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Graduate Studies

THE IMPACT OF THE THEORY OF MULTIPLE INTELLIGENCES AND
TEACHING STRATEGIES ON READING INSTRUCTION

A Chapter Style Capstone Seminar Paper Submitted in Partial Fulfillment of the
Requirements for the Master's Degree of Cross-Categorical Special Education

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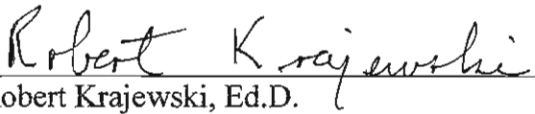
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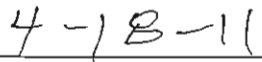
THE IMPACT OF THE THEORY OF MULTIPLE INTELLIGENCES AND
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By Chelsea J. Lamb-Vosen

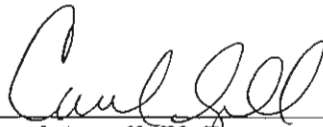
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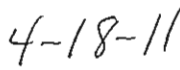
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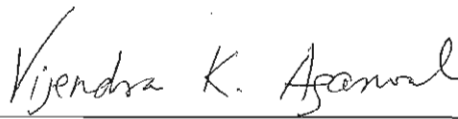
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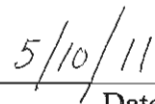
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ABSTRACT

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Reading is the cognitive process of acquiring information from written text, and all individuals acquire reading abilities differently. Howard Gardner developed the theory of multiple intelligences, focusing on content of learning and relationships between learning and specific intelligences, namely: Verbal-linguistic intelligence, Logical-mathematical intelligence, Visual-spatial intelligence, Bodily-kinesthetic intelligence, Musical intelligence, Interpersonal intelligence, Intrapersonal intelligence, and Naturalist intelligence. Several instructional programs, strategies, and techniques are discussed in terms of effective teaching practices for those students with reading difficulties. The research examined in this capstone seminar paper project will assist current and future educators with instruction involved in reading strategies to use for struggling readers.

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CHAPTER I

INTRODUCTION

Introduction

Every society recognizes that people are different. In education, that thought is taken one step further to acknowledge that everyone learns differently. This fact becomes important both inside and outside the classroom because recognizing that students learn differently and modifying curriculum and instruction to better enhance learning opportunities will inevitably assist in a student's success. Before the 1970's and 1980's researchers did not actively investigate how people, more specifically students, learn. In 1983, Howard Gardner developed a model of teaching that revolves around the differing potential each student has instilled inside of them, called the theory of Multiple Intelligences (MI theory). His theory classifies human intellectual competencies in an extraordinarily new way, with more specific criteria than the traditional choice between "verbal" or "mathematical" (Hyun, 2000). It appeals to many different kinds of minds, and involves the idea of intelligence rather than aptitude or ability. MI theory encourages educators to ask not how smart a child is, but rather in what ways are they smart (Rettig, 2005). Gardner provides a means of mapping the broad range of abilities and capabilities that humans possess by grouping their attributes into eight categories, or "intelligences": Verbal-linguistic

intelligence, Logical-mathematical intelligence, Visual-spatial intelligence, Bodily-kinesthetic intelligence, Musical intelligence, Interpersonal intelligence, Intrapersonal intelligence, and Naturalist intelligence (Armstrong, 2000). Researchers still continue studying MI theory, specifically regarding the influence it has on reading instruction in classrooms.

Reading is a complex and important process for students to understand. Educators must recognize that all individuals acquire the ability to read differently. Teaching reading, therefore, is an ability that educators need to firmly grasp to facilitate classroom success. Educators need to be aware of the difficulties involved in teaching reading. It is through the process of research that teachers are better able to discover the most effective ways to teach reading successfully.

There are multiple instructional methods, programs, and strategies appropriate to use when supporting students with classroom reading difficulties. Some strategies prove to be more effective than others, depending on the learner's characteristics. For example, some students learn to read naturally, progressing through the varying levels without much difficulty, while other students struggle with the reading process throughout their academic careers due to influences like language barriers and socioeconomic status. Furthermore, some students are diagnosed with a reading/learning disability which in turn requires more instructional time and effort from both the student and teachers in order to develop and advance their reading ability.

It is important to consider the effects of being a struggling reader. According to Sencibaugh (2007), 90% percent of students with learning disabilities demonstrate

significant difficulties learning to read. In his study, Sencibaugh goes on to state that students with learning disabilities struggle with emergent reading skills, as phonemic awareness and phonics. In his view, students are unable to analyze the context of the word(s), and cannot therefore understand and decode the text meaning. Research studies have been conducted, many emphasizing strategy instruction due to the fact that numerous students with learning disabilities need metacognitive skills. From these studies, we can conclude that further instruction is needed for these and other students in order to increase their reading capabilities.

According to Roberts, Torgesen, Boardman, and Scammacca (2008), more than one-third of fourth -grade students and over one-fourth of eighth-grade students do not read well enough to understand important concepts and acquire new knowledge from grade-level text and curriculum resources. Five areas are believed to be critical in successfully increasing struggling readers' improvement: word study, fluency, vocabulary, comprehension, and motivation.

I intend to explore the following in this capstone seminar paper project:

- multiple objectives concerning what the reading process entails
- the types of reading disabilities and characteristics of struggling readers
- multiple objectives concerning what MI theory encompasses
- a research review to understand what strategies in reading instruction are effective within the scope of MI theory
- how, as a future educator, one can be prepared to assist students with reading disabilities by incorporating MI theory.

CHAPTER II

DEFINITIONS AND KEY AUTHORS

Definitions

Accommodation: the process of reorganizing cognitive structures or schemes or creating new schemes in response to external stimuli that do not fit into any available scheme (Owens, 2001).

Analysis: the separating of any material or abstract entity into its constituent elements as a method of studying the nature of something or of determining its essential features and their relations (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/analysis>).

Applied research: the research designed to develop and test predictions and interventions that can be used directly to improve practice (Gall, Gall, and Borg, 2005).

Assessment: a participatory, iterative process that:

- provides data/information you need on your students' learning
- engages you and others in analyzing and using this data/information to

confirm and improve teaching and learning

- produces evidence that students are learning the outcomes you intended
- guides you in making educational and institutional improvements
- evaluates whether changes made improve/impact student learning, and documents the learning and your efforts (Retrieved April 9, 2011 from <http://www.uni.edu/assessment/definitionofassessment.shtml>).

At-risk: a student who meets one or more of the following criteria:

- a student who is not meeting the requirements necessary for promotion to the next grade level or graduation from high school.
- A student whose education attainment is below other students of their age or grade level.
- a student who is a potential dropout.
- a student who is failing two or more courses of study.
- a student who has been retained.
- a student who is not reading on grade level (Retrieved January 19, 2011 from http://www3.ksde.org/leaf/survey_on_education_costs/at-risk.pdf).

Autism: a complex developmental disability that typically appears during the first three years of life and is the result of a neurological disorder that affects the normal functioning of the brain, impacting development in the areas of social

interaction and communication skills. Both children and adults with autism typically show difficulties in verbal and non-verbal communication, social interactions, and leisure or play activities (Retrieved March 11, 2011 from <http://www.definitionofautism.com/>).

Baseline: the *A* condition or conditions, during which the individual's behavior is observed under natural conditions; the level of performance at the "start" of data collection. It is a "line in the sand" that can be used to measure change of important performance indicators in the future. When baseline data is compared with data collected at later points in the educational process, decisions can be made regarding whether students are making adequate progress (Gall, Gall, and Borg, 2005).

Benchmark: a standard of excellence, achievement, etc., against which similar things must be measured or judged; a developmentally appropriate standard or milestone (Wiggins and McTighe, 2005).

Category: any of several fundamental and distinct classes to which entities or concepts belong; a division within a system of classification (Retrieved January 19, 2011 from <http://www.merriam-webster.com/dictionary/category?show=0&t=1295489469>).

Categorical: without exceptions or conditions; absolute; unqualified and unconditional (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/categorical>).

Cognitive disability: a disability of significantly sub-average intellectual functioning that exists concurrently with deficits in adaptive behavior and also adversely affects educational performance (IDEA, 2004).

Communication: the process of encoding, transmitting, and decoding signals in order to exchange information and ideas between participants (Owens, 2001).

Component: a constituent part; element; ingredient (Retrieved January 19, 2011 from <http://www.merriam-webster.com/dictionary/component>).

Content: the subjects or topics covered in a book or document. Content refers to something that is to be expressed through some medium, as speech, writing, or any of various arts (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/content>).

Criteria: a standard of judgment or criticism; a rule or principle for evaluating or testing something (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/criteria>).

Curriculum: a reference to the courses strictly taught in school or to a document which includes a design others have developed and that teachers implement in classrooms (Polloway, Patton, & Serna, 2001).

Disability: the deprivation of ability or absence of competent physical, intellectual, or moral power, means, fitness, and the like; also the combination of physical or intellectual impairments of an individual and the social attitudes and environment that prevents a person from living a full, normal life or from performing his/her normal job (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/disability>).

Dyslexia: a language-based learning disability that refers to a cluster of symptoms, resulting in people having difficulties with specific language skills, particularly reading. Students with dyslexia usually experience difficulties with other language skills as spelling, writing, and pronouncing words. Dyslexia affects individuals throughout their lives; however, its impact can change at different stages in a person's life. It is referred to as a learning disability because dyslexia makes it more difficult for a student to succeed academically in the typical instructional environment; and, in its more severe forms, it will qualify a student for Special Education, special accommodations, or extra support services (International Dyslexia Association, 2008).

Early intervention: a process of assessment and therapy provided to children, especially those younger than age six, to facilitate normal cognitive and emotional development and to prevent developmental disability or delay (<http://medical-dictionary.thefreedictionary.com/early+intervention>).

Educational research: the systematic collection and analysis of information (sometimes referred to as data) in order to develop valid, generalized descriptions, predictions, interventions, and explanations relating to various aspects of education (Gall, Gall, and Borg, 2005).

Effective: producing a decided, decisive, or desired result(s) or outcome(s) (Retrieved March 12, 2011 from <http://www.merriam-webster.com/dictionary/effective>).

Emotional and/or behavioral disorder: the Individuals with Disabilities Education Act (IDEA) defines a serious emotional disturbance (SED) as a condition which exhibits one or more of the following characteristics over a long period of time and to a marked degree and which adversely affects an individual's educational performance:

- an inability to learn which cannot be explained by intellectual, sensory, or health factors;
- an inability to build or maintain satisfactory interpersonal relationships with peers and teachers;

- inappropriate types of behavior or feelings under normal circumstances;
- a general pervasive mood of unhappiness or depression;
- a tendency to develop physical symptoms or fears associated with personal or school problems (IDEA, 2004).

Environment: the surroundings of, and influences on, a particular item of interest; the natural world or ecosystem; all elements over which a designer has no control and that affect a system or its inputs and outputs (Retrieved April 9, 2011 from <http://dictionary.reference.com/browse/environment>).

Extrinsic: the not forming part of or belonging to a thing; originating from or on the outside; originating outside a part and acting upon the part as a whole (Retrieved April 9, 2011 from <http://www.merriam-webster.com/dictionary/extrinsic>).

Form: a word, part of a word, or group of words forming a construction that recurs in various contexts in a language with relatively constant meaning; the shape or pattern of a word or other construction (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/form>).

Formal assessment: a procedure based on the results of standardized tests or other exams that are administered under regulated or controlled test-taking

conditions. In the process of a formal assessment, data is collected on student performance on the test or tests to determine the level of academic achievement or various other characteristics under analysis (Retrieved April 9, 2011 from <http://www.education.com/definition/formal-assessment/>).

Hidden curriculum: the unstated norms, values, and beliefs that are transmitted to students through the underlying educational structure and organization of activities (Retrieved January 19, 2011 from <http://www.education.com/definition/hidden-curriculum/&answersPage=96>).

Individuals with Disabilities Education Act (IDEA): the public law (P.L. 108-446) that requires children with disabilities to be educated in the "least restrictive environment appropriate" to meet their "unique needs" (IDEA, 2004).

Inclusion: an instructional methodology based on educating children with disabilities and without disabilities in the same classroom environment. Often called "full inclusion," this practice is encouraged by IDEA by the provision that disabled children should be educated in the least restrictive environment possible; therefore, if a disabled child can effectively learn in a regular classroom environment, he or she should study there. Proponents of inclusion generally favor newer forms of education service delivery (Retrieved April 9, 2011 from <http://www.education.com/definition/inclusion/>).

Informal assessment: a method of measuring an individual's performance by casually watching their behavior or using other informal techniques. Informal assessments are different from formal assessments such as standardized tests or graded formal presentations because the graded individual is less aware of the assessment in progress (Retrieved April 9, 2011 from <http://www.education.com/definition/informal-assessment/>)

Intelligence: the human ability to solve problems or to make something of value in one or more cultures. According to Gardner, intelligence is a biopsychological potential, or a result of that person's genetic inheritance as well as his/her psychological properties (Gardner, 1993b).

Instructional strategy: the plan and method with which education is implemented. It may incorporate lecture topics, class discussions and activities, as well as questioning strategies, games, assessments, and media; overall plans for implementing instructional goals, methods, or techniques (Retrieved April 9, 2011 from <http://www.education.com/definition/educational-strategies/>).

Intrinsic: of or relating to the fundamental nature of a thing; inherent (Retrieved March 12, 2011 from <http://www.merriam-webster.com/dictionary/intrinsic?show=0&t=1299983548>).

Language: a socially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols (Owens, 2001).

Least restrictive environment (LRE): the appropriate placement for a child with a disability that most closely approximates where the child, if not disabled, would be educated. As required by law, LRE should give special needs children as much contact with children who do not need special education as possible, including access to the general education curriculum, extracurricular activities, and any other program which non-disabled peers would be able to access (Retrieved April 9, 2011 from <http://www.education.com/definition/least-restrictive-environment-lre/>).

Method: a process by which a task is completed; also-in object-oriented languages, a subroutine or function belonging to a class or object (Retrieved April 9, 2011 from <http://www.merriam-webster.com/dictionary/method>).

MI Theory: the theory developed by Howard Gardner suggesting that intelligence based on IQ testing alone is far too limited. He proposed eight different intelligences to account for a broader range of human potential. MI Theory identifies students' abilities in other areas of intelligence and does not limit intelligence to strengths in the verbal-linguistic and logical-mathematical areas (Gardner, 1999; Gardner, 1993b).

Modification: the individualization of instruction, either in classwork or routines, tailored to the student's specific needs. A modification can also mean a change in what is being taught to or expected of the student (Retrieved January 19, 2011 from <http://www.nichey.org/EducateChildren/IEP/Pages/SpecialEducation.aspx>).

Morphology: the study of word structures and the rules that govern how phonemes are combined to make words within a language; the aspect of language concerned with rules governing change in meaning at the intraword level (Owns, 2001).

No Child Left Behind Act: a reauthorization of the Elementary and Secondary Education Act, the central federal law in pre-collegiate education. ESEA, first enacted in 1965 and last reauthorized in 1994, encompasses Title I, the federal government's flagship aid program for disadvantaged students. At its core, NCLB has several measures designed to facilitate broad gains in student achievement and to hold states and schools more accountable for student progress including:

- Annual testing
- Academic progress
- Report cards
- Teacher qualifications

- Reading First
- Funding (Retrieved April 9, 2011 from <http://www.education.com/definition/no-child-left-behind-nclb/>)

Phoneme: the smallest linguistic unit of sound that can signal a difference in meaning when modified (Owens, 2001).

Phonemic awareness: the ability to manipulate and understand sounds, as well as the relationship between sounds and words (Owens, 2001).

Phonological awareness: the consideration of phonology at a conscious level, including syllabification; sound identification, manipulation, segmentation, and blending; rhyming; and alliteration. A metalinguistic skill, phonological awareness is used to foster reading development (Owens, 2001).

Phonology: the aspect of language concerned with rules governing the structure, distribution, and sequencing of speech-sound patterns (Owens, 2001).

Placement: the assignment of students to schools or academic classes and programs according to their background, readiness, abilities, and goals (Retrieved January 19, 2011 from <http://www.nichey.org/EducateChildren/IEP/Pages/SpecialEducation.aspx>).

Pragmatics: the aspect of language concerned with language use within a communication context (Owens, 2001).

Prevent: keep from occurring; avert; hinder (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/prevent>).

Psycholinguistics: the study of psychological aspects of language, especially as they apply to the psychological processes involved in learning, processing, and using language (Owens, 2001).

Reading: the interpreting of letters or other written information; speaking aloud words or other written information (Retrieved April 9, 2011 from <http://www.merriam-webster.com/dictionary/reading>).

Reading disability: the unexpected underachievement characterized as a discrepancy between achievement and intellectual aptitude, despite adequate opportunity to learn and in the absence of sensory difficulties or cultural deprivation (Retrieved January 19, 2010 from <http://www.education.com/reference/article/reading-disabilities/>).

Reading First: the primary national reading program initiative implemented through NCLB that focuses on putting proven methods of early reading instruction in classrooms. States and districts receive support to apply scientifically based

reading research and proven instructional and assessment tools consistent with this research to ensure that all children learn to read well by the end of third grade (Retrieved April 9, 2011 from <http://www.education.com/definition/reading-first/>).

Reading instruction: a reliable, trustworthy and valid evidence indicating that when a program or set of practices is used, children can be expected to make adequate gains in reading achievement (Heilman, Blair, Rupley, 1998).

Reading process: a multi-dimensional cognitive process of decoding symbols for the purpose of deriving meaning (reading comprehension) and/or constructing meaning from written texts; complex skill requiring critical and creative thinking processes to pull together a number of interrelated sources of information. Steps that most children go through as they read are pre-reading, first reading (of fiction), re-reading, and extended reading (Retrieved April 9, 2011 from <http://www.education.com/definition/reading-process/>).

Reading tools: the objects, materials, information, research, assessment or strategies used to enhance a student's ability to read (Heilman, Blair, Rupley, 1998).

Reading strategy: a tool, method or technique used to increase vocabulary knowledge and reading comprehension ((Heilman, Blair, Rupley, 1998).

Related services: the developmental, corrective, and other supportive services that may be required to enable students with disabilities to benefit from Special Education -- specified in the Individuals with Disabilities Education Act to include speech-language pathology, audiology, psychological services, physical and occupational therapy, recreation, and transportation, among others (Retrieved January 19, 2011 from <http://www.education.com/definition/related-services-special-education/>).

Semantics: the aspect of language concerned with rules governing the meaning or content of words or grammatical units (Owens, 2001).

Sensory integration disorder: the inability of the neurological system to appropriately manage input from the senses causing an over-sensitivity or under-sensitivity to sights, sounds, tastes, smells, and/or touch (Retrieved January 19, 2011 from <http://learningdisabilities.about.com/od/su/g/sensoryintegrat.htm>).

Small group instruction: a method of teaching that includes giving students feedback based on their individual responses and planning instruction with materials and an instructional sequence that meets individual student needs (Retrieved January 19, 2011 from <http://www.readingrockets.org/article/30676>).

Socioeconomic status (SES): a relation to social classes in society; a combination of social and economic factors that are used as an indicator of household income and/or opportunity (Retrieved January 19, 2011 from <http://nationsreportcard.gov/glossary.asp#s>).

Sociolinguistics: the study of sociological influence on language learning and use, especially cultural and situational variables, including dialects, bilingualism, and parent-child interactions (Owens, 2001).

Special Education: the specially designed developmental and corrective instruction implemented to meet the unique needs of a child with a disability, including instruction conducted in the classroom, in the home, in hospitals and institutions, and in other settings as well as instruction in physical education. Special Education services also include speech-language pathology, audiology, psychological, recreation, physical and occupational therapy, and transportation services, travel training, and vocational education and refers to a range of educational and social services provided by the public school system and other educational institutions to individuals with disabilities who are between three and 21 years of age (Retrieved April 9, 2011 from <http://www.education.com/definition/related-services-special-education/>).

Specific learning disability: a disorder in one or more of the basic psychological processes involved in understanding or in using language, either spoken or

written, which may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations (Retrieved January 19, 2011 from <http://www.nichey.org/disabilities/specific/pages/ld.aspx>).

Status: the position of an individual in relation to another or others, especially in regard to social or professional standing; state or condition of affairs (Retrieved January 19, 2011 from <http://dictionary.reference.com/browse/status>).

Strategy: a plan of action intended to accomplish a specific goal (Retrieved April 9, 2011 from <http://www.merriam-webster.com/dictionary/strategy>).

Struggling reader: a person who uses much effort to enhance the capability to become an independent reader (Retrieved April 9, 2011 from http://www.mcrel.org/pdf/Instruction/REL1RR_SES-Report_Strategy.pdf).

Syntax: the study of the principles and rules for constructing sentences in a natural language; organizational rules specifying word order, sentence organization, and word relationships (Owens, 2001).

Traumatic Brain Injury (TBI): an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational

performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psycho-social behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma (IDEA, 2004).

Use: the act or practice of employing something (Retrieved January 19, 2011 from <http://www.merriam-webster.com/dictionary/use>).

Whole group instruction: a method of teaching in which a teacher presents a lesson to the whole class with little differentiation in either content coverage or assessment for any student's ability (Retrieved January 19, 2011 from <http://www.plusd.org/schools/ces/subsites/Tiffany-McIntosh/Classroom-Design/Whole-Group-Instruction/index.html>).

Key Authors

Armstrong, Thomas: Author and speaker with more than 35 years of teaching experience ranging from primary through doctoral levels. Over one million copies of his books are in print in 25 languages on issues related to learning and human development, with specific emphasis on disabilities, including

Autism, ADHD, and dyslexia. He has appeared on several national and international television and radio programs and has had articles featured in *The New York Times*, the *Washington Post*, *USA Today*, *Investor's Business Daily*, and *Good Housekeeping*. Armstrong has received awards from Educational Press Association and the National Association of Secondary School Principals (<http://www.thomasarmstrong.com/bio.php>).

Campbell, Bruce: With 30 years of experience at all educational levels. For the Marysville School District, Campbell is now a teacher of high needs youth and serves as teacher to teachers by coaching those new to the profession. He also serves as an associate professor of education for Antioch University Seattle, and as a frequent speaker at national conferences for Staff Development for Education (SDE).

Campbell, Linda: A professor of education at Antioch University Seattle, she has designed and administered teacher education programs. Specifically, she works with schools to promote the retention and achievement of Native American youth. Campbell has extensive experience at all levels of education, including public school K-12 teacher and NEA school restructuring specialist. In addition to serving as the university's project director for the Gates Foundation Early College Initiative for Native Youth, she serves as a consultant and a presenter. Moreover, she received a Gates Foundation grant in 2002 and creates college access programs for underserved students.

Gardner, Howard: The John H. and Elisabeth A. Hobbs Professor in Cognition and Education at Harvard Graduate School of Education. He is also adjunct professor of psychology at Harvard, adjunct professor of neurology at the Boston University School of Medicine, and Senior Director of Harvard Project Zero. Gardner and colleagues at Project Zero have been involved in the design of performance-based assessments; education for understanding; the use of multiple intelligences to achieve more personalized curriculum, instruction, and pedagogy; and the quality of interdisciplinary efforts in education. More recently, Gardner has directed the GoodWork Project, a large scale effort to identify individuals and institutions exemplifying good work; that is, recognizing work that is excellent in quality, socially responsible, and meaningful to its practitioners. He is also investigating the nature of trust in contemporary society and ethical dimensions entailed in the use of the new digital media. His new research undertakings encompass a study of effective collaboration among non-profit institutions in education and a study of conceptions of quality, nationally and internationally, in the contemporary era. His numerous honors include a MacArthur Prize Fellowship in 1981 and honorary degrees from 26 colleges and universities. In 2005 and again in 2008, he was selected by Foreign Policy and Prospect magazines as one of the 100 most influential public intellectuals in the world. Having authored 25 books and several hundred articles, Gardner is best known in educational communities for his MI Theory, a critique of the notion

that there exists but a single human intelligence that can be adequately assessed by standard psychometric instruments

(<http://www.howardgardner.com/bio/bio.html>,

<http://www.goodworkproject.org/>).

Lazear, David: For more than a decade Lazear has consulted and conducted hundreds of seminars and workshops for corporations, school districts, ministries and departments of education, and education service centers around the world and across the United States. People have had the opportunity to learn firsthand from a leading expert about the practical applications of the MI Theory.

Sousa, David: An international consultant in educational neuroscience and author of seven books suggesting ways that educators and parents can translate current brain research into strategies for improving learning. A member of the Cognitive Neuroscience Society, Sousa has conducted workshops in hundreds of school districts on brain research, instructional skills, and science education at the Pre-K to 12 and university levels. He has made presentations to more than 100,000 educators at national conventions of educational organizations and to regional and local school districts across the U.S., Canada, Europe, Australia, New Zealand, and Asia. Sousa is past president of the National Staff Development Council. He has received numerous awards from professional associations, school districts, and educational foundations for his

commitment to research, staff development, and science education. He recently received the Distinguished Alumni Award and an honorary doctorate from Massachusetts State College (Bridgewater), and an honorary doctorate from Gratz College in Philadelphia

<http://www.corwin.com/authorDetails.nav?contribId=505118>).

CHAPTER III

LITERATURE REVIEW

Reading Process

Armstrong (2003) opines that scientists believe language transpired from the physical movements, such as gestures, facial expressions, postures, and other gross and fine motor movements of primates and early human beings. According to Sousa (2005), people are born with an innate capacity to distinguish the distinct sounds (phonemes) of all the world's languages. However, reading is not an ability that comes naturally to people; Rather it is an active process that engages a reader with printed text.

Reading also heavily incorporates written information with the reader's prior knowledge and experiences. Problematic areas of reading include, but are not restricted to, limited vocabulary knowledge, a lack of phonological processing skills, reduced reading comprehension, and poor writing ability. Blair, Heilman, and Rupley (1994) state, "the major goal of reading instruction is to foster in students the ability to interact with and to understand printed language." For effective reading, individuals need to possess a working knowledge of encoding and decoding, vocabulary, syntax, and discourse (Eldredge, 1999).

Language Acquisition

Spoken language is an essential and necessary part of learning written language. It is important that development of spoken language is considered for us to understand the acquisition of the reading process more accurately. Bloom says that language can be divided into three major components: form, content, and use (as cited in Owens, 2001, p. 18). Form includes the components that connect sounds or symbols, namely syntax, morphology, and phonology. Syntax is defined as organizational rules that specify word, phrase, clause, and order, sentence organization, and the relationships between words, word classes, and other sentence components. Syntax does not dictate the meaning of words; however, it does dictate the word order of a sentence, thus affecting the meaning of words (Lue, 2001).

Phonology is the aspect of language concerned with the rules governing the structure, distribution, and sequencing of speech-sound patterns. Phonemes are defined as the smallest linguistic unit of sound that can signal a difference in meaning when modified and when it is combined in certain ways, creates words (Owens, 2001). Phonemic awareness is the ability to understand the abstract system of sounds and how they can be used in reading. A strong foundation and understanding of phonemic awareness is crucial for critical skill learning to read an alphabetically written language. It contains rules that govern word structure, distribution, and sequencing of speech sounds and the shapes of syllables within words. Phonics instruction teaches the relationship between phonemes of spoken language and the graphemes of written language, and how to use these relationships to read and write words (Sousa, 2005). According to the National Reading Panel (as cited in Uhlir,

2003), the most effective methods for the teaching of reading are those having a combination of teaching phonics, using diverse instructional strategies, and giving feedback on oral reading.

Morphology is the aspect of language concerning word structures and the rules that govern how phonemes are combined to make words within language. Owens (2001) defines morphemes as the smallest unit of meaning and states that they are indivisible without violating the meaning of the word. One main feature in morphology is the knowledge of word meaning in language acquisition. Individuals who read with accuracy and fluency have acquired a broad range of word families and are able to cross-reference them while reading. In comparison, individuals who struggle with reading have less prior word knowledge to draw from and less organizational structure to allow access to words and learn new words (Lue, 2001).

Content includes semantics, or the aspect of language concerned with rules governing the meaning and subject matter of words or word combinations (Owens, 2001). Semantic development is imperative to the basics of written language because it goes beyond simple identification of words. It also includes the meaning conveyed and the cognitive abilities used to create that meaning. Semantics is related to an individual's ability to comprehend verbal language and written text. It draws from a person's background experiences, situational experiences, prior knowledge, and verbal reasoning skills (Finn, 1990).

Using the language process, both verbally and nonverbally, encompasses pragmatics. Pragmatics is defined as the set of rules related to language use within the communicative context (Owens, 2001) and focuses on the way language is used to

communicate instead of language structure. It plays an important role in the reading process because it is through this pragmatic use that meaningful contexts are derived from written text and spoken language.

The reading process relies heavily upon an individual's ability to decode and comprehend language. Decoding language involves alphabetic knowledge, phonemic awareness, and phonics instruction to develop fluency. Comprehending depends on the capability to then decode the meaning of words and word structure connected to vocabulary knowledge, linguistic skills, and text comprehension. Sousa (2005) states that "phonemic awareness is a good predictor of [students'] ability to read accurately and quickly." Syntax, phonology, morphology, semantics, and pragmatics are all key constituents in the successful development of individuals' verbal language and incorporating verbal language knowledge into the reading process.

Struggling Readers

It should be acknowledged that there are physical disabilities affecting an individual's reading performance and/or processes. These physical disabilities include visual, hearing, and speech-language impairments as well as less than average intellectual abilities. Vision and hearing impairments have multiple accommodations for alternate forms of reading. In this seminar project I will examine mental, not physical, processes that impede reading abilities in relation to MI theory. Effective reading requires the success of the brain's ability to coordinate three systems: auditory processing, visual processing, and comprehension (Sousa, 2005).

The majority of students with learning disabilities experience significant problems with reading, specifically within the areas of phonological awareness,

vocabulary acquisition, and comprehension. Because individual students' weaknesses differ, reading disabilities are even more difficult to discern.

Students categorized as low ability readers, or passive learners are limited or inefficient in the use of reading strategies. These students specifically lack both decoding and comprehension skills. According to Aaron and Baker (1991), most often these students who lack decoding and comprehension skills do so because of their limited vocabulary and background knowledge of various words. These individuals are then unable to rely on the message context to recognize and infer word meaning. Students with a high frequency of school absences, poor motivation, and limited reading experience and exposure usually have low abilities in reading. These students will benefit not only from extra practice with phonological processing and extended vocabulary methods, but also from more time spent on reading exercises as further practice in oral reading activities which assist them in fostering fluency. Because the population of struggling readers is growing by the day and the implications for future reading issues for students are becoming more severe, it is imperative that educators develop remedial instructional strategies and programs to give struggling readers the opportunity for classroom success.

History of Learning Disabilities

Issues with learning and behavior in children are certainly not new challenges, but rather have been at the forefront of educational debates for decades. There are three overarching categories within the disabilities umbrella:

- learning disabilities
- emotional and behavioral disorders and

- cognitive disabilities.

Because identification and referrals have increased within the last few decades, legislation has been passed mandating the integration of students in need of Special Education services into general education classrooms. Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112) was the first piece of civil rights legislation guaranteeing the protection of the rights of people with disabilities. In 1974 the Education for All Handicapped Children Act (EAHCA) mandated that states create full educational opportunities for children with disabilities. According to Yell (2006), this legislation established the rights of people with disabilities regarding a free appropriate public education in the least restrictive environment. In 1990, EAHCA was renamed as the Individuals with Disabilities Education Act (IDEA) and included revisions as adding traumatic brain injury and Autism as new disability categories as well as adding transition requirements for students over 16 years of age.

Another revision of IDEA in 2004 called for more accountability at the state and local levels, asking school districts to provide adequate and equal instruction and intervention for students to prevent Special Education services from becoming necessary. The 2004 reauthorization of IDEA stated that any student who consistently performs below state-approved and grade-level standards on scientifically-based and valid interventions and who does not respond to additional supports may be determined to have a learning disability (Humphreys, Goodman, Grant, & Maggs, 2008). Many people perceive the proactive approach antithetical the “wait to fail” or IQ-achievement discrepancy model (Zierkel & Thomas, 2010). Furthermore, IDEA allows districts to use up to 15% of its Special Education funding

for providing education and behavioral evaluations, services, and supports for enabling ongoing professional development to develop greater proficiency and knowledge with the delivery of scientifically valid academic and behavioral techniques (Humphreys, et al., 2008).

The federal definition of a learning disability, as described under legislation P.L. 94-142 attempts to term a learning disability as a disorder in one or more of the basic psychological processes involved in understanding or in using spoken and written language that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. Conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, and dyslexia are categorized as learning disabilities (<http://www.dpi.state.wi.us/sped/ld.html>). The definition of a learning disability is very broad, thus making it difficult to understand what that classification fully entails. Because of the complexities in defining a learning disability, it is even more difficult to define a reading disability.

Learning disabilities have been the fastest growing category of Special Education since the passing of the first federal laws in 1975. According to the U.S. Department of Education (2008), approximately five percent of all students, ages three to twenty-one, are recognized as having a learning disability. This equates to approximately 2.5 million students who receive Special Education services because of a learning disability (<http://nces.ed.gov/fastfacts/display.asp?id=64>). Special Education teachers are challenged in describing any form of a learning disability because the characteristics exhibited vary with each individual. Other difficulties displayed by individuals with learning disabilities include, but are not limited to,

cognition, perception, memory, attention, and thought processes.

A disability is assessed based on the individual's intelligence level compared to his/her capabilities to perform certain skills and tasks. If a teacher or parent notices a discrepancy in the student's level of reading compared to his/her grade level, a formal assessment will be administered to determine if a learning disability does indeed exist. Students with reading difficulties may be assessed for Special Education services and could be placed within a specific learning disability category under IDEA.

Reading Disabilities

Aaron and Baker (1991) explain that the nature of reading disabilities or reading difficulties can be attributed to intrinsic factors (reading disabilities) or extrinsic factors (reading difficulties). Intrinsic factors causing reading disabilities include deficient phonological processing skills, comprehension processing skills and deficient cognitive processes. Extrinsic factors causing reading difficulties may include poor motivation, limited reading experience, and poor reading environments at home. The most important factor involving specific reading disabilities (SRD) is an individual's difficulty with written language and not with spoken language. However, if the individual's difficulty extends to include language comprehension, then it is referred to as a nonspecific reading disability. Low reading abilities (or referred to as struggling readers) involve a low reading performance-due to a range of possibilities in cognitive processes. The most common deficit that characterizes SRD is within the phonological processing system.

During the past century, there has been a long debate over what a learning

disability is and how to define the term; and moreover, what a reading disability or reading difficulty is and how to effectively correct the deficiency. This capstone seminar paper project examines what factors are taken into account regarding reading disabilities and difficulties, and therefore, what effective strategies an educator may use to correct the reading problem pertaining to MI theory.

A specific reading disability consists of the following symptoms:

- a slow reading speed
- errors in oral reading
- poor spelling
- errors of syntax in written language
- reliance on context for word recognition
- and poor reading comprehension (Aaron, 1995).

Aaron and Baker (1991) state that a number of studies explain that the rate with which words are identified is a major contributing factor to individual differences in reading skill. Students who display a slow reading speed tend to remain that way despite spending a number of years in schooling. Errors in oral reading are influenced by poor decoding skills. Poor decoding skills tend to promote students having over dependence on sight-word reading strategies. Educators who use oral reading in the classroom will notice that students with SRD usually misread content words and omit function words or substitute a word for that function word fitting within the context of what the individual is reading. Poor spelling is a classic symptom of students with a reading disability and struggling readers. Because students use phonological processes (spelling-to-sound) when attempting to spell new

or familiar words, these students make many more errors in spelling than their same aged peers. Errors of syntax in written language occur because of the constant change of suffixes in content words.

Dyslexia

Dyslexia is a learning disability that affects an individual's ability to read and spell accurately. According to the International Dyslexia Association (2008), dyslexia is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities; resulting in individuals having difficulties with specific language skills, particularly reading. Dyslexia contributes to problems in reading comprehension and reduced reading experience that hinders the growth of vocabulary and background knowledge. The Orton Dyslexia Society Research Committee (as cited in Vase, 2004) states that dyslexia is a specific language-based disorder characterized by single word decoding, usually reflecting insufficient phonological processing. These difficulties are often an unexpected consequence in relation to age and other cognitive and academic abilities; that is to say they are not the result of a development disability or sensory impairment.

The British Dyslexia Association (as cited in Vase, 2004) describes dyslexia as a specific difficulty in learning, in one or more of reading, spelling and written language which may be accompanied by difficulty in number work, short-term memory, sequencing, auditory and/or visual perception, and motor skills. Dyslexia is evident when students are assessed specifically within mastery and use of written language, including alphabetic, numeric, and musical notation. Furthermore, oral language is often affected as well. Sousa (2005) asserts that dyslexia is a

developmental deficit that appears to be one of the most common causes of reading difficulties, and usually results in a life-long struggle with reading.

Dyslexia may be impossible to define because it has several forms and multiple characteristics that may be unique to each individual. Dyslexia is categorized into three groups:

- acquired dyslexia
- primary or
- secondary dyslexia.

One of the most common characteristics with reading difficulties in people with dyslexia is the lack of phonological processing skills. Most have trouble pronouncing sounds in written language (Bruno, Manis, Keating, Sperling, Nakamoto, & Seidenberg, 2007).

Although not all struggling readers have dyslexia, it is the most common reading disability (of all learning disabilities). Dyslexia, in the past, was overused to describe students with reading difficulties. Moreover, some research has redefined dyslexia as a speech-language disorder affecting phonological processing, thus having an effect on an individual's ability to read (Weaver, 1998). Weaver (1998) explains that dyslexia might be a difficulty in an individual's ability to read words in isolation, but not with how an individual comprehends the written text.

Specific reading disabilities were discussed earlier in this capstone seminar paper project and now the focus will shift to non-specific reading disabilities (NSRD). Non-specific reading disabilities are due to extrinsic factors such as the home environment and parental support. Individuals with NSRD mainly struggle

with comprehension abilities. In many instances, individuals with NSRD can read at a fast rate and have intact decoding skills, but lack the ability to comprehend what they are reading. The ability to read at an average or above-average pace without being able to recall what was read is referred to as “word calling” (Aaron and Baker, 1991). The most startling trait of students with NSRD is their impeccable ability to read orally compared to their listening comprehension skills. More often than not these students are not identified until they are in secondary school or even college.

English Language Learners

Another group of students categorized as struggling readers include English Language Learners (ELL). This student group also has the “highest dropout rate, lowest achievement scores, largest mobility rate, and highest poverty” (McCardle, Mele-McCarthy, Cutting, Leos, & D’Emilio, 2005). ELLs are students who did not grow up speaking English. Some were born in other countries, while others grew up in the United States. Either way, the primary language spoken at home was not English. Because of this lack of exposure, these students do not read, speak, write or comprehend English with as much fluency and accuracy as their peers. Furthermore, while these students are trying to learn English, they are still trying to progress with their native language.

Although ELLs struggle with learning English (and possibly their native language as well), Special Education laws do not allow ELL students to be qualified for Special Education services unless they qualify under the mandated criteria for learning disabilities, emotional disorders or cognitive disabilities. Many ELL students cannot maintain reading at their grade level. One of the major characteristics

that ELL students struggle with is speaking English, phonological skills and the ability to hear and repeat certain phonemes (Lue, 2001).

ELL students (and their teachers) grapple with being sensitive and understanding of language differences. Language differences can be noted in dialects of a language. A dialect is a variation of a national language. There are many forms of dialects including, but not limited to: African-American English, Northern vs. Southern dialects in the United States, and Standard-American English (most commonly used in Midwest). In order to effectively teach English to these students, educators must be more familiar with cultural backgrounds and have further knowledge in effective strategies for phonology, vocabulary and comprehension of the English language (Lue, 2001 and Sousa, 2005).

Most ELL students do not have reading disabilities, but rather only reading difficulties in English. Introducing multicultural literature and diverse materials for these students to use is helpful, and they also will benefit from extra reading strategies that may further their progress in reading English. The strategies I will discuss later in this capstone seminar paper are also helpful tools for teachers to use with ELL students (National Center for Research on Evaluation, Standards, and Student Testing, 2008).

Socioeconomic Status

Most research reveals that socioeconomic status has a significant impact on students' reading progress. Chall (1983) states that during the latter half of the 1960s the factor found to be closely related to reading achievement was the SES of the parents.

However, present research leans more towards what parents do in the home environment to support reading development rather than focusing on family SES. More important is that SES and the supports in the home environment do go hand in hand. Parents who earn a higher wage have the monetary support to purchase books for their children and tend to have a higher educational background themselves in order to support their children's reading development. Many parents who earn a lower wage may not have the monetary support to provide the same amount of reading materials and may be absent from home more often due to working longer hours. Parents and guardians who have the economic support and time to take their children to museums, libraries and even zoos display a more positive learning environment for their children and expose their children earlier on to new learning environments (Chall, 1983).

The International Reading Association conducted an informal, emergent reader poll that discussed socioeconomic status and the role it plays in reading acquisition. The poll explained that those from higher socioeconomic status homes have more access to materials and resources that foster the reading process and are exposed to more literate environments, including adults that actively engaged in reading and writing activities.

Thus, as a result of available research, most students who suffer from a reading disability or struggle with reading because of poor phonological processing skills, insufficient practice with oral reading and reading aloud from written text, have low vocabulary knowledge as well as low reading comprehension. Differences in gender, socioeconomic status and various cultural backgrounds all contribute towards

a slower reading development. Individual students are all unique in what their strengths and weaknesses are in reading, but there are definite environmental factors that contribute towards a faster or slower reading development in students. In order to aid these students in their reading abilities, it is necessary to examine forms of assessment available to educators in the classroom, and use these assessment tools to use effective strategies for these struggling readers.

No Child Left Behind

According to Bellanca (2009), the emphasis on the verbal-linguistic and logical-mathematical intelligences correlate most with traditional schools and current assessment practices. He states further NCLB has had a major impact on the development of students' interests in other intelligences, specifically regarding curriculum limitations. As a result, NCLB has inadvertently posed a threat to the visual and musical arts, sciences, athletics, and other curricula that would be conventionally fostered to encourage students to learn in their own way. Many schools have responded to NCLB by utilizing programs that teach the fastest reading and mathematical outcomes with the least amount of ruckus (Bellanca, 2009).

NCLB is based on four main pillars, including:

- stronger accountability for results
- more freedom for states and communities
- proven education methods, and
- more choices for parents.

For the past decade, it has been apparent in schools that states are working to close the achievement gap, ensuring all students achieve academic proficiency. Annual

state and school district reports inform parents and taxpaying communities about progress being made and schools that do not achieve adequate yearly progress (AYP) are required to provide supplemental services. These could include offering free tutoring and/or after-school assistance and taking corrective actions. Dramatic changes will need to be made in the forms of how the school is run if AYP is not achieved after five years.

More freedom for states and communities involves the allocation of funds for each specific school district. Under NCLB, states and school districts have unparalleled flexibility in how educational funds are used. This allows districts the use of educational funds for their exact needs, such as hiring new teachers, increasing teacher pay, and improving educator training and professional development opportunities.

NCLB also calls for proven educational methods within reading instruction. Educational dollars are to be spent on research-based approaches that will help children learn the most. NCLB implements President Bush's Reading First initiative by increasing federal funding for reading programs from \$300 million to more than \$900 million between the 2001 and 2002 fiscal years. Additionally, a new Early Reading First program was implemented and focuses on the support of early language, literacy and pre-reading development for preschool-age children, particularly those from low SES families (NCLB, 2002).

Lastly, NCLB enhances options for parents with children in schools that are persistently failing AYP. In schools that do not meet state standards for at least two consecutive years, parents have the option to transfer their children to a better-

performing public school, including a public charter school, within their district. The district must provide transportation, using Title I funds if necessary. Students from low SES families in schools who fail to meet AYP for at least three consecutive years are eligible to receive supplemental educational services, including tutoring, after school services and summer school. Furthermore, students who attend a chronically dangerous school or are the victim of a violent crime while in school are given the option to transfer to a safe school within their district

<http://www2.ed.gov/nclb/overview/intro/4pillars.html>.

Components of Multiple Intelligence Theory

Definition of Intelligence

Howard Gardner developed MI theory in 1983, when he published his book, *Frames of Mind: The Theory of Multiple Intelligences*. In it, he states that he developed MI theory based on his own observations and those of other academics in varied disciplines, including anthropology, developmental psychology, brain research, cognitive science, and animal physiology (Armstrong, 2003). MI theory focuses on the content of learning and the relationship between learning and the intelligences or disciplines (Silver, Strong, Perini, 2000). Gardner identified seven, later to be eight, intelligences he believes to be foundations in educational learning and teaching.

To many educators and researchers, intelligence has varying definitions. According to Checkley (1997), in regards to MI theory, Gardner defines intelligence as the human ability to solve problems or to make something of value or create a product in one or more cultures. "Creating a product" could include transforming a

blank canvas into a picture that elicits emotions or a deep conversation. It could also encompass developing and leading a productive team from a group of people who couldn't acquiesce on a solution. "Solving a problem" incorporates using pragmatics and abilities in real life situations. Gardner (1993a), suggests that students' intelligence is the product of their culture and they may have varying building blocks of intelligence that give them the ability to solve problems. Additionally, Gardner says (1993b) that intelligence is a biopsychological potential. How a person is deemed intelligent is a result of that person's genetic inheritance as well as his/her psychological properties. Intelligence ranges from a person's cognitive capabilities to his/her personality dispositions. Gardner goes on to state that each of the eight intelligences is activated by certain kinds of internally or externally presented information (Gardner, 1993b). Additionally, Armstrong asserts that each intelligence corresponds to a set of capacities that are meant to balance on two main foci: the ability to solve problems and the shaping of significant cultural products (Armstrong, 2003).

In *Intelligence Reframed: Myths and Realities about Multiple Intelligences* (1999), Gardner suggests several myths about MI theory practiced in classrooms throughout the world. One such myth is that, "There is a single "approved" educational approach based on MI theory" (p. 89). Gardner responds that MI theory is not an "educational prescription" (p. 89), but rather a comprehensive way of looking at students and how they learn best. MI theory does not suggest a complete overhaul of the curriculum, but rather it provides a framework to follow for enhancing instruction (Campbell, Campbell, & Dickinson, 2003).

Gardner (1999) proposes that MI theory supports three main propositions: people are not all the same; people do not all have the same kinds of minds; and education works most effectively if these differences are taken into account rather than disregarded. Gardner developed MI theory in the hopes that educators would think about teaching the whole child, rather than his/her parts:

Taking human differences seriously lies at the heart of the MI perspective. At the theoretical level, this means that all individuals cannot be profitably arrayed on a single intellectual dimension. At the practical level, it suggests that *any* uniform educational approach is likely to serve only a small percentage of children optimally. (p. 91).

Teachers must take into consideration the implications for this theory in their classrooms. Students benefit from the use of MI theory in the classroom, especially bearing in mind how it incorporates important other factors, such as technology.

Gardner (1993a) maintains that schools should serve the purposes of developing intelligences and assisting students in achieving both vocational and personal goals that are appropriate for the intelligences a student has. MI Theory has emerged as a major technique to improve students' achievement across the curriculum, including those with special needs and from low SES families (Geimer, Getz, Pochert, & Pullman, 2000).

MI theory is beneficial to use as a reading intervention because it involves both the parents and communities of school districts and students are able to demonstrate and share their personal strengths. This helps to create a positive educational experience and foster higher self-worth and self-esteem among students (Uhlir, 2003). Moreover, the use of MI theory helps promote students' capabilities to create solutions to problems in every aspect of life, helping to create balanced

individuals who can function successfully as members of their culture and society.

Verbal-linguistic Intelligence

Verbal-linguistic intelligence is described as having sensitivity to the meaning and order of words. This intelligence includes the ability to manipulate the syntax, phonology, semantics, and pragmatics of language (Armstrong, 2000). Students demonstrate strengths in the language arts, including listening, speaking, writing, and reading (Carlisle, 2001). Children with linguistic intelligence learn by listening, reading, verbalizing, and enjoy discussions, word games, and books. Additionally, these students are able to remember and record verses, lyrics and trivia (Hutinger, 2001). Activities to help strengthen a learner's linguistic intelligence can include, but are not limited to, oral reading, books on tape, vocabulary and word games, writing short stories, and explaining, describing, and answering questions (Carlisle, 2001). This particular intelligence differs from the others because everyone who speaks can be said to possess it at some level. Furthermore, because standardized testing tools usually rely on verbal responses, those who exhibit the verbal-linguistic intelligence are oftentimes seen as possessing high levels of other intelligences (Teacher Created Materials, 1999).

Logical-mathematical Intelligence

Logical-mathematical intelligence correlates to students who have an exceptional ability in mathematics and other complex logical systems, such as numbers, reasoning and problem solving (Guignon, 1998). Additionally, this intelligence includes processes such as categorization, classification, inference, generalization, calculation, and hypothesis testing (Armstrong, 2000). Activities

involving counting, measuring, and predicting tend to be good endeavors for students. The scientific method offers a great way for students to use their abilities of collecting and recording data as well as inductive and deductive reasoning skills (Carlisle, 2001). This intelligence is often associated with deep critical thinking, involving the ability to see patterns and relationships (Teacher Created Materials, 1999).

Visual-spatial Intelligence

Students who have visual-spatial intelligence have the ability to “think in pictures,” and perceive the visual world accurately (Guignon, 1998). It also includes the capacity to visualize, to graphically represent visual or spatial ideas, and to orient oneself appropriately in a spatial environment (Armstrong, 2000). Students with visual-spatial intelligence enjoy working with puzzles, mazes, maps, art, illustrations - anything eye-catching really (Carlisle, 2001). People who possess this intelligence learn best from visual presentations, including movies, pictures, and demonstrations using models and props (Teacher Created Materials, 1999). According to Gardner (1993a), occupations such as engineers, sculptors, surgeons, and sailors all involve a high developed spatial intelligence.

Bodily-kinesthetic Intelligence

Bodily-kinesthetic intelligence is, according to Guignon (1998), “the ability to use one’s body in a skilled way, for self-expression or toward a goal” (p. 1). This intelligence involves communicating through gestures, and students learn best by touching and manipulating objects, and enjoying creative and physical activity. Overall, people who exhibit bodily-kinesthetic intelligence possess knowledge through bodily sensations (Hutinger, 2001). Dancers, athletes, sculptors, surgeons,

mechanics, actors, and mimes are all examples of those who display this intelligence.

Reading is not oftentimes referred to as a passive experience. For emergent readers, reading can be a physical performance. Making the connection between the body and literacy has been investigated. Armstrong (2003) suggests delving into the minds of writers in order to understand the foundation of the relationship between the body and reading. Certain writers have described this connection as something as simple as getting goosebumps when writing poetry. Others have described that in order to mentally recall a word, the method of tracing the letters or words in one's mind is utilized (Armstrong, 2003).

Musical Intelligence

According to Armstrong (2000), musical intelligence is “the capacity to perceive, discriminate, transform, and express musical forms” (p. 2). Musical intelligence can consist of recognizing the structure of music, schemas for hearing music, sensitivity to sounds, creating melody and rhythm, and sensing qualities of a tone (Lazear, 2003). Examples of those who demonstrate musical intelligence are composers, dancers, and musicians, as well as music producers and writers. Behaviors like singing, whistling, and humming while engaged in other activities are common; many times teachers can label a student who exhibits these behaviors as being disruptive or non-compliant when asked to stop.

Interpersonal Intelligence

Interpersonal intelligence involves using social skills and working in groups. This requires a keen ability to assess other people's moods, intentions, motivations, and feelings (Armstrong, 2000; Gardner 1993a). Additionally, a person possessing

interpersonal intelligence must be able to pragmatically react to those social cues. Completing group projects, cooperative learning, and giving and receiving feedback are all positive ways to spread this intelligence throughout the classroom (Lazear, 1992). Dividing up class jobs and encouraging students to use collaboration skills are often promoted in today's classrooms and involve the use of the interpersonal intelligence.

Intrapersonal Intelligence

Intrapersonal intelligence is the ability for someone to understand his/her own emotions. Howard Gardner once said, “[This intelligence] refers to having an understanding of yourself, of knowing who you are, what you can do, what you want to do, how you react to things, which things to avoid, and which things to gravitate toward” (Checkley, 1997). This intelligence includes a heightened sense of awareness of one's own wants and needs, in addition to having “the capacity for self-discipline, self-understanding, and self-esteem” (Armstrong, 2000, p. 2). This intelligence is shown through a deep awareness of inner feelings, and people who demonstrate this intelligence tend to be independent and self-directed, with strong opinions on controversial issues. Also, a strong sense of self-confidence is evident with those who possess intrapersonal intelligence (Teacher Created Materials, 1999).

Naturalist Intelligence

Naturalist intelligence is the newest multiple intelligence. Gardner describes this intelligence as having several qualities. One includes the ability to discriminate among living things, such as plants and animals. Secondly, the naturalist intelligence also has sensitivity to other features of the natural world, such as clouds and rock

configurations. These skills have been of obvious use to our species in the past, but were never really considered intelligence. In an interview conducted by Checkley (1997), Gardner said, “This ability was clearly of value in our evolutionary past as hunters, gatherers, and farmers; it continues to be central in such roles as botanist or chef” (p. 12).

Reading Strategies within Multiple Intelligence Theory

There are a number of instructional reading strategies that can be used to promote the integration of MI Theory in classrooms. The methods discussed in this capstone seminar paper project include:

- Literature Circles
- Reader’s Theater
- Rhythm Walks
- Interactive Read Alouds,
- and Making Words.

Included in Appendix A of this capstone seminar paper project are examples of MI Theory instructional strategies.

Literature Circles

Literature Circles are employed by educators in classrooms to facilitate learning through MI Theory and they typically include four to five students. Centered on readers’ responses as part of a balanced literacy program, one goal of Literature Circles is to actively engage students in cooperative learning activities through the practice of critical thinking and reflection. Discussion is guided by the students’ response to the piece of literature they have read. Students can all read the same book

or, alternatively, students can choose a book to read based from personal interest. If the latter occurs, students should choose books written by the same author or with a similar theme. After the students read the book, discussions can center on characters, geographical location, theme and plot, or identification of figurative language.

MI Theory can be used to respect each student's intelligence. For example, journal entries can be used to bring together ideas and gives students with verbal-linguistic and intrapersonal intelligences a way to express their ideas. Engaging students in creative and dramatic role playing or pantomiming helps facilitate learning in students with bodily-kinesthetic, interpersonal, musical, and perhaps visual-spatial intelligences. Lastly, students with logical-mathematical intelligence benefit when lessons incorporate making models or objects to clarify meanings of relevant concepts the book addresses (Ediger, 2002).

Reader's Theater

Reader's Theater is another creative way to incorporate MI theory into classrooms. An oral activity in which students read scripts or stories, Reader's Theater is an authentic and entertaining method that helps improve students word recognition, fluency, and comprehension. By using Reader's Theater scripts, students are encouraged to read with expression and to practice important fluency attributes, such as pausing, inflecting, and intonating.

Reader's Theater can be used at any grade level and the teacher chooses the appropriate levels of reading. The students read their scripts and highlight their lines while sitting at desks or tables, and the teacher reviews the script to introduce and teach new vocabulary. The students should be allotted sufficient time to practice

fluent delivery of their lines. When practicing a Reader's Theater performance, the teacher should encourage students to look up from their scripts and make eye contact with the audience as well as use voice inflection and gestures.

A Reader's Theater performance can be as simple or as elaborate as the teacher desires. If using costumes and props, the face and head areas command the most attention so a hat, mask, or makeup can work as an entire costume. The students will be holding their scripts when they perform so it should be kept in mind when choosing props; objects that require two hands may not be practical.

Rhythm Walks

Rhythm walks are yet another instructional strategy to use when implementing MI theory in classrooms. Rhythm walks encompass verbal-linguistic, visual-spatial, musical-rhythmic, bodily-kinesthetic and interpersonal intelligences. A rhythm walk is a repeated reading strategy that incorporates dance and body movement to facilitate reading fluency and comprehension. A rhythm walk can be done in whole groups, small groups, or pairs. Rhythm walks are meant to draw attention to the natural breaks and phrasing throughout the text by using steps or movements. The repeated reading during a rhythm walk helps to build sentence fluency and reading comprehension. When students repeat the rhythm walk, they are using gestures, intonations, and expressions resulting in more fluent reading. In elementary grades, rhythm walks are functional to use with beginning and struggling readers to motivate them and show how fun reading can be. In middle school or secondary grades, rhythm walks are effective to use for students learning to read a different language or to comprehend more difficult texts, such as poetry, romance, comedies or tragedies.

There are six key elements to rhythm walks that must be considered when planning for this instructional method. First, the right text should be chosen. It should be short, engaging, and be at the appropriate reading level for students. Chunking the words into manageable sizes is important as well. For instance, chunking The Eensy Weensy Spider song as follows allows for fluency and comprehension of the text: the eensy weensy spider/ climbed up the water spout/ down came the rain/ and washed the spider out/ out came the sun/ and dried up all the rain/ and the eensy weensy spider/ climbed up the spout again (Peebles, 2007). The third key element is the size of the font. Big letters are preferred so students are not hunching over to read. Peebles (2007) suggests that the teacher model the rhythm walk by demonstrating fluid movements in opposition to the key elements of fluency, including accuracy, rate, and prosody. The fifth key element, allowing students to move at their own pace, is sometimes difficult for a teacher to master. Allowing for creativity and learning to evolve is key in the success of any rhythm walk. Lastly, consulting the original text is essential for students to practice their fluency skills with the originally connected text (Peebles, 2007).

Interactive Read Alouds

An interactive read aloud is a deliberate and explicit method of reading instruction that includes vocabulary development, reading with fluency, and access to comprehension strategies that make students' thinking visible. According to Pinnell and Fountas (2007), an interactive read aloud is defined as a teaching strategy in which students practice active listening and respond to an oral reading of a text. The purpose of an interactive read aloud is to improve student awareness of literacy

concepts by using the essential components of a research-based literacy program: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Fisher, Flood, Lapp, & Frey, 2004). Furthermore, interactive read alouds help to boost language development, promote active listening, encourage critical thinking, support learning more about the world around us, and serve as models for great writing (Smolkin and Donovan, 2003). Interactive read alouds also provide students with an effective demonstration of literacy instruction, demonstrating how to think and act like a reader (Pinnell and Fountas, 2007). Specifically, interactive read alouds foster the development of verbal-linguistic, logical-mathematical, and intrapersonal intelligences. Included in Appendix B of this capstone seminar paper project is an example of an interactive read aloud lesson plan.

Making Words

A making words lesson is a technique that can be used to promote the verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, and interpersonal intelligences. A making words lesson provides an excellent opportunity for teaching decoding and spelling. A hands-on activity, a making words lesson involves looking for patterns in words and making new words by adding or changing the sequence of letters. The ability to pick out patterns in words helps students decode and spell the less-frequent words that have yet to be taught. Additionally, a making words lesson facilitates student learning regarding the automatic recognition and ability to spell high frequency words (Rice, n.d.). Student objectives in a making words lesson include:

- discovering patterns in words

- exploring how changing one letter in word changes the meaning of that word
- recognizing where one puts letters to change the whole word
- and using clues and phonic patterns to make words (Cunningham, 1991).

Included in Appendix C of this capstone seminar paper is an example of a making words lesson plan.

CHAPTER IV

CONCLUSION

Conclusion

There is still much research and discourse that needs to be completed regarding MI Theory; however, in recent years, such research has begun to take place. Gardner (1993a) and his colleagues have addressed how they have researched taking into account various differences of intelligence profiles within an educational setting:

We have addressed the ways in which each child's profile of intelligences can be assessed; the ways in which each child can be aligned with curriculum, particularly with reference to the way in which that curriculum is presented to the child; and the ways in which youngsters with particular profiles of intelligence can be matched up appropriately with educational opportunities outside the confines of school (p. xv).

One problem that could limit the amount of research conducted is the fact that not many educators practice the use of MI Theory daily in their classrooms. Each child learns differently, that much is known. Why do teachers not try actively, every day, to appeal to the interests and strengths of each student that walks into their classroom? It is understandable that teachers may not have the time or resources to promote the various intelligences; however, the school administrators and districts should be willing to assist these teachers in every way. In each classroom, there are future scientists, actors, body builders, novelists, archaeologists, counselors, and

numerous other important professions represented by each student. Shouldn't we as educators take the time and effort to make resources available so these students have every opportunity to excel in the area they do best?

MI theory does not feature positions on tracking, gifted education, interdisciplinary curriculum, and the length and time of the school day and year (Gardner, 1999). These lacking aspects of MI Theory need to be examined for further evidence of the effectiveness of the theory in the classroom as well as to decipher specific teaching strategies considered to be most successful for each intelligence.

Regardless of what research has yet to be done on MI Theory, there is no question that it has come a very long way in the past 25 years. However, if people would remember the quote by Goethe, "Treat people as if they were what they ought to be, and you help them to become what they are capable of being," it would be evident that we as educators not only have the responsibility to provide a solid education, but the important role to nurture a student's creative development. If we as educators find strategies and methods to meet the unique needs of all readers and motivate through techniques that incorporate individual values and desires of readers, then students will become more developed and efficient readers.

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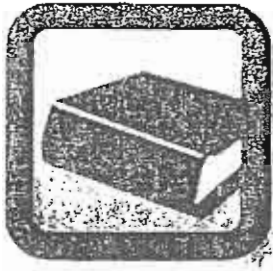
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APPENDIX A

MI THEORY INSTRUCTIONAL STRATEGIES



WordSmart

Verbal-Linguistic Intelligence

"word smart" or "book smart"

What is it?

- ♦ the knowing that comes through the language; through reading, writing, and speaking
- ♦ understanding the order and meaning of words in both speech & writing and how to properly use the language
- ♦ understanding sociocultural nuances of a language, including idioms, plays on words, and language-based humor

What is this type of learner like?

- ♦ possesses highly developed skills for reading, speaking and writing
- ♦ tends to think in words
- ♦ likes various kinds of literature, playing word games, making up poetry & stories, getting into involved discussions with other people, debating, formal speaking, creative writing, and telling jokes
- ♦ likely precise in expressing self and irritated when others are not

Example Teaching Activities:

- ♦ Lectures
- ♦ Discussions
- ♦ Word games
- ♦ Storytelling
- ♦ Choral reading
- ♦ Journal writing
- ♦ Sharing time
- ♦ Extemporaneous speaking
- ♦ Debates
- ♦ Individualized reading
- ♦ Memorizing linguistic facts

Teaching Materials:

- ♦ Books
- ♦ Worksheets
- ♦ Manuals
- ♦ Tapes
- ♦ Recorders
- ♦ Computers for word processing
- ♦ Stamp sets
- ♦ Books on tape

Instructional Strategies:

- ♦ Read about it
- ♦ Write about it
- ♦ Talk about it
- ♦ Listen about it

Lesson Planning Ideas

Social Studies:

- Play "What's My Line?" with historical figures
- Debate important issues & decisions from the past
- Create limericks about key historical events
- Study poetry from different periods of history
- Compile a notebook of historical jokes
- Read and learn stories, myths, & poetry from other cultures
- Hold a "countries of the world" spelling & pronunciation bee
- Keep an "insights from other Cultures for Us" log
- Study a road map & give verbal instructions to get some place
- Learn basic conversation in several foreign languages

Mathematics:

- Write a series of story problems for others to solve
- Explain how to work a problem to others
- Make up puns using math vocabulary, terms, concepts & operations
- Solve problems with a partner—one solves and other explains the process
- Create poems telling when to use different math operations

Language Arts:

- Teach "concept mapping" to help remember content
- Write a sequel/next episode to a story or play
- Create crossword puzzles/word jumbles for vocabulary words
- Play "New Word for the Day"—learn a new word and use it frequently during the day
- Practice impromptu speaking and writing

Science & Health:

- Write a humorous story using science vocabulary
- Create a diary on "Life of a Red Blood Cell" (from the cell's perspective)
- Write steps used in an experiment so someone else can do it
- Make up an imaginary conversation between different parts of the body
- Give a speech on "10 steps for healthful living"

Practical Arts & Physical Education:

- Give verbal explanations for a gymnastics routine
- Write instructions for the use and care of machines in industrial technology
- Tell another how to run a word processing program—then do it
- Pretend you're a radio sportscaster—describe a game in process
- Play "Recipe Jeopardy"—make a question for the answers given

Fine Arts:

- Listen to a piece of music & make up a story about it
- Verbally describe an object while a partner draws it
- Tell a partner the steps to a dance while they perform it
- Turn a Greek/Shakespearean tragedy into a sit com
- Describe an emotion/mood & play music it suggests
- Carefully observe the effects of different kinds of music on you



LogicSmart

Logical-Mathematical Intelligence

"number smart" or "logic smart"

What is it?

- ◆ Uses numbers, math & logic to find and understand various patterns in our lives: thought patterns, number patterns, visual patterns, color patterns, etc.

What is this type of learner like?

- ◆ Think more conceptually and abstractly than others
- ◆ Able to see patterns and relationships that others may miss
- ◆ Like to conduct experiments, to solve puzzles and other problems, to ask cosmic questions, and analyze circumstances and people's behavior
- ◆ Enjoy working with numbers and mathematical formulas and operations
- ◆ Love the challenge of a complex problem to solve
- ◆ Systematic and organized
- ◆ Always has a logical rationale or argument for what they are doing or thinking at any given time

Teaching Activity:

- ◆ Brain teasers
- ◆ Problem solving
- ◆ Science experiments
- ◆ Mental calculations
- ◆ Number games
- ◆ Critical thinking
- ◆ Socratic questioning
- ◆ Logic problems & games
- ◆ Logical-sequential presentations on subject matter
- ◆ heuristics

Teaching Materials:

- ◆ Calculators
- ◆ Math manipulatives
- ◆ Science equipment
- ◆ Math games
- ◆ computers

Instructional Strategies:

- ◆ Quantify it
- ◆ Think critically about it
- ◆ Conceptualize it

Lesson Planning Ideas

Social Studies:

- ♦ Find examples where "history repeats itself"
- ♦ Compare & contrast different periods of history
- ♦ Ask factual, process, & higher order questions about key historical decisions
- ♦ Create time sequence charts with titles for major eras of history
- ♦ Predict what the next decade will be like based on patterns of the past
- ♦ "follow the legend" map-reading games & exercises
- ♦ play "guess the culture" based on artifacts in an imaginary time capsule
- ♦ rank-order key socio-economic factors that shaped a culture's development
- ♦ predict what will happen in several current event stories
- ♦ learn cause & effect relations of geography & geological events

Mathematics:

- ♦ find unknown quantities/entities in a problem
- ♦ teach how to use a calculator for problem solving
- ♦ create number sequences & have a partner find the pattern
- ♦ mind-map proofs for geometric theorems
- ♦ design classification charts for math formulas, processes & operations

Language Arts:

- ♦ predict what will happen next in a story or play
- ♦ create an outline with 4 main points X 4 sub points X 4 sub-sub points
- ♦ learn to read, write & decipher "code language"
- ♦ analyze similarities & differences of various pieces of literature
- ♦ use a "story grid" for creative writing activities

Science & Health

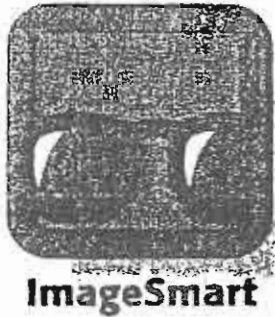
- ♦ use the symbols of the Periodic Table of Elements in a story
- ♦ find 5 different ways to classify a collection of leaves
- ♦ create a goal setting chart for a story of AIDS (what I know, want to know & what I learn)
- ♦ learn the pattern of successful & reliable scientific experiments
- ♦ practice webbing attributes of various systems of the body

Practical Arts & P.E.

- ♦ follow a recipe to make bread from scratch
- ♦ find the relation of keyboard actions & computer performance
- ♦ design a physical exercise routine using a matrix
- ♦ create a problem solving scenarios for machines used in industrial technology
- ♦ make a classification matrix on meaning(s) of computer symbols

Fine Arts:

- ♦ learn patterns of 10 different dance steps
- ♦ compose a piece of music from a matrix
- ♦ use a Venn diagram to analyze characters in a play
- ♦ create "paint-by-number" picture for another to paint
- ♦ analyze plays using the classical dramatic structure model



Visual-Spatial Intelligence

"art smart" or "picture smart"

What is it?

- Represents the knowing that occurs through the shapes, images, patterns, designs, and textures we see with our eyes
- Also includes the images we are able to conjure inside our heads

What is this type of learner like?

- Tend to think in images and pictures
- Very aware of object, shapes, colors, textures, and patterns in their environment
- Probably like to draw, paint, and make interesting designs and patterns, and work with clay, colored markers, construction paper, and fabric
- Love to work jigsaw puzzles, read maps, and find their way around new places
- Have definite opinions about colors that go together well, textures that are appropriate and pleasing, and how a room should be decorated
- Excellent at "seeing with the mind's eyes" activities like visualizing, pretending, imagining, and forming mental images

Example Teaching Activities:

- Visual presentations
- Art activities
- Imagination games
- Mind-mapping
- Metaphor
- Visualization
- Photography
- Visual puzzles & mazes
- 3-D Construction kits
- art appreciation
- picture metaphors
- collages
- idea sketching
- symbols
- optical illusions

Teaching Materials:

- Graphs
- Charts
- Diagrams
- Maps
- Video
- LEGO sets
- Art materials
- Optical illusions
- Cameras
- Picture library
- Computer graphics software
- Telescopes
- Microscopes
- Draw-and-paint/CAD software

Instructional Strategies:

- See it
- Draw it
- Visualize it
- Color it
- Mind map it

Lesson Planning Ideas

Social Studies:

- ♦ Have imaginary talks/interviews with people from the past
- ♦ Make visual diagrams & flow charts of historical facts
- ♦ Imagine going back in time—see what it was like “back then”
- ♦ Paint a mural about a period of history
- ♦ Imagine & draw what you think the future will be like
- ♦ Draw maps of the world from your visual memory
- ♦ Study a culture through its visual arts—painting & sculpture
- ♦ Make maps out of clay & show geographical features
- ♦ Make décor for the classroom on a culture you are studying
- ♦ Use a map to get around an unfamiliar place or location

Mathematics:

- ♦ Do a survey of student’s likes/dislikes then graph the results
- ♦ Estimate measurements by sight & by touch
- ♦ Add, subtract, multiply & divide using various manipulatives
- ♦ Imagine using a math process successfully, then really do it
- ♦ Learn metric measurements through visual equivalents

Language Arts:

- ♦ Play vocabulary words “Pictionary”
- ♦ Teach “mind mapping” as a notetaking process
- ♦ Draw a picture of the different stages of a story you’re reading
- ♦ Learn to read, write, & decipher code language
- ♦ Use highlight markers to “colorize” parts of a story or poem

Science & Health:

- ♦ Draw pictures of things seen under a microscope
- ♦ Create posters/flyers showing healthy eating practices
- ♦ Create montages/collages on science topics
- ♦ Draw visual patterns that appear in the natural world, including the microscopic
- ♦ Pretend you are microscopic & can travel in the bloodstream

Practical Arts & P.E.

- ♦ Draw pictures of how to perform certain physical feats
- ♦ Create visual diagrams of how to use machines in industrial technology
- ♦ Practice drawing objects from different angles (e.g. drafting)
- ♦ Learn a series of “spatial games” (e.g. horseshoes, ring toss)
- ♦ Imagine your computer is human—draw how it works

Fine Arts:

- ♦ Watch a video of dancers and imagine yourself in their shoes
- ♦ Pretend you can enter a painting and imagine what it’s like
- ♦ Listen to music with your eyes closed & create a sculpture from clay
- ♦ Draw the sets for the various scenes of a play you are reading
- ♦ Draw the visual and color patten of a dance



Bodily-Kinesthetic Intelligence

"body smart" or "movement smart"

What is it?

- ♦ "learning by doing"
- ♦ learning happens through physical movement and through the knowings of our physical body

What is this type of learner like?

- ♦ Have a keen sense of body awareness
- ♦ Like physical movement, dancing, making and inventing things with their hands, and role playing
- ♦ Probably communicate well with body language and other physical gestures
- ♦ Perform a task much better after seeing someone else do it first and then mimicking their actions
- ♦ Likes physical games of all kinds and likes to demonstrate how to do something to someone else
- ♦ Finds it difficult to sit still for long periods of time
- ♦ Easily distracted or bored if not actively involved

Example Teaching Activities:

- ♦ Hands-on learning
- ♦ Drama
- ♦ Dance
- ♦ Sports that teach
- ♦ Tactile activities
- ♦ Relaxation exercises
- ♦ Mime
- ♦ crafts
- ♦ Body maps
- ♦ "messy activities"
- ♦ creative movement
- ♦ physical education activities
- ♦ body language

Teaching Materials:

- ♦ Building tools
- ♦ Clay
- ♦ Sports equipment
- ♦ manipulatives
- ♦ Tactile learning resources
- ♦ Field trips
- ♦ Virtual reality software

Instructional Strategies:

- ♦ Build it
- ♦ Act it out
- ♦ Touch it
- ♦ Get a "gut feeling" of it
- ♦ Dance it

Lesson Planning Ideas

Social Studies:

- ◆ Perform and/or create dramas from a period of history
- ◆ Re-enact great scenes or movements from history for today
- ◆ Hold an historical period costume & food day
- ◆ Play "Great Moments from the Past" charades
- ◆ Learn dance from previous periods of history
- ◆ Learn folk dances/dramas of a culture being studied
- ◆ Create gestures to represent the legend of a map
- ◆ Play "physical movement games" from another culture
- ◆ Simulate "going shopping" using currency from another country
- ◆ Study "body language" from different cultural situations

Mathematics:

- ◆ Use different parts of the body to as a "rule" to measure different things
- ◆ Add & subtract members to & from a group to learn about fractions
- ◆ Invent something that requires applying math concepts
- ◆ Create & act out a play in which the characters are geometric shapes or other math concepts
- ◆ Make up a playground game that uses math concepts/operations

Language:

- ◆ Play "The Parts of a Sentence" charades
- ◆ "embody" (act out) the meaning of vocabulary words
- ◆ act out a story or play that you are studying
- ◆ learn the alphabet and/or spelling through body movements & physical gestures
- ◆ make up a "Parts of Speech" folk dance

Science & Health:

- ◆ role play the parts & dynamics of the life of a cell
- ◆ create the rotation of planets with the class as the solar system
- ◆ become & act out the different states of matter
- ◆ conduct a series of "hands on" scientific/health experiments
- ◆ study & try various "biofeedback" techniques/methods

Practical Arts & P.E.:

- ◆ learn & perfect "multitracking" routines (e.g. rub stomach & pat head)
- ◆ invent something in manufacturing technology classes (e.g. a new house, a tool, etc.)
- ◆ practice physical movements in your mind then with your body
- ◆ make up a new kind of snack food, prepare it, and eat it
- ◆ create & perform a drama on how a computer operates

Fine Arts:

- ◆ create the dance equivalent for different inventions, machines, settings, etc.
- ◆ create "human sculpture tableaux" to express ideas
- ◆ make up gestures, postures, or facial expressions to accompany a musical score
- ◆ design "living paintings" of a classical work
- ◆ practice doing impromptu dramatic mime activities



SoundSmart

Musical-Rhythmic Intelligence

“music smart” or “sound smart”

What is it?

- ◆ Knowing that happens through sound and vibration
- ◆ Also known as auditory-vibrational
- ◆ Deals with sounds, tones, beats, and vibrational patterns

What is this type of learner like?

- ◆ Loves music and rhythmic patters
- ◆ Very sensitive to sounds in the environment
- ◆ May study or work better with music in the background
- ◆ Can often reproduce a melody or rhythmic patter after hearing it only once
- ◆ Various sounds, tones, rhythms may have visible effect on them—can see changes in facial expressions, body movement or emotional responses
- ◆ Likes to create music and enjoys listening to a variety of music
- ◆ May be skilled at mimicking sounds, language accents, and others’ speech patterns
- ◆ Can probably readily recognizes different musical instruments in a composition

Example Teaching Activities:

- ◆ Mood music
- ◆ Rapping
- ◆ Songs that teach
- ◆ Rhythms
- ◆ Chants
- ◆ Linking old tunes with new concepts

Teaching Materials:

- ◆ Tape/voice recorder
- ◆ Tapes, CDs
- ◆ Musical instruments
- ◆ Background music
- ◆ Music software

Instructional Strategies:

- ◆ Sing it
- ◆ Hum it
- ◆ Whistle it
- ◆ Rap it
- ◆ Listen to it

Lesson Planning Ideas

Social Studies:

- ♦ Analyze different historical periods through their music
- ♦ Create a series of key dates in history "raps"
- ♦ Teach/learn songs/music that were popular in previous eras (e.g. Gregorian chant, WW II songs)
- ♦ Make musical instruments from the past & compose a piece using them
- ♦ Watch film about the past & focus on the sounds of history
- ♦ Listen to & analyze different kinds of music from different cultures
- ♦ Play musical & percussion instruments from around the world
- ♦ Learn the key characteristics of music & rhythmic patters from different cultures
- ♦ Create a sound/tonal-based legend for a map
- ♦ Learn & sing songs from nations/countires being studied

Mathematics:

- ♦ Learn mathematical operations through songs, jingles, & rhythmic beats
- ♦ Learn addition, subtraction, multiplication & division through drum beats
- ♦ Break a set of tones and/or rhythmic patterns into various groups to learn division tables
- ♦ Play the "Rhythm Game" to learn times tables (slap thighs, clap hands, snap fingers)
- ♦ Make up sounds for different math operations & processes

Language Arts:

- ♦ Learn Morse Code & practice communicating with it
- ♦ Use different kinds of music for different kinds of writing
- ♦ Create song/raps to teach grammar, syntax, phonetics, semantics, and other language concepts
- ♦ Learn & practice "phonetic punctuation"
- ♦ Illustrate a story/poem with appropriate sounds, music, rhythms, & vibrations

Science & Health:

- ♦ Learn to use music, rhythm, sound, & vibrations to reduce stress
- ♦ Listen to the sound & rhythmic patterns of the environment (humanly-created & nature)
- ♦ Try various humming patterns to see how they can alter their moods & awareness
- ♦ Experiment with the effects of vibration on sand in a metal plate
- ♦ Assign sounds to systems you are studying such as the nervous systme, circulatory systems, etc.

Practical Arts & P.E.

- ♦ Perform physical exercise routines in sync with music
- ♦ Record & recognize the varying sounds of a computer operating (and what they mean!)
- ♦ Experiment with the effects of different kinds of music on how you eat
- ♦ Learn to recognize various machines in industrial technology via their sounds
- ♦ Use musci to help improve keyboarding skills & speed

Fine Arts:

- ♦ Play "Guess the Rhythm/Instrument" when listening to various musical pieces
- ♦ Turn a nonmusical play into a musical or into an "old time radio show"
- ♦ Practice impromptu music composition using the "stuff" in your surroundings
- ♦ Draw, paint, or sculpt a piece of music as it plays
- ♦ Make up a creative/interpretive dance to a piece of music



PeopleSmart

Interpersonal Intelligence

“people smart” or “group smart”

What is it?

- ◆ A person-to-person way of knowing
- ◆ Happens when we work with and relate to other people
- ◆ Asks us to develop a whole range of social skills that are needed for effective person-to-person communication and relating

What is this type of learner like?

- ◆ Learn through personal interactions
- ◆ Probably has lots of friends, shows a great deal of empathy for others, and exhibits a deep understanding of other points of view
- ◆ Loves team activities of all kinds and is a “good” team player
- ◆ Sensitive to other’s feelings and ideas
- ◆ Skilled at drawing others out in a discussion
- ◆ Probably skilled at conflict resolution, mediation, and finding compromise

Example Teaching Activities:

- ◆ Cooperative learning
- ◆ Peer tutoring
- ◆ Community involvement
- ◆ Social gatherings
- ◆ Simulations
- ◆ Conflict mediation
- ◆ Cross-age tutoring

Teaching Materials:

- ◆ Board games
- ◆ Party supplies
- ◆ Props for role plays
- ◆ Interactive software

Instructional Strategies:

- ◆ Teach it
- ◆ Collaborate on it
- ◆ Interact with respect to it

Lesson Planning Ideas

Social Studies:

- ♦ Do an historical period "jigsaw" (each one learns part & teaches others)
- ♦ Role-play a conversation with an historical figure
- ♦ Imagine "passing over" into other times/lives—describe their feelings, thoughts, beliefs, values
- ♦ Make a case for different perspectives on the Revolutionary War
- ♦ Discuss the impact of key historical decisions on today's world
- ♦ Assume the perspective of another culture & discuss a current news item
- ♦ Find the relation of geography/climate to customs/values
- ♦ Create scenarios of "culture shock" & analyze for its causes
- ♦ Brainstorm & prioritize ways to overcome "ugly Americanism"
- ♦ Learn to read different kinds of maps, then teach another how to understand them

Mathematics:

- ♦ Solve complex story problems in a group
- ♦ Conduct an "interviewing others" research project & calculate results as percentages
- ♦ "each one teach one" new math processes/operations
- ♦ describe *everything* you do to solve a problem to a partner
- ♦ have teams construct problems linking many math operations, then solve them

Language Arts:

- ♦ experiment with joint story-writing—one starts then passes it on
- ♦ analyze the message or moral of a story with a group—reach a consensus
- ♦ use a "human graph" to see where a group stands on an issue
- ♦ read poetry from different perspectives & in different moods
- ♦ conduct language drill exercises with a partner (make it into a game)

Science & Health:

- ♦ discuss "saying no to drugs" & create a "say NO" strategy
- ♦ assign a group research project—groups design & implement their research plan
- ♦ use lab teams for science experiments & exercises
- ♦ discuss controversial health topics & write team position papers
- ♦ describe the "before & after" of key scientific paradigm shifts

Practical Arts & P.E.

- ♦ teach & play a series of non-competitive games
- ♦ assign teams to prepare and serve meals from foreign countries
- ♦ use peer coaching teams for projects in industrial technology
- ♦ have students work in pairs to learn & improve sports skills
- ♦ create cooperative computing teams to learn computer skills

Fine Arts:

- ♦ learn a new dance & teach it to others
- ♦ create a team cooperative sculpture from clay
- ♦ sketch your partner with different expressions
- ♦ practice "stop the action & improvise" while dramatizing a play
- ♦ learn to sing rounds & counter melody songs
- ♦



Intrapersonal Intelligence

"self smart" or "introspection smart"

What is it?

- ◆ Human self-reflective abilities by which we can step outside of ourselves and think about our own lives
- ◆ Involves the uniquely human propensity to want to know the meaning, the purpose, and significance of things
- ◆ Awareness of the inner world of self, emotions, values, beliefs, and our various quests for genuine spirituality

What is this type of learner like?

- ◆ Likes to work alone and may shy away from others
- ◆ Probably self-reflective and self-aware
- ◆ In tune with their inner feelings, values, beliefs, and thinking processes
- ◆ Frequent bearer of creative wisdom and insight
- ◆ Highly intuitive & inwardly motivated
- ◆ Often strong willed, self-confident, and have definite, well-thought out opinions
- ◆ Others often come to this person for advice & counsel
- ◆

Example Teaching Activities:

- ◆ Individualized instruction
- ◆ Independent study
- ◆ Options in course of study
- ◆ Self-esteem building
- ◆ One-minute reflections
- ◆ Choice time
- ◆ Motivational curriculum
- ◆ Goal setting

Teaching Materials:

- ◆ Self-checking materials
- ◆ Journals
- ◆ Materials for projects
- ◆ Private spaces for study
- ◆ Interest centers
- ◆ Options for homework

Instructional Strategies:

- ◆ Connect it to your personal life
- ◆ Make choices with regard to it

Lesson Planning Ideas

Social Studies:

- Keep a journal "Questions from life history might be able to answer"
- Do a "pluses, minuses, & interesting" analysis of famous historical decisions
- Reflect on "If I could be any historical figure, who would I be & why"
- Write an essay on "Mistakes from the past I won't repeat"
- Imagine people from the past giving you advice for living today
- Try using "awareness" or "consciousness raising" techniques from other cultures
- List criteria of your "ideal geography/climate"—find it on a map
- Discuss "How I'd be different if I'd grown up in another culture"
- Learn "focusing techniques" from different cultures (methods for concentration)
- Keep a "feelings diary" as you read about current events (responses for Channel One)

Mathematics:

- Track different thinking patterns for different kinds of math problems
- Bridge math concepts beyond school into "real life" (what? so what? now what?)
- Use guided imagery to see & solve complex story problems
- Evaluate your strengths/weaknesses in understanding math—palm new strategies for success
- Watch your mood shifts/changes as you do math problems—not causes

Language Arts:

- Write an autobiographical essay entitled "My Life to Date"
- Write an autobiographical essay entitled "My Life in the Future"
- Analyze literature for "connections to our lives today"
- Write a new poem each day for a week on "Who am I?" & "Where am I going?"
- Imagine being a character in a story/novel—what would you do differently or the same

Science & Health:

- Design, implement & evaluate a one month "Be Healthy" project
- Reflect on pictures of the solar system & your own life on earth
- Write about "If I could be any animal what would I be & why?"
- Lead a series of "I Become What I Behold" exercises (imagine you are an object, animal, etc.)
- Practice techniques for achieving relaxation & reducing stress (e.g. deep breathing)

Practical Arts & P.E.:

- Perform & discuss how different physical exercises make you feel
- List how things learned in industrial technology classes can help you in the future
- Write down & analyze "conversations with your computer"
- Watch yourself preparing a meal & note *everything* that goes on (thoughts, feelings, physical responses)
- Imagine a skill & then try to do it *exactly* as you imagined

Fine Arts:

- Draw yourself from different angles while looking in a mirror
- Dance the different stages of your life's journey including the anticipated future
- Create a series of sculptures to express your moods
- Imagine yourself as *each* character in a play (note different feelings, values, beliefs, etc.)
-



NatureSmart

Naturalist Intelligence

"nature smart" or "environment smart"

What is it?

- ◆ Knowing that occurs through our encounters with the natural world including our recognition, appreciation, and understanding of the natural environment
- ◆ Include species discernment, communion with the natural world and its phenomena, and the ability to recognize and classify various flora and fauna.

What is this type of learner like?

- ◆ Have a profound love for the outdoors, animals, plants, and almost any natural object
- ◆ Fascinated by and noticeably affected by such things as the weather, changing leaves in the fall, the sound of the wind, the warm sun, an insect in the room, etc.
- ◆ Likely nature collectors
- ◆ May have several pets and want more
- ◆ Tend to have an affinity with and respect for all living beings

Lesson Planning Ideas

Social Studies:

- ◆ Recognize & interpret historical trends
- ◆ Understand how "natural events" have influenced history
- ◆ Create analogies between historical events and events in nature
- ◆ Study how animals have effected history & historical trends
- ◆ Study the lives of famous naturalists & their impact on history
- ◆ Create environmental representations for different cultures
- ◆ Grow, taste, and learn to recognize food from different cultures
- ◆ Study the influence of climate/geography on cultural development
- ◆ Recreate multi-media experiences of the natural environments of different parts of the world
- ◆ Study animals & insects from different parts of the world

Mathematics:

- ◆ Work story problems with patterns in nature
- ◆ Use "nature manipulatives" in math problem-solving
- ◆ Graph positive & negative influences on the environment
- ◆ Understand the mathematical patterns of the natural world & environment
- ◆ Create & work calculation problems based on nature/natural processes

Language Arts:

- ◆ Nature scene recreations/simulations for literature & poetry
- ◆ Poetic/descriptive essay writing based on nature experiences
- ◆ Learn & practice using the vocabulary, idiom, jargon, & vernacular of the nature & the naturalist
- ◆ Understand influences of climate/environment on various authors
- ◆ Creative story writing using animal characters & their characteristics

Practical Arts & P.E.:

- ◆ Grow vegetables, fruits, herbs, & use them in cooking
- ◆ Learn about uses of nature for building in construction & manufacturing technology
- ◆ Understand pluses/minuses of different fabrics based on their natural content
- ◆ Understand how climate & geography influence transportation technology
- ◆ Learn how to use nature responsibly in industrial technology

Fine Arts:

- ◆ Compose using sound from nature & the environment
- ◆ Recognize & recreate visual images of natural patterns (paint or sculpt them)
- ◆ Create dances which embody/demonstrate patterns, objects, & animals in nature
- ◆ Design "full blown" dramatic enactment of natural process
- ◆ Make montage/collages incorporating "stuff" from nature

APPENDIX B

INTERACTIVE READ ALOUD LESSON PLAN

Grade level: 4K Pre-school/Kindergarten

Lesson Topic: Comprehension

Wisconsin Model Academic Standards

- A.4.1 - Use effective reading strategies to achieve their purpose in reading.
Discern how written texts and accompanying illustrations connect to convey meaning.
- A.4.2 - Read, interpret, and critically analyze literature.
Recognize and recall elements and details of story structure, such as sequence of events, character, plot, and setting, in order to reflect on meaning.
- C.4.2 - Listen to and comprehend oral communications.
Follow basic directions.
Identify and summarize key points of a story or discussion.
Retell stories and reports of events in proper sequence.
- C.4.3 - Participate effectively in discussion.
Use appropriate eye contact and other nonverbal cues.

Student Objectives

- Students will be able to follow 2-3 step directions accurately.
- Students will recall elements and details of the story in discussion and independent work.

Materials

- Book *The Very Hungry Caterpillar* by Eric Carle
- Interactive tag board with caterpillar on it
- Boardmaker clip art with different foods caterpillar eats:
 - 1 apple
 - 2 pears
 - 3 plums
 - 4 strawberries
 - 5 oranges
 - 1 chocolate cake
 - 1 ice cream cone
 - 1 pickle
 - 1 slice of Swiss cheese
 - 1 slice of salami
 - 1 lollipop
 - 1 piece of cherry pie
 - 1 sausage
 - 1 cupcake
 - 1 slice of watermelon
- Worksheet with blank caterpillar
- Markers, crayons, color pencils
- Tissue Paper, pipe cleaner, glue and tape (in case pipe cleaner won't stay)
- Construction paper strips with students' names

Procedure

Pre-Instruction

A.) Assess/Elicit Prior Knowledge

Ask students how many insects they can name. If no one says caterpillar or butterfly, ask specifically about them: where they come from, how they are born. If someone does say caterpillar or butterfly, go straight into relating it to prior knowledge.

B.) Build Background/Relate to Prior Knowledge

The class is in the middle of an insect unit. Students will explain differences between some insects (i.e. Where they are born, how they develop or change, how long they live, and what they eat).

C.) Focus Attention

Introduce the book *The Very Hungry Caterpillar* by Eric Carle. Also introduce the tag board with the clip art and tell them we will be doing some fun activities throughout the class and after we've completed reading the book.

Direct Instruction (Shared Book Experience)

A.) Establish Purpose

Explain to the students that they will be helping to match (attach with Velcro) the food the caterpillar ate (clip art) to the caterpillar on the tag board. After, the teacher will give them a worksheet with a caterpillar on it and ask them to recall 5 items that the caterpillar ate throughout the story. Lastly, we will make our own butterflies to hang around the room.

B.) Modeling/Discovery

While reading the story, the teacher will demonstrate putting the first three foods the caterpillar eats to the matching food on the tag board. While reading, the teacher will point to each word as she says them so the students can follow along. The teacher will also ask the students to make predictive statements about what the caterpillar is going to eat. (Relates to the Discovery step of the Shared Book Experience.)

C.) Guided Practice

After the teacher has demonstrated the first three foods the caterpillar eats, the students will then be asked to match the remaining "food" items (clip art) to the correct location on tag board. (Relates to the Exploration step of the Shared Book Experience.)

D.) Closure

Teacher reviews everything the caterpillar ate by using the tag board as a visual aid. Review what happened to the caterpillar throughout the story.

E.) Check for understanding

The teacher has been continuously monitoring how much the students understand of the story and the activity through the participation and the matching action with the tag board and clip art.

Post-Instruction

A.) Independent Practice

The teacher will hand out the caterpillar coloring page and ask the students to draw at least five items the caterpillar ate throughout the story.

B.) Extension Activity

The students will make butterflies from tissue paper and pipe cleaner that will be hung from the ceiling around the classroom. Each student's butterfly will have his or her name attached underneath it and can decorate his or her butterfly any way they want. (Relates to Independence and Expression step of the Shared Book Experience.)

Evaluation/Assessment

Throughout post-instruction, the teacher will move about the room verifying that students are doing the independent practice correctly (Objective 1). While doing so, she will take anecdotal notes. In addition, she will go through the handed-in caterpillar coloring page to check that each student drew five things the caterpillar ate (Objective 2).

APPENDIX C

MAKING WORDS LESSON PLAN

Making Words Lesson Plan

Grade Level: Kindergarten

Subject: Reading

Lesson Topic: Phonics

Wisconsin Model Academic Standards

- A.4.1 - Use effective reading strategies to achieve their purpose in reading.
Use a variety of strategies and word recognition skills, including rereading, finding context clues, applying their knowledge of letter-sound relationships, and analyzing word structures.
- C.4.2 - Listen to and comprehend oral communications.
Follow basic directions.
- C.4.3 - Participate effectively in discussion.
Volunteer relevant information, ask relevant questions, and answer questions directly.
Use appropriate eye contact and other nonverbal cues.

Student Objectives

- Students will be able to follow basic directions accurately.
- Given a set of words, students will be able to correctly match rhyming patterns.
- Given a set of words, students will be able to correctly match initial-sound cluster patterns.
- Students will manipulate letters to create words, both independently and in small groups with peers.

Materials

- Notecards with letters and words:
Letters: d, e, r, a, c, n, a, l (calendar)
Words: an, can, Dan, ace, race, lace, lead, lean, lane, clean, rad, read, real, clear
Letters: e, b, t, r, e, s, m, p, e (September)
Letters: s, n, r, i, p, g (spring)
Letters: r, p, i, a, l (April)
Letters: c, m, a, h, r (March)
- Rhyming book dealing with time (seasons, months, etc.)

Procedure

- *Pre-instruction*
The teacher starts with one themed word, like holiday. The first student will find a word that rhymes or starts with the same letter and deals with the theme of class, seasons and time. Each sequential student will then rhyme a word or say a word that begins with the same letter with the word spoken by the previous student.

Students have recently learned the 12 months of the year and the four different seasons.

- *Direct instruction*
Refer to Making Words Lesson (pg. 2)
- *Post-instruction*
Extension activity: Bring a rhyming book to class and read aloud with students. Throughout, ask which words rhyme with what. Incorporate concept of time (months, seasons, etc.)

Independent Practice: In small groups, students will be given letters that spell out the name of a certain month or season. They will use these letters to make at least five different words and then figure out the secret word.

Evaluation/Assessment

- Class will regroup and the teacher will list the words made on the board. After this is completed, students will sort the words on the board by rhyming patterns and initial-sound cluster patterns.

Making Words Lesson

Letters: **d, e, r, a, c, n, a, l**

Take two letters and make **AN**. "I made an egg for breakfast."

Add one letter to make the three-letter word **CAN**. "I can do anything."

Now change just one letter and **CAN** becomes **DAN**.

When you change two of the letters in **DAN** you can make **ACE**.

Add one letter to **ACE** and make **RACE**. "I ran in the race."

Change one letter in **RACE** to make **LACE**. Everyone say lace.

Change one letter in **LACE** to make **LEAD**.

Change one letter in **LEAD** to make **LEAN**.

Can you figure out another word to make with the letters from **LEAN**? Rearrange them to make the words **LANE**.

Add one letter to **LANE** and you can make **CLEAN**. "I will help my mom clean tonight."

Everyone take your letters and start over again. Make the word **RAD**.

Add one letter to **RAD** and **READ**.

Change one letter in **READ** to make **REAL**.

Add one letter to **REAL** and you can make **CLEAR**.

Have you figured out the secret word yet?

Sorting Part of Lesson

Words: AN, CAN, DAN, ACE, RACE, LACE, LEAD, LEAN, LANE, CLEAN, RAD, READ, REAL, CLEAR

First sort words together by initial sounds (excluded ones that begin with vowels)

can	dan	lace	race	clear
		lead	rad	clean
		lean	read	
		lane	real	

Pronounce all of the words, emphasizing the /l/ and /r/ sounds.

Next the students will sort the words into rhymes. Not all of the words will be used.

an	ace	lead	lean
can	lace	read	clean
dan	race		

Non-rhyming words:

lane	rad	real	clear
------	-----	------	-------

Once the words are sorted into rhymes, remind the students that rhyming words can help them read and spell words.

Write two new rhyming words on cards. Have them place these words under the rhyming words and use the rhymes to decode them:

scan	greed
------	-------

Say two rhyming words and help them use the rhyming words to figure out how to spell them:

space	queen
-------	-------