa  
SUBJECT: CULTURAL GEOGRAPHY/SCIENCE/HISTORY/ARTS  
Lesson 7: African Country Project

<table>
<thead>
<tr>
<th>Curriculum Area &amp; Grade Level:</th>
<th>Assessment(s)</th>
</tr>
</thead>
</table>
| Cultural Studies - 2nd & 3rd Grade | • Researching on a chosen country through books and websites  
• Planning project with teacher in small group  
• Gathering supplies for project  
• Build a Diorama of animals, plants, people, and art artifact of chosen country |

<table>
<thead>
<tr>
<th>Common Core Standard(s)</th>
<th>Multicultural Objectives</th>
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| [http://www.corestandards.org/the-standards](http://www.corestandards.org/the-standards) | • Compare and Contrast the fundamental needs of life of people in Africa vs. people in the U.S  
• Identify the connections and differences in arts and cultural studies between the African people and people of the U.S |

**Materials**

**General:** Colored pencils/crayons - Glue sticks - Pencils - Scissors - Rulers - Scrap paper (plain and color construction)  
**Provided Resources:** Clay - Model Magic - Shoe box - Pipe Cleaner - Fake/Real grass, leaves - Soil - Twigs - Rocks - Pebbles - Plastic Animals  
**Books:** *Hands-On Africa* by Yvonne Y. Merrill, *Project Book Vol. 1* by Scene-A-Rama - A Division of Woodland Scenics--The World Leader in Model Scenery  
**Websites:**  
[www.scenarama.com](http://www.scenarama.com)  
[www.hands-on.com](http://www.hands-on.com)  
[http://thebiomemproject.blogspot.com/](http://thebiomemproject.blogspot.com/)  
[www.voicethread](http://www.voicethread)  

**Student Activities**

**Group Lesson** - Group Discussion - Writing a Researching Paragraph of Africa as a Continent  
Learning Style Focus

This lesson is the capstone project for the entire Thematic Unit on Africa where all of the concepts from the earlier lessons are integrated. The project is designed to attract all learning styles because of all the elements and steps that go into it. The students are allowed to be as creative as possible using a computer, online website, various types of art media, and numerous creative writing pieces such as researching and collecting data from books, websites as well as hands-on materials and encyclopedia.

Instructional Strategies

1. Students choose a country from West Africa, East and Central Africa, or Southern Africa to start project. Currently the classroom resources do not exist to support projects for countries of Northern Africa.

2. Teacher groups students based on their choices of country. Before teacher starts to distribute resources, there should be three groups of researchers: one group is researching on country/countries of West Africa and the other two groups for East and Central Africa and Southern Africa. Teacher can make this activity fun by having students randomly choose number out of a hat (ex. #1 is for West, #2 is for East and Central, and #3 is for Southern Africa).

3. Students create their project folders. The first page in this folder is the “Africa Project List” and the second page is “Africa Biomes Research Project”. These two documents are included in the resource collection for this lesson. Teacher should modify the document to fit the classroom setting, add a due date, and then sign his or her name when distributing this document to students. Depending on the students’ reading and writing level, teacher will decide to assign this project to 2nd and 3rd graders, or only to 3rd graders.

4. Students who are researching countries in West Africa receive copies of page 10 and 11 of Hands-On Africa book. Pages 28 and 29 are for students researching countries in Central and East Africa, and pages 52 and 53 are for Southern Africa. Based on these handouts, each student will choose an art activity to include in their diorama. Teacher then makes copy of the art project guidelines from this book so students can start gathering materials for their art activities.

5. Country research: Teacher checks out books on different countries from the three regions for students. Students use Montessori Country Research Guide that has a list of questions to help student write a research report on their country of choice.

6. Students then review the lesson about the Pygmies, the !Kung, and the Masai people of Africa. Students write a research report of the indigenous people who live in the country they chose. Students use the Fundamental Needs of Humans chart as a guideline.
7. Students review lesson about Animals of Africa and use animal research cards to choose two different animals that live in the country they are researching. Students write two animal research reports, making sure to include clay/plastic/paper models of these animals in their diorama.

8. Students review lesson about Plants of Africa and write a research report on one of the plants that grow in the chosen country using Montessori Plant Research Guide. Students make sure they include a clay/plastic/paper model for this plant in their diorama.

9. Students bring research folder home and choose a shoe box to start assembling the elements of the diorama. Students need to add clay models for the people and art activity that they chose in step #4 of this lesson plan. Students use their creativity to work on the diorama. Students can use paint, soil, twigs, pebbles, cacti, and plants to liven up the miniature biome of their favorite country of Africa.

10. Students bring their diorama to school and prepare for a presentation in a small group. Students use index cards to write the main ideas that they present. Each student is allowed to use eight minutes for the presentation plus a four-minute question and answer period.

11. Students take a picture of their diorama and work one-on-one with a parent helper or teacher assistant to upload this picture on “voicethread” website and start recording their presentation.

12. Students share their recorded presentation with classmates and family.

**Work Cited**

www.voicethread

http://voicethread4education.wikispaces.com/

http://thebiomemproject.blogspot.com/


Chapter 5 - Recommendations

In this project I integrated the concept of learning styles into a thematic unit about Africa designed to improve the ability of 2nd and 3rd grade students to read and write. As I began the project, the questions that guided me were whether specific materials in the Montessori learning environment could be matched with particular learning styles as defined by Willis and Hodson (1998), and which specific curricular elements best support the needs of each learning style. The resulting lesson plans form an interesting thematic unit with elements that appeal to all learning styles while providing content required by both the Montessori education system and the State of California.

Lessons Learned

Prior to beginning this project I had some limited contact with learning styles through the Willis and Hodson book and through reviewing the LSI results from some of my students. The literature review taught me that learning styles is a much larger and more complex subject than I had previously imagined, indeed a subject larger than Willis & Hodson (1998) or any single book could encompass. I learned there are many definitions of learning styles, most of the literature was written by only a handful of researchers who spend a great deal of time criticizing and defending one another, and the concept of learning styles has become a big business with many books and assessment instruments available online.

When I began the project I imagined using specific activities or materials to create lessons that would be the best fit for one particular learning style. In an individualized learning environment such as home schooling it may be possible to design lessons that
are truly customized to the learning style preference of one child, however I learned that in the Charter Montessori elementary school where I teach it is neither possible nor desirable. I have 25 children in my class and all of them – regardless of learning style – are expected to master a curriculum that meets content standards established by the State of California and the Montessori educational system.

Through creating this project I learned that the key to integrating the knowledge of learning styles into the classroom experience is not depth, but breadth. Rather than individually targeted and narrowly focused, the lessons must be sufficiently broad and inclusive that all learning styles will find something attractive and accessible. As educators, if we know the learning styles of the children in our classroom and we know the learning characteristics, ideal setting, strengths, areas for growth, and relationship conflicts typical of each style, we can proactively design curricula that pick and choose from those elements to create an inviting, exciting learning environment for the student.

**Project Implementation Plans**

I plan to implement this project in my classroom and develop similar curriculum sketches for other units throughout the school year. I also plan to conduct a presentation for my colleagues at the Charter Montessori Elementary school as several of them have expressed interest in incorporating learning styles into their lesson plans and teaching strategies.

**Educational Implications**

The educational implications of learning styles are immense, yet the concept has received comparatively little attention at the elementary level. I believe that other elementary school teachers desiring to create similar projects should first acquire a
thorough theoretical grounding in the major learning style models and select a model that is easy to administer and interpret. My experience has shown that implementation strategies work best with broad, multi-lesson thematic units where elements can be incorporated that appeal to all learning styles, albeit in different ways. In a classroom setting, the temptation to over-intervene and over-customize the lessons for particular learning styles should be avoided.

Students feel happy, safe and fulfilled at school when they have opportunities to interact with their peers and with their teacher on a daily basis. Learning styles is a tool—an “guiding star”—in support of the essential interpersonal contact that takes place in the classroom every day. Knowing my students’ learning styles helps me present lessons in ways they will find fun, interesting, creative and innovative, while as a Montessori teacher I must also be an open-minded, flexible observer to nurture the learning and the intellectual development of the students.

**Limitations**

Implementation of learning styles into the classroom experience is time-consuming and requires a high level of organizational skill from the teacher to bring the lessons to life as a successful learning experience for the students. Because most of the activities are designed for students who read at or above grade level, implementation may become more difficult in classroom populations with a higher percentage of English language learners.

A significant limitation (but also an opportunity) exists in implementing this type of curriculum in a Montessori learning environment. Maria Montessori (1964) talked about the child developing from a state in which the sights and sounds of the world
appear chaotic to a more ordered condition facilitating mastery of self and environment. The Montessori classroom reflects this dichotomy; beneath the apparently calm exterior lays a creative, dynamic environment in which each child pursues his or her areas of interests within preset boundaries established by the teacher.

The Montessori teacher requires significant resources to add the layer of learning styles onto this already complex infrastructure. The curriculum would be difficult to implement with a class size greater than 25 students, a trained teacher assistant should be in the room at least half the time to help work with groups of students pursuing various lessons, and additional parent volunteers can also be very handy. Success also depends on students being interested in the project and feeling motivated to dedicate significant energy and effort to the lessons.

**Suggestions for Future Research**

Since the Montessori system and the concept of learning styles are both focused to varying degrees on individualizing the educational experience of children in creative and accessible ways, I found it surprising that in my literature review I did not uncover a single study looking at how learning styles are implemented in a Montessori learning environment.

As a long-range goal, I believe that this project could be expanded and developed into a dissertation investigating whether statistically-significant improvement in learning outcomes can be obtained with broad-stroke thematic units predesigned with elements appealing to the range of learning styles in the classroom. It would be interesting to design an experiment on how students with different learning styles absorb and retain the same learning content when presented with individualized activities that are both a good
match and a poor match for their own learning style. Kinshuk et al. (2009) did something very similar to this in a university environment, but I am not aware of any study that has attempted this type of research in a Montessori learning environment.

Experimentation with curricula in other areas such as mathematics, science, foreign language, music and art would also help validate the viability of learning styles outside the realm of literacy and social studies.

**Project Summary**

This project was a journey that began with a kernel of an idea about how the Willis and Hodson LSI – a commonly-used resource in the home schooling division of the Charter School where I work – could also add value in my Montessori classroom. The literature review in Chapter Two opened my eyes to 40 years of research on learning styles and raised questions in my mind about whether I was using the right model, the right instrumentation, and even whether the concept of learning styles itself was still valid. Based on my own experience and that of my colleagues, I pushed forward and created the methodology for the project that I documented in Chapter Three, then began planning the lessons which appear in Chapter Four.

As an educator, I know there are numerous elements involved in creating efficient best teaching practice in the classroom. The child’s learning style is one of these elements and provides a useful tool that helps me engage with my students in an accessible way. This project has exposed me to a wealth of ideas and a long history of work by researchers who have made the study of learning styles the cornerstone of their academic career. As I pursue new challenges, both in the Montessori classroom and as a graduate student, I look forward to further developing the ideas outlined in this project in
a way that will enrich the learning environment for the students it is my privilege to teach.
References


Curry, L. (1987). Integrating concepts of cognitive or learning style: A review with attention to psychometric standards. Ottawa, ON: Canadian College of Health Service Executives


Dunn, R. and Honigsfeld, A. (2006) What if young children were grouped for reading with learning style-responsive approaches? Reading Improvement, 2, 70-76


