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**AN ADOLESCENT STUDENT WITH FETAL ALCOHOL EFFECT  
AND LEARNING DISABILITIES:  
TUTORING IN WRITTEN LANGUAGE**

by

**Carol L. Johnson**

**University of Northern British Columbia**

**B.G.S., Simon Fraser University, 1994**

**THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION  
in  
CURRICULUM AND INSTRUCTION**

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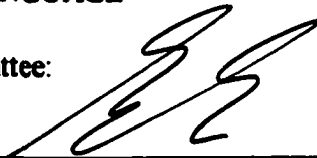
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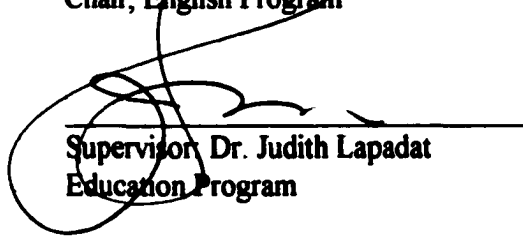
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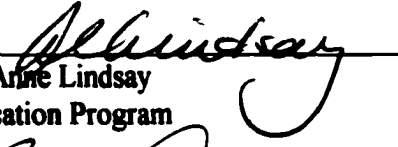
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## Abstract

**This case study investigates the learning problems of an adolescent girl with Fetal Alcohol Effect and learning disabilities, and the process by which an experienced tutor of students with learning disabilities makes decisions about appropriate levels of instruction and effective teaching strategies. Structured, multisensory, phonetic instruction in reading, writing, and spelling was effective for this student. However, because of the neurological basis for the student's learning problems, other important features of the tutoring included structure, repetition to overlearning, minimizing distractions in the environment, and instruction in organizing, planning, metacognition, attribution, and self-advocacy. The study demonstrated the importance of a tutor's extensive domain-specific knowledge and experience with problem-solving. Further research looking at tutoring students with Fetal Alcohol Syndrome or Effect should be longitudinal, and must consider the neurological basis for the students' learning, attention, and behavior problems.**



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## DEDICATIONS

**This report is dedicated to Vera Laznicka, who planted the seed; to my family, who nourished it and encouraged it to grow; and to Dr. Judith Lapadat, who guided its development with her caring, support, and high expectations.**

# **AN ADOLESCENT STUDENT WITH FETAL ALCOHOL EFFECT AND LEARNING DISABILITIES: TUTORING IN WRITTEN LANGUAGE**

## **CHAPTER ONE**

### **INTRODUCTION**

**Teaching individuals with Fetal Alcohol Syndrome (FAS) or Fetal Alcohol Effect (FAE) is a challenging task because of the complexity and variety of learning, attention, and behavior problems in this population, as well as because of variability within the individual (Kleinfeld, 1993; Morse, 1993). This is a new field of research, which draws on literature and practical experience not only in education, but in medicine, psychology, and social work as well.**

**A case study of the tutoring of a student with FAE is a means of looking closely at a student's responses to instruction, her ways of constructing meaning, her behavior, and her adaptations to her strengths and weaknesses. As a tutor with 11 years of experience working with children and adults with learning disabilities (LD), I took on the challenge of tutoring this student because I was interested in whether the methods I have been using with my other students would be effective with students affected by FAS/E.**

**Kim (not her real name) is a 13 year old girl with FAE. When this study began, she was reading, spelling, and doing math at about a Grade 4.5 level. In mainstream Grade 8 classes, she was struggling with following instructions, remembering the content of what she read in English, Science, and Social Studies texts, and keeping up with her peers, especially in reading texts and doing homework. She worked hard but was losing**

interest and wanting to quit because she felt she had no chance of success in her academic courses.

Kim's struggles in school may have roots in more than just her prenatal exposure to alcohol. Her mother Mariah (not her real name), grandfather, grandmother, and uncle all have learning disabilities. Because these may be hereditary (Ellis, 1993; Moats & Lyon, 1993; Obrzut & Lecker, 1994; Torgeson, 1994; Vellutino, 1987), her learning may be affected by learning disabilities in addition to FAE. Therefore investigation of her learning must consider diagnostic characteristics of both FAE and LD as well as research into interventions that have been shown to be effective with each of these problems.

Kim is probably far from unique in having her learning affected by both prenatal exposure to alcohol and hereditary learning problems. Of students identified with LD, 35% drop out of high school. Kim's mother Mariah did, twice. Up to 60% of adolescents in treatment for substance abuse have LD. That describes Mariah's experiences. Of females with LD, 50% will become mothers (many of them single) within three to five years of leaving high school (Ellis & Cramer, 1996). Although Mariah was 25 when Kim was born, she was a single mother and continues to raise Kim on her own. According to these statistics, it is likely not unusual to see students whose learning is affected by both FAS/E and inherited LD. For this reason, my observations of Kim's learning could be relevant for others working with children from similar circumstances.

Children with FAS/E who remain with their birth mothers are at high risk for abuse, neglect, and poverty, particularly if the mother is still abusing alcohol or other substances (Kleinfeld, 1993; Schmidt & Turpin, 1996a). If a student was living with any



of those risks, it would be difficult to tell whether ongoing problems or problems on any particular day were a result of FAE, learning disabilities, or stress from home. However, Morse (1993) emphasized that the most important factors in the success of a student with FAS/E are the intervention and advocacy of the family, whether this family is biological or otherwise. Factors that appear to be protective against the development of secondary disabilities for an individual with FAS/E include living in a stable and nurturant home for over 72% of her life, being diagnosed before the age of 6, not having been subjected to violence, and having basic needs met for at least 13% of her life. Secondary disabilities, those the child is not born with, could include mental health problems, disrupted school experience, trouble with the law, inappropriate sexual behavior, substance abuse problems, and problems with employment and living independently in adulthood (Streissguth, Barr, Kagan, and Bookstein, 1996).

Although the results of a case study of my work with one student will not be generalizable to a population, they may suggest directions for further study. Even in the absence of adequate replicated research the results may provide practical suggestions for those working with similar students. As stressed by Morse, "the needs of children and their families demand that interventions be tested now" (1993, p. 24).

For this case study, I planned to tutor Kim for three hours a week, in one hour sessions, for four months. Her school is two blocks from my home, where I do my tutoring, and we made arrangements for her to come during the language arts portion of her classes for the spring semester. The focus of my work with Kim was to be on written language, with direct instruction in reading, writing, and spelling as well as in

comprehension and compensatory skills. However, the effects of her participation in the classroom would also be considered. This was particularly important because I intended to integrate the language arts work of the classroom into our lessons, and the teacher hoped to integrate my work into the classroom to facilitate transfer of learning. I planned to administer pre- and posttesting in spelling and reading, describe early and late samples of her writing, and administer a self-esteem measure as well. Other data collection would be in the form of detailed observations of Kim's apparent strengths and weaknesses, her skills and knowledge, types of errors, effective and ineffective teaching strategies, and appropriate pacing and transitions during our lessons.

As a convenience, throughout this report I refer to students with FAS/E or LD as female, like the subject of the study. This is simply to avoid confusion and awkward language in the report, and does not suggest gender differences in these populations.

I have reviewed literature about issues relating to FAS/E, LD, interventions that are recommended for students with FAS/E or LD, teaching written language, and case study research to establish theoretical support for this study. The Methods chapter includes information about study design, the subject, and information about quantitative data instrumentation and measures. The Results chapter reports quantitative data such as test results and qualitative data such as description of my clinical decision-making process. The final chapter consists of discussion of my conclusions about Kim's learning, implications for practice, limitations of the study, and suggestions for further research.

## CHAPTER TWO

### LITERATURE REVIEW

#### Fetal Alcohol Syndrome and Effect

##### Definition and Diagnosis or Identification

“One of the most powerful teratogens” (1993, p. 24) is Morse’s description of alcohol. The diagnosis of Fetal Alcohol Syndrome (FAS) depends on three conditions being observed in a child born to a mother who has consumed alcohol during her pregnancy. Impaired growth, changes in facial structure, and central nervous system abnormalities must all be present for the label of FAS to be applied (Burgess & Streissguth, 1992; Morse). However, in the case of Fetal Alcohol Effect (FAE), identification is made when one or two of these three signs appear in such a child (Morse). Burgess and Streissguth further noted that Fetal Alcohol Effect is not now a medical diagnosis, but a descriptive term for children who had prenatal exposure to alcohol but do not display the full range of physical manifestations of FAS. The leading cause of mental retardation in the western world, FAS is estimated to occur in 1 in 500 to 600 children in the United States each year, and FAE in 1 in 300 to 350 (Burgess & Streissguth). This estimate of prevalence may be low because of lack of identification or diagnosis in many cases (Burgess & Streissguth; Morse), or because of high death rates in alcohol-affected infants, which reduces the number of surviving children who have been affected (Robinson, Conry, & Conry, 1996).

Although it may be tentatively identified by educators, parents, social workers, teaching assistants, or other people working with affected children, Fetal Alcohol Syndrome is a medical diagnosis. Fetal Alcohol Effect is not a medical diagnosis. Noting

the imprecise nature of the diagnosis, Burgess and Streissguth (1992) said that it must be made by a medical doctor who has specific training in recognizing the often subtle intricacies of this type of birth defect. Further contributing to imprecise diagnosis is the fact that recognition of craniofacial abnormalities is a subjective process, particularly because of possible ethnic differences in facial characteristics (Robinson et al., 1996).

Other factors to be considered are genetics, lifestyle, nutrition during pregnancy, maternal characteristics including IQ, and the possibility of prenatal exposure to other drugs as well (Morse, 1993). The effects of the consumption of a combination of drugs and alcohol on the developing fetus is unknown (Morse; Smitherman, 1996). Malbin (1993b) added that diagnosis is also complicated because the nature and severity of the effects observed in a child after fetal exposure to alcohol is impacted by the stage of pregnancy when the alcohol was consumed and by dose. A longitudinal study of the effects of prenatal alcohol exposure on 500 children followed from birth to age 14 suggested that binge drinking and drinking early in the pregnancy as opposed to mid-pregnancy had the most serious consequences in the form of neurobehavioral deficits (Streissguth et al., 1994).

Several important chemical, endocrine, and immunological functions of the fetal brain can also be affected by prenatal exposure to alcohol (Weinberg, 1997). Other physical abnormalities which may point to the effect of a mother's alcohol consumption during pregnancy may be seen in the ears, eyes, mouth, heart, liver, skeletal system, and urogenital systems (Morse, 1993). These associated abnormalities may also result from factors other than alcohol abuse during pregnancy. Their impact upon the child can be significant.

Morse (1993) pointed out that the problems resulting from the central nervous system damage have the greatest potential to affect the growing child. Extreme irritability and restlessness seen in infancy may present as hyperactivity in childhood and adolescence. Learning disabilities, slow language processing, memory deficits, intellectual limitations, perseveration, inappropriate social behavior, and fine and gross motor abnormalities significantly affect the social and academic success of a child with FAS or FAE. To further complicate the picture, Morse described the variability in the performance of children with FAS/E, with them often performing a particular task successfully one day but being unable to complete it the next (see also Olson et al., 1997; Weinberg, 1997).

Burgess and Streissguth (1992) claimed that FAS should not necessarily be considered to be more severe than FAE, because there is often little difference between the cognitive and behavioral characteristics of individuals with these two conditions. They noted that a student with FAE may not look disabled, but may struggle with the same cognitive or behavioral weaknesses as a student who qualifies for special help because of physical manifestations of FAS (see also Malbin, 1993a; Mattson, Riley, Gramling, Delis, & Jones, 1998; Shaywitz, Cohen, & Shaywitz, 1980).

There are no biochemical tests (Morse, 1993) or testing measures (Burgess and Streissguth, 1992) that can definitively diagnose FAS or FAE. However, many researchers now recommend routinely collecting information on possible prenatal exposure to alcohol when any student displays cognitive impairment of unknown etiology (Mattson et al., 1998; Shaywitz et al., 1980; Weinberg, 1997). To help identify clients who may have FAS/E, questionnaires have been developed, such as the Fetal Alcohol

Behavior Scale designed by Streissguth et al (1996) for use in their study on secondary disabilities in this population. Morse noted that most medical professionals have limited experience with patients with FAS/E, and that much of their educational literature is based only on severe cases, so that they may overlook the condition when their patients are less severely affected. Many physicians say they are reluctant to diagnose FAS, particularly with diagnosis being so imprecise. They have expressed concern that the diagnosis might label a child in school and in society, which may not be useful as long as there is little in theory and research that can suggest successful interventions (Morse).

Because of the complexity of problems in students with FAS/E, community awareness and sharing of information among various disciplines is necessary (Burgess, Lasswell, & Streissguth, 1992; Malbin, 1993a; Schmidt & Turpin, 1996b; Weinberg, 1997). Streissguth et al (1996) stressed the importance of families, clients, and agencies working together when dealing with mental health, education, criminal justice, social work, alcohol and drugs, and life skills issues.

#### State of Research into FAS/E

As noted above, heterogeneity in the profiles of students with FAS/E is one factor which makes it difficult to design rigorous research that is generalizable to other students (Weinberg, 1997). A second factor affecting the generalizability of research results is the difficulty in diagnosing FAS/E, which leads to inconsistency in classification. Third, the psycho-social complications of identifying drinking mothers influence availability and accuracy of perinatal histories (Weinberg). A fourth factor to consider is the widely varying circumstances in which FAS/E children grow up. Those who remain with their

birth mothers are at high risk for abuse, neglect, and poverty (Kleinfeld, 1993; Schmidt & Turpin, 1996a; Weinberg, 1997). When these risk factors do occur they must be seen as having significant effects on the children, and thus as being significant variables in rigorous study. Because many other similarly damaged children are in homes that provide optimal care, nutrition and support, this is particularly important to consider.

With the diagnostic categories of FAS/E first identified in the United States in 1976 (Morse, 1993), it is not surprising that definitive research has not yet been produced about successful interventions in such a new field of study. When other factors such as the imprecise nature of diagnosis (Weinberg, 1997), the heterogeneity and variability of the symptoms (Olson et al., 1997), and the extreme differences in living circumstances (Kleinfeld, 1993; Weinberg, 1997) are also considered, it is even more understandable that rigorous intervention studies with generalizable results have not been forthcoming. These factors suggest that case study research of individuals affected by FAS/E may be an appropriate way to begin investigating educational and life skills interventions by first making explicit the process by which an experienced tutor decides on potentially useful teaching strategies.

#### Self-Esteem in Students with FAS/E

Faced with feeling inadequate because of the many motor, academic, and social challenges resulting from their prenatal exposure to alcohol, children with FAS/E are at high risk for low self-esteem. For many of these children, difficult home circumstances might include neglect, abuse, or lack of support. The parent of eight alcohol-affected children, Lutke (1993) stressed how important it is to their self-esteem to experience

consistent success. Key to making success accessible for her children at home is her practice of ensuring that new skills are practiced in small increments, with each increment or step being mastered before the next is introduced (see also Kerns, Don, Mateer, & Streissguth, 1997). Lutke uses each child's strengths to teach critical social and behavioral skills, skills which she says are crucial to the child's acceptance by others. Hinde (1993) concurred, describing the child's strengths as "the foundation for self-esteem" (p. 135) (see also Weinberg, 1997). Caldwell (1993) added that constant positive feedback about her son's effective use of skills was useful reinforcement of his efforts, and that frequent nurturing of this nature seemed to contribute significantly to his self-esteem. However, a constant challenge to the self-esteem of both the child and the parent is the perception of many other care-givers that behavior and learning problems are deliberate and easily changed, rather than arising from neurological limitations (Lutke).

Particularly in adolescence, the cumulative effect of poor academic performance and frustration with the consequences of behavioral and social problems often results in depression and anxiety for a student with FAS/E (Burgess & Streissguth, 1992). In their study on secondary disabilities in 415 clients with FAS/E, Streissguth et al (1996) found that mental health problems occurred in 94% of their subjects, with depression being second only to attention deficit problems. Depression was reported by over 40% of the adolescents in the study. The study suggested that stability in a long-term nurturing home is a strong protective factor against mental health problems in this and all populations, and that early diagnosis and appropriate support could minimize the risk of mental health problems for clients with FAS/E.



Awareness of the neurological basis for learning and behavior problems in individuals with FAS/E is essential (Malbin, 1993a), even though support of these individuals is largely educational. Early intervention and support are critical factors in the learning and life success of children with FAS/E.

## Learning Disabilities

### Definition and Diagnosis or Identification

The definition of learning disabilities (LD) is no more precise and no more easily operationalized than the definitions of Fetal Alcohol Syndrome or Fetal Alcohol Effect. Stanovich (1993) noted that different definitions serve different purposes, whether for research, delivery of service, or advocacy work. Because diagnostic criteria differ, so do prevalence rates, ranging from 2.4% in one part of the USA to 9.6% in another (Torgeson, 1991). Zigmond (1993) added that for each child identified with LD, there is a child with similar learning characteristics who is not identified.

A report from the National Joint Committee on Learning Disabilities (NJCLD) to the International Dyslexia Association (IDA, formerly called The Orton Dyslexia Society) provided this definition, which was first published in 1990 following extensive multidisciplinary discussion:

**Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills.**

**These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span.**

Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute a learning disability.

Although learning disabilities may occur concomitantly with other disabilities (e.g., sensory impairment, mental retardation, serious emotional disturbance), or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences. (NJCLD, 1997, p. 29)

Discussing the 1988 draft of this definition, worded exactly as above, Torgesen (1994) said that recognizing the heterogeneity of LD in the first element of the definition demonstrates that a single theory of LD would be inadequate in describing the various disorders in this general definition. Referring to the second element, the assumption that LD are intrinsic to the individual, he asserted that a complete and viable theory must consider several methodological or theoretical paradigms, including behavioral, cognitive, and neuropsychological. Pumphrey and Reason (1992) agreed, but added that effective communication between disciplines is essential, cautioning with the whimsical example of the children's story about six blind men identifying an elephant by describing isolated features of the animal, with each providing only part of the whole picture.

Lyon (1996) shared Torgeson's concerns about the NJCLD definition, claiming that a more precise, operational, and inclusionary definition is necessary. With the limitations of the NJCLD definition in mind, he participated in the development of a working definition of dyslexia. Because I will be dealing largely with Kim's written

language problems, this definition as proposed by the Orton Dyslexia Society Research Committee in 1994 is important to note:

**Dyslexia is one of several distinct learning disabilities. It is a specific language-based disorder of constitutional origin characterized by difficulties in single word decoding, usually reflecting insufficient phonological processing.**

**These difficulties in single word decoding are often unexpected in relation to age and other cognitive and academic abilities; they are not the result of generalized developmental disability or sensory impairment. Dyslexia is manifest by variable difficulty with different forms of language, often including, in addition to problems with reading, a conspicuous problem with acquiring proficiency in writing and spelling. (Lyon, 1995, p. 9)**

**Lyon (1995) pointed out that dyslexia is one specific learning disability, but that it affects at least 80% of the learning disabled population and is the most prevalent type of learning disability. He emphasized that this is a working definition, subject to change in response to further research into such aspects as neuroimaging and genetics as well as the role of phonological processing in language learning. Addressing the issue of unexpected decoding difficulties in this definition, he stated that this is better verified by comparing reading age to chronological age or by comparing reading ability to academic performance in other areas, than by reference to previously acceptable discrepancy between IQ and reading levels. Dickman (1996) claimed that identifying LD through a discrepancy between IQ and achievement identifies a result rather than a cause of LD.**

**Measuring the discrepancy between listening comprehension and reading ability**

would be more useful to educators than measuring the discrepancy between IQ and reading levels (Stanovich, 1993). Stanovich claimed that children who are low in both reading levels and listening comprehension do not have an "unexpected" learning problem as required by the above definition of dyslexia. Further, he noted that often statistical means are used to identify students with LD without consideration of whether their learning has been adversely affected by other factors, such as sociocultural differences or lack of adequate instruction.

More than one ability-achievement discrepancy should be considered to increase validity when identifying a student as dyslexic, and it would be useful to apply regression equations to the difference between reading achievement and expected reading skills as predicted by intelligence testing (Pumphrey & Reason, 1992). Moats and Lyon (1993) added that although the IQ-reading levels discrepancy model is not desirable in classifying a student as dyslexic, it may be relevant in predicting useful instructional approaches or long-term outcomes.

According to Ellis (1993), dyslexia is more like obesity than like the measles. He said that you either have measles or you don't, but the diagnosis of obesity is more arbitrary, based on a continuum that is affected by various factors, such as bone structure, gender, age, and proportion of muscle to fat. Similarly, the diagnosis of dyslexia is based on a continuum that is affected by several factors, such as apparent intelligence, type of literacy experiences, support for literacy in the home and school, or social or emotional influences on the individual. This continuum was recognized and described by Orton as long ago as 1928 (Henry, 1998).

While scientists from various disciplines debate causes, definitions, and diagnostic criteria, parents, teachers and students cope daily with the manifestations of LD. The “unexpected” problems with listening, speaking, reading, writing, reasoning, or mathematical skills as defined above by the NJCLD present only part of the complex picture of LD. Many other learning characteristics contribute to a common profile of students with LD, with some or all of these characteristics being consistent and persistent in each individual. In my tutor training workshops I illustrate the elements of this profile by drawing an umbrella, showing each of these characteristics as a drip from the umbrella. An individual with LD may display five of these characteristics, or nine, or 11, and they may be large drips or small ones, depending on the severity of the characteristic.

Most students with LD are poor at organizing (Hallahan, Kauffman, & Lloyd, 1996; Henry, 1998; Hornsby, 1984; Lyon, 1996), including steps of a task, or their ideas, time, or possessions. They may be slow to process language (Lahey & Bloom, 1994) and may have problems with word retrieval (Alexander, Gray, & Lyon, 1993; Catts, 1991b; German, 1994; Roth & Spekman, 1991), comprehension (Roth & Spekman, Pumphrey & Reason, 1992), abstract reasoning (Roth & Spekman; Bender, 1992), and understanding of idioms (Milosky, 1994; Roth & Spekman). Students with LD often have difficulty with metacognitive strategies (Bender; Wong, 1991), generalization of learning (Pumphrey & Reason; Swanson, 1993), and transitions between activities or environments (Bender; Hornsby). They may be distractible, with poor selective attention, and many have problems with handwriting, copying, and sequencing (Bender, Hornsby). Individuals with LD often demonstrate low self-concept (Bender), and are at risk for development of

secondary problems such as depression, anxiety, and substance abuse (Pumphrey & Reason; Torgeson, 1994). To further confuse this complex picture, there is often variability within the individual (Pumphrey & Reason; Zigmond, 1993), with performance being successful one day, poor the next, and successful again the third day.

Given the difficulties in providing consistent definitions for identifying LD in general or dyslexia in particular, it is difficult to recommend appropriate interventions or to design research that has consistent and practical applications.

### State of Research into Learning Disabilities

As with FAS/E, definitive research into the area of LD is still fairly new, having been recognized in the United States as a category of disability only since 1968 (Lyon 1996). The phrase was coined by Kirk, who said that LD represented a discrepancy between an individual's achievement and her apparent capability to learn (Zigmond, 1993). Lyon commented that more time is necessary to be able to gain "a better understanding of the critical diagnostic markers and interventions that have a known probability of success" (p. 4). Complicating this understanding is the multidisciplinary nature of research in the field, which includes psychology, education, neurology, neuropsychology, psychiatry, speech-language pathology, and optometry, each with only a partial understanding of the complex manifestations of LD (Lyon). Inadequate definitions and classification systems fail to provide educators or researchers with the information they need to guide their practice, and guiding practice is presumably an important reason for having definitions and classifications (Moats & Lyon, 1993). Wong (1997) recommended stronger links between

research and teaching practice as a means of encouraging practical research that is more likely to be used by teachers in the field.

Because some research has suggested that the educational approaches usually recommended for teaching students with LD are also useful with students that Torgeson (1991) described as "garden-variety poor readers" ( p. 27), many educators question the necessity for identification of LD in a student. Wallach and Butler (1994) suggested that too much attention given to causes and categories of LD detracts from intervention time. However, Torgeson contended that a better understanding of subtypes of LD would help in applying research into practice, noting that an intervention investigated with a group of students of one subtype might not be useful for students of another subtype (see also Ellis, 1993; Pumphrey & Reason, 1992). Disagreement about classification or categorization for students with LD creates a dilemma similar to that faced by physicians described above who are reluctant to diagnose FAS because of the imprecise nature of the diagnosis as well as lack of research on appropriate interventions (Morse, 1993).

Just as the heterogeneity in students with FAS/E makes it difficult to provide a clear operational definition or generalizable research, so does the heterogeneity in students with LD. Lack of consistency in classification due to conflicting views of what qualifies as a learning disability leads to problems in identifying samples of similar subjects, and this variability in sample characteristics limits rigorous replication of studies and generalization of results (Catts, 1991a; Lyon, 1996; Moats & Lyon, 1993; Pumphrey & Reason, 1992; Torgeson, 1994; Williams, 1988). Describing the difficulty of producing generalizable research about students with LD, Dickman (1993) compared studies using inconsistent

classification of students with LD to studies that investigated the link between balls and broken windows without considering the difference between baseballs, basketballs, and golf balls. It is impossible to generalize across studies when this difference between types of balls is not considered, and it is impossible to predict how one ball will behave by studying a different kind of ball, he said. Similarly, generalization across studies is not advisable when the criteria for including students in the samples differ, and an intervention that is useful for students of one classification may not be useful for students who are identified by different characteristics.

Lyon (1996) expressed optimism that new treatment initiatives being supported by the National Institute of Child Health and Development may begin to shed light on relationships between cognitive, neuropsychological, linguistic, and behavioral attributes in children with LD (see also Henry, 1998). With more information about subtypes of learning problems, he said, it should become possible to select specific intervention approaches for individual students (see also Lyon et al., 1991). Moats (1996) claimed that "the nature of the problem dictates the nature of the intervention" (p. 88). Current neuropsychological research suggests that it may be more effective for students with LD to be taught to use their strengths to compensate for their weaknesses rather than to try to correct their weaknesses, although this suggestion is only tentative and more research in this area is required (Lyon et al., 1991). Dickman (1993) added that diagnostic profiles are often complicated by co-morbidity of various kinds of learning problems along with intrinsic problems such as mental health disorders or extrinsic factors including socioeconomic status, school failure, and adoptive status. Identifying a student with only



one condition when others co-occur gives an inaccurate picture of that child's learning needs. "The fashion of sorting children into separate and distinct diagnostic pigeonholes is a bureaucratic convenience with no scientific or pedagogic merit," he said (p. 221).

There is little rigorous, empirically-based research on effective interventions to use with students with LD, particularly students in high school (Ehren, 1994; Scruggs & Mastropieri, 1994). Researchers seldom have control in their investigations of interventions used with students with LD, whether in the classroom or a laboratory, and it is difficult to provide ideal research conditions (Pumphrey & Reason, 1992; Scruggs and Mastropieri). Englert (1996) claimed that traditional quantitative research is inappropriate for investigating teaching of strategies because of the complexity of factors that affect the teaching-learning process, and that rich data from qualitative research is more useful. Pumphrey and Reason added, however, that research must not wait for perfect research conditions, but that "perfect is the enemy of the better. If you have an idea on how to alleviate SpLD [specific learning disabilities], try it out" (p. 125). Just be aware, they said, that claims of efficacy of an intervention may be undermined by less than ideal research conditions. Single-subject case studies using a pre-posttest, no-control-group design may provide valuable insights (Pumphrey & Reason), and begin to shed light on interventions for individuals and suggest directions for larger studies. Because developments in the field of LD in special education are more political and social than scientific (Torgeson, 1991) and more financial than educational (Pumphrey & Reason), it is difficult to carry out systematic research on effective interventions or to implement research recommendations.

Research in the fields of both FAS/E and LD is chronologically young, and beset

by problems with imprecise definitions, unclear means of classification, unproven interventions, and heterogeneity of populations, making design and generalizability difficult. A case study with a pre-posttest design would appear to be a useful way to start examining educational interventions with a student with both of these complex learning problems.

### Self-Esteem in Students with Learning Disabilities

Those who work with individuals with LD should be concerned about self-esteem, as well as other secondary disabilities such as depression or other mental health problems (Pumphrey & Reason, 1992; Smith, 1996; Torgeson, 1994). As a tutor, I frequently hear from parents after I have been tutoring their children for a month or two that the children seem generally happier, both in school and out. Their anecdotal reports of fewer nightmares, fewer stomach aches, and less resistance to going to school have led me to believe that as the children find ways that they can learn, and find success in reading, spelling, and writing, they feel better about themselves.

Seligman's (1995) investigations of the relationship between self-esteem and school success concluded that school failure is a causal factor in low self-esteem. He argued that the efforts of many educators to teach self-esteem would be better utilized in teaching mastery of skills, because learning success is one of the roots of good self-esteem (see also Lyon, 1996; Wong, 1991). Pumphrey and Reason described research that combined effective teaching of reading with instruction in self-esteem, but questioned whether it was the self-esteem instruction, learning success, or simply the supportive attention of an adult that contributed to the students' improvement over that of students in

other treatment conditions. Similarly, Chall (1997) claimed that research has demonstrated effective methods to teach reading, and that if educators were to use these methods, fewer children would suffer from low self-esteem as a result of reading failure (also see Henry, 1998). Academic success and genuine social acceptance are critical to social well-being (Moats, 1996).

Conflicting results in research about self-concept in adolescents with LD may be a result of a failure of researchers to differentiate between global self-concept and limited self-concept (Bender, 1992). Bender said that most adolescents with LD feel good about themselves as people, but not about themselves in academic settings. He added that most adolescents with LD are passive learners who have a more external locus of control than non-handicapped students, believing that it is external factors rather than their own effort that contribute to academic success. This external orientation may emerge from an individual's years of academic failure, and may act as a survival mechanism (see also Bryan, 1986). Cramer (1996) added that early intervention is necessary to prevent continued academic failure because the longer a student fails, the more her self-esteem suffers.

Dickman (1993) described the variable results of research linking LD to delinquency, suggesting that inconsistent classification of subjects led to inconsistent results. Some studies showed a strong correlation between LD and delinquency, some a modest correlation, and others no correlation at all. He claimed that different kinds of learning problems can lead to different risks of secondary problems, such as school failure, social problems, or delinquency. A student with dyslexia is at low risk, he said, a student

with non-verbal LD is at higher risk, but a student with dyslexia, attention deficit disorder with hyperactivity, and non-verbal LD is at significantly higher risk because of the characteristics of his learning differences. Although Dickman did not use the term "self-esteem," it would seem reasonable to assume that low self-esteem is a factor in the delinquent behaviors he described.

Attention to self-esteem is critical in the support of individuals with LD. This could include academic support to minimize failure, moral support, attribution training, or social skills training.

### Comparing FAS/E and Learning Disabilities

The presence of Fetal Alcohol Syndrome or Fetal Alcohol Effect in a student with LD complicates an already complex picture. The literature seems to distinguish the learning problems associated with FAS/E from those associated with LD (Burgess & Streissguth, 1992; Kleinfeld, 1993; Morse, 1993), presumably on the basis of the differing neurological etiologies of the learning problems. Perhaps it is because research in both areas is so chronologically young that the similarities and differences in their manifestation and in successful interventions do not appear to have been investigated. Although LD are mentioned in FAS/E literature as characteristic in individuals with FAS/E, there is little reference to research about LD, and there are few references to FAS/E in literature about LD (see Bender, 1992). To clarify the similarities and differences described in the literature, I have summarized parallels in problems seen in students with FAS/E and in students with LD in Table 1.

**Table 1**  
**Problems in Children with FAS/E and Children with Learning Disabilities**

FAS/E	Learning disabilities
<b>Diagnosis</b>	
Based on prenatal history and physical examination by trained physician.	Usually based on number of years behind peers in school reading and spelling, or discrepancy between IQ and performance, as measured by a psychologist.
<b>Physical manifestations</b>	
Growth retardation, central nervous system involvement, facial dysmorphology, physical anomalies in eyes, ears, mouth, heart, liver, skeletal, and urogenital systems. Hypo- or hypersensitive to touch.	Suggestion of higher incidence of left-handedness or uncertain hand preference, and autoimmune disorders such as arthritis, diabetes, or allergies.
<b>Familial tendencies</b>	
Not inherited, but may run in families because of familial pattern of alcohol abuse.	Thought to be inherited in most cases.
<b>Etiology</b>	
Neurological and physiological damage from prenatal alcohol consumption.	Possible neuro-anatomical differences.
Intrinsic to individual; not developmental.	Intrinsic to individual; not developmental.
<b>Learning problems</b>	
IQ range 20-130.	IQ range same as normal population.
Slow development of early language, including articulation. *	May have slow development of early language, including articulation.
Problems with sound/symbol relationships and phonological awareness. *	Problems with sound/symbol relationships and phonological awareness.
Problems with storage and retrieval of information. *	Problems with storage and retrieval of linguistic information.
Slow to process language. *	May be slow to process language.
Problems with spelling, reading, writing, and math. *	Problems with spelling, reading, writing, and sometimes math.

(table continues)

FAS/E	Learning disabilities
Difficulty with abstract concepts.*	May have difficulty with abstract concepts.
May be able to decode but struggle with comprehension.*	May be able to decode but struggle with comprehension.
Poor cognitive processing, especially executive and strategic processes.*	May have poor cognitive processing.
Not known.	May have reversals in reading and writing.
Poor selective attention.*	May have difficulty with selective attention.
Impulsive; lack of awareness of consequences.*	May be impulsive; may show lack of awareness of consequences.
Problems organizing ideas, things, time.*	Problems organizing ideas, things, time.
Poor short and/or long term memory.*	Poor short and/or long term memory.
Poor sequencing, especially instructions.*	Poor sequencing, especially instructions.
Problems generalizing from one activity or situation to another.*	Problems generalizing from one activity or situation to another.
Transitions between activities are often difficult, and may cause child to withdraw or be disruptive.*	Transitions between activities may be difficult.
Poor communication skills, especially pragmatics of language.*	May have poor communication skills, including pragmatics of language.
Variability; marked difference between "good days" and "bad days."*	Variability; may show marked difference between "good days" and "bad days."
At risk for developing secondary problems such as depression, anxiety, substance abuse, trouble with the law.*	At risk for developing secondary problems such as depression, anxiety, substance abuse.

**Note.** \*Problems may be more intractable than in students with learning disabilities.

Sources: Ellis & Cramer, 1996; Hornsby, 1984; Lapadat, 1991; Malbin, 1993a; Morse, 1993; Pumphrey & Reason, 1992; Smitherman, 1996; Streissguth et al., 1996; Vellutino, 1987; Zigmond, 1993.

When I first recognized the parallels illustrated in Table 1, I wondered if the approach to teaching language that is effective for teaching most of my students with LD would also be effective for students with FAS/E. This study begins to address the question of whether similar symptoms of learning problems in students with FAS/E and with LD would respond to similar interventions.

### **Teaching Written Language to Students with FAS/E or Learning Disabilities**

#### **General Recommendations**

Students with FAS/E and students with LD are both heterogeneous groups, with inter-student and intra-student differences. However, the similar symptoms listed in Table 1 are reflected in similar general recommendations in the literature for working with both groups. I have summarized these recommendations in Table 2.

Table 2

**Recommended Interventions for Students with FAS/E and Students with Learning Disabilities**

<b>FAS/E</b>	<b>Learning disabilities</b>
Structure in environment, routines, etc.*	Structure in environment, routines, etc.
Consistency in rules, environment, communication.*	Consistency in rules, environment.
Brevity in communication; make it as concrete as possible.*	Brevity in communication. May benefit from concrete presentation.
Variety in communication, using visual and auditory input, singing, and demonstration.*	Variety in communication, using visual and auditory input, singing, and demonstration.
Repetition and practice to overlearning.*	Repetition and practice to overlearning.
Multisensory teaching and reinforcement.*	Multisensory teaching and reinforcement.
Teach to the skill level and need of each student.*	Teach to the skill level and need of each student.
Adapt environment to minimize distractions.*	May be necessary to adapt environment to minimize distractions.
Immediate constructive feedback on successes and errors.*	Immediate constructive feedback on successes and errors.
Teaching reading: conflicting anecdotal reports of progress and of problems with both whole language and with explicit instruction in sound-symbol relationships.	Teaching reading: research recommends explicit instruction in sound/symbol relationships along with connected reading, meaning, and other language instruction.
Not known.	Integrate teaching of reading, writing, and spelling.
Not known.	Writing helps to improve reading.

**Note.** \*More important for students with FAS/E than for students with LD.

Sources: Adams, 1990; Gere, 1993; Hallahan et al., 1996; Henry, 1998; Hornsby, 1984; Lahey & Bloom, 1994; Lutke, 1993; Malbin, 1993a; Morse, 1993; Tanner-Halverson, 1993.



In the literature I found five consistent guiding principles for intervention with students who have FAS/E, summarized by Tanner-Halverson (1993) as structure, consistency, brevity, variety, and persistence. Describing the need for structure, Lutke (1993) explained, "Structure creates the form that holds us together, like the pail around a bucket of sand. Alcohol-affected children do not have internal structures to hold themselves together. In effect, they are the sand, and we must attempt to be the pail" (p. 75). Malbin (1993a) emphasized that Fetal Alcohol Syndrome and Effect (FAS/E) are handicaps with a physiological basis, and that modifications to environment should be made for FAS/E as they would for any other physical handicap. She said this could include modifications to attitudes, perceptions, physical layout, sensory stimuli, timelines, expectations, and processes, suggesting that these modifications could support greater student success. Lutke agreed, recommending structure in environment, routine, rules, and possessions. For students with distractibility or attention deficit problems, this structure and modification of environment often makes the difference between successful learning and shutting down or acting out in reaction to overstimulation (Malbin, 1993a).

Structure is also important for students with LD (Hallahan et al., 1996; Lyon, 1996), even though they do not usually require the degree of structure that is often necessary for students with FAS/E. Students with LD tend to struggle with organization, whether of their personal effects, their homework, their time, or their ideas, and they usually benefit from direct instruction in and practice of skills to improve their organization in all areas (Henry, 1998). Environmental considerations such as reducing distracting sights and sounds, seating at the front of the room near the teacher, or

**maintaining consistency in location of classroom supplies can be helpful to students with LD (Hornsby, 1984).**

**In effect, consistency is a form of structure, ensuring that rules and routines are established and reinforced the same way every time. Lutke (1993) cautioned that children with FAS/E do not adapt easily to change, and inconsistency causes change, which is stressful to them. Morse (1993) agreed, suggesting that consistency would help them to focus on their learning. Both students and teachers benefit when the student “can rely on a ritual rather than internal organization” (Soby, 1994, p. 86). When change in rules or routine is necessary, children with FAS/E should be prepared in advance in order to facilitate a smoother transition (Tanner-Halvorsen, 1993).**

**Similarly, children with LD benefit from consistency in scheduling, in recording homework assignments, or even in the people they interact with (Bender, 1992; Hornsby, 1984). Changes in routines, rules, or teaching staff tend to be disturbing for children with LD, as they are for children with FAS/E. Children with LD usually benefit from help with transitions, such as reminders that there are five minutes left before recess, or that this afternoon Mrs. Brown will be away but Mr. Jones will be taking care of the class.**

**Addressing the need for brevity when communicating with children with FAS/E, Lutke (1993) claimed, “The more you talk, the less likely they are to grasp the point” (p. 85). Sentences should be short, precise, and concrete. She said that too many stimuli, whether verbal, visual, or environmental, seem to overwhelm these children and make it more difficult for them to sort out the information they need. Malbin (1993a) concurred, adding that slow cognitive pace may be based in slow processing of auditory or visual**

stimuli or slow production of expressive language (see also Weinberg, 1997). This slow cognitive pace means that children with FAS/E may need longer to process information than other children. If they are not allowed this time they may become overloaded and be unable to cope with the learning or communication task, which they might be capable of performing if they are given the time they need. They may react to stimulus overload by withdrawing or by acting out with disruptive behaviors (Malbin).

Slow language processing is also a problem for many students with LD. They need time to think about an instruction, or to process the language in a question before they can begin to think about the answer (Lahey & Bloom, 1994). Many struggle with word retrieval, which makes it difficult for them to answer quickly, even when they know the content of what they want to say (Catts, 1991a; German, 1994; Roth & Spekman, 1991). Note-taking from a lecture is difficult for students who process language slowly, and they are often unable to summarize an idea and write it down before the teacher has gone on to another topic (Hornsby, 1984; Lahey & Bloom). Sharing notes with a selected classmate or being provided with a copy of the teacher's notes can be useful accommodations for these students. Taped lectures are another possible strategy, but in my experience, most students find re-listening to a whole lecture too time-consuming for study purposes.

Variety in communication with children with FAS/E can be accomplished by incorporating visual representations such as picture labels, or singing, physical demonstrations, exaggerated vocal variety, and exaggerated expressive body language (Lutke, 1993). Eye contact can help to ensure that the child knows that a particular

instruction is for her and not for anyone else in the room (Groves, 1993; Lutke, 1993; Murphy, 1993). It is important to be aware that children with FAS/E can often “talk the talk but not walk the walk,” perhaps being able to repeat an instruction or tell a peer what to do, but not being able to apply it to their own behaviors (Malbin, 1993a). For this reason, they may need to be led through the steps of instructions for them to succeed. Because children with FAS/E tend to take communication literally, Lutke suggested avoiding idiomatic expressions such as “put a lid on it” (p. 85).

Similarly, variety in communication is important for students with LD, although they may not have the intellectual limitations or the depth of weaknesses of students with FAS/E. A consistent recommendation in the literature about LD is for a multisensory approach to teaching (Henry, 1998; Lyon et al., 1991; Pumphrey & Reason, 1992) and multisensory choice in student presentation of assignments as a means of accommodating students’ different strengths and weaknesses (Pumphrey & Reason). As for students with FAS/E, rhythm or singing are often useful learning tools, particularly for learning material such as the alphabet or mathematical facts by rote. Also like most children with FAS/E, many students with LD take communication literally, often missing the point of idiomatic expressions (Milosky, 1994; Roth & Spekman, 1991).

Persistence is essential in working with children affected by FAS/E (Kerns et al., 1997). Lutke (1993) described repetition in teaching routines for learning new skills in school and at home, including dressing, bathing, making sandwiches, and doing chores. Chores and skills must be explained in simple language and demonstrated and practiced step-by-step, with immediate tactile and visual rewards for the accomplishment of each

step (see also Phillpot, 1993). Learning is most effective when it is integrated with experience (Murphy, 1993). This experience should occur in a variety of situations because children with FAS/E have difficulty with generalization and memory, and for them, "every day is a new day -- every minute a new minute" (Soby, 1994, p. 93). For children with FAS/E who often lack the ability to conceptualize, comprehend, sort out, retain, and apply abstract information, it is usually necessary to provide repetition and concrete, visual representation of instructions, rules, concepts, and sequences (Kerns et al.; Lutke; Soby). Also recommended in the literature was that teachers use a multisensory approach to teaching, using visual, auditory, and tactile-kinesthetic input (Malbin, 1993a; Morse, 1993; Phillpot; Soby), activity-based teaching (Morse; Soby), and repetition to the point of overlearning (Malbin).

Multisensory reinforcement to the point of overlearning is also a crucial component of teaching most students with LD (Greene & Enfield, 1982; Hallahan et al., 1996; Henry, 1998; Pumphrey & Reason, 1992; Rome & Osman, 1985; Sheffield, 1991; Vellutino, 1987), as it is for students with FAS/E. While the need for concrete representation of instructions or learning material may not be as critical for students with LD as it is for many students with FAS/E, concrete presentation can be effective for those students who struggle with abstract ideas. I have found manipulative materials to be useful for explaining abstract concepts such as affixes, sentence structure, or spelling rules to students who are otherwise puzzled by these concepts. For example, manipulating plastic letters to demonstrate the effect of adding an "e" to words like "fin" and "mat" is usually more effective than simply explaining and demonstrating with paper and pencil.

The general recommendations for structure, consistency, variety, brevity, and persistence in teaching students with FAS/E apply to teaching students with LD as well. The need for such support is usually greater for students with FAS/E than for students with LD, and this may be related to more serious neurological damage in students with FAS/E.

### Reading

Eighty per cent of students with LD have problems with language and reading (Ellis & Cramer, 1996). This statistic does not distinguish students with FAS/E from other students with learning difficulties, but presumably a similar percentage of students with FAS/E have reading problems.

The above general principles for teaching students with FAS/E and LD must be considered when teaching them written language, but it is also important to consider current research on teaching reading, writing, and spelling to students in general. Various approaches to teaching reading have been used in our schools in recent years, including whole word or meaning-based and code-emphasis approaches. Language experience approaches emphasize the interdependence of oral and written language, utilizing beginning readers' memory and oral language skills as well as visual configuration of words and context clues. A socio-cultural process involving the student, teacher, and peers produces a vocabulary of sight words that are relevant to students' interests (Bos & Vaughn, 1994). The whole language approach focuses on students' construction of meaning, functional language that is relevant to individual students, the use of authentic literature, emphasis on the writing process, co-operative student work, and the importance

of student motivation, enthusiasm, and interest. Most whole language teachers believe that students should not be taught reading skills in isolation using segmented texts and worksheets (Bergeron, 1990). On the other hand, code-emphasis instruction, whether analytic or synthetic, emphasizes explicit teaching of reading skills such as segmenting and sound-symbol relationships as part of a larger program of reading and writing (Adams, 1990).

In her 1990 review of current research on learning to read, Adams concluded that fluency and comprehension in reading English depends on thorough knowledge of sound-symbol relationships and spelling. Further, she found that most children do not learn these relationships unless they are explicitly taught. Lyon (1996) described the importance of a beginning reader's phonological awareness, of being able to distinguish the overlapping sounds in speech as discrete sounds which are represented by symbols in written language. Current research demonstrates conclusively that effective reading instruction includes explicit instruction in writing the symbols representing the sounds in speech, in addition to an emphasis on connected reading, meaning, and language instruction (Adams, 1990; Adams, 1997; Blachman, 1996; Chall, 1991; Chall 1997; Feitelsen, 1988; Gough, 1996; Henry, 1998; Liberman & Liberman, 1990; Moats, 1996; Pumphrey & Reason, 1992; Stanovich, 1980; Vellutino & Scanlon, 1991). However, Chall (1991) made the distinction that phonology is the critical feature of teaching beginning reading, while language and meaning become more important as reading develops.

Is this approach to teaching reading also appropriate for students with FAS/E or LD? Adams (1997) maintained that structured explicit instruction in orthophonemic or

sound-symbol relationships along with connected reading and direct teaching in other aspects of language were effective in teaching all but 1% to 3% of children to read.

Further, she claimed that this approach was particularly effective for students who were at risk for reading problems, although she did not directly address its usefulness for students with FAS/E. With reference to teaching students with LD, Adams' position has been supported by others in the field (Blachman, 1996; Butler, 1991; Chall, 1997; Greene & Enfield, 1982; Guyer et al., 1993; Kauffman & Trent, 1991; North, 1992; Pumphrey & Reason, 1992; Rome & Osman, 1985; Sheffield, 1991; Vellutino, 1987), but these provided little reference to students with FAS/E.

Effective instruction both for students with FAS/E and for students with LD must include multisensory reinforcement (Henry, 1998; Malbin, 1993a; Morse, 1993; Philpott, 1993; Pumphrey & Reason) and repetition (Lutke, 1993; Malbin; Pressley & McCormick, 1995) with constructive feedback on errors (Lutke; Pressley & McCormick; Hallahan et al., 1996). Pumphrey and Reason contended that these approaches would be useful in teaching literacy to any student, but that teaching students with dyslexia differs in "the degree of structure, detail, assessment, systematic teaching, record-keeping, and overlearning that characterized the specialized approaches.... There is no quick fix, no magic method, no panacea"(p. 118) in working with students with LD. However, they cautioned that it is difficult to determine whether learning success results from direct instruction or from program content, suggesting that the combination may be more effective than each of its parts. To the critics who have called this approach boring and involving too much overlearning for the student, they replied that it is effective, while less



structured approaches have consistently failed to help students with dyslexia to become literate. The effectiveness of this approach for teaching students with FAS/E has not been thoroughly and rigorously investigated.

I found less literature describing effective approaches for teaching reading to students with FAS/E than for students with LD, and all of it was anecdotal in nature. Referring to the debate about the teaching of reading as it relates specifically to children with FAS/E, Tanner-Halverson (1993) said that her school found that these students had difficulties with instruction in sound-symbol relationships and were more successful with what she called a whole language approach. She attributed this to students' problems with auditory processing, analysis, and synthesis, which she said are required by what she called the phonics approach. On the other hand, Phillipot (1993) claimed that structured multisensory instruction in sound-symbol relationships was more effective than a literature-based approach for her students with FAS/E. Gere (1993) commented that contextual prediction was her daughter Cindy's strength, while decoding as taught in the Distar Program was her weakness.

This debate brings up several questions. The first is whether what is helpful for one will be helpful for others. This must be asked for each student, given the heterogeneous profiles of students with FAS/E and with learning disabilities, as well as the inconsistent levels of performance often displayed by each student. The second question is whether to remediate or to compensate for a weakness, such as Cindy's weakness with decoding, as mentioned above. A third question concerns the quality of teaching used when an approach has been unsuccessful. An experienced teacher with domain-specific

knowledge about the structure of language and related problem-solving skills (Mayer, 1987) is more likely to provide effective instruction than a teacher who does not have this knowledge, even when they are both presenting the same program.

Blachman (1994) claimed that current research strongly supports direct instruction in phonemic awareness for reducing reading difficulties (see also Adams, 1990; Moats, 1988). My preference in tutoring is to provide both remediation and compensatory techniques for my students' weaknesses, although I have found situations where after intensive but unsuccessful attempts at remediation I have decided that continued remediation is counterproductive. Difficulty in learning mathematical facts by rote is an example of a weakness that can be readily compensated for with a calculator.

In my experience, reading instruction is most effective when it is responsive to the needs of the student as to whether or how much orthophonemic instruction is involved. Pumphrey and Reason (1992) emphasized the importance of teaching to individual needs of students with LD, so that a student who appears to benefit more from a top-down approach would progress from general learning to specific, with word recognition skills following the reading of a story. On the other hand, a student who struggles with phonological awareness may need to strengthen specific decoding skills before progressing to reading and writing sentences and stories. This responsive teaching is difficult to accomplish across a classroom but more feasible in a small group or tutoring situation, where the teacher or tutor has an opportunity to not only observe individual learning strengths and needs, but to respond to them as well (see Englert, 1996).

Practice with immediate constructive feedback helps the student to analyze and

correct errors, which is more effective than practice with feedback that simply classifies answers as right or wrong (Hallahan et al., 1996; Pressley & McCormick, 1995).

Immediate constructive feedback helps a student to correct her errors rather than practice incorrect spelling (Gelzheiser & Clark, 1991). Lutke (1993) described the benefits of immediate feedback and rewards when teaching her children with FAS/E.

The course of a lesson plan changes when the teacher or tutor is able to respond immediately with constructive feedback, seeing a student error or confusion as what is often called a "teachable moment." Many other factors call for adjustment of a responsive lesson plan, including what the student already knows, what she needs to know, whether her prior knowledge is sufficient to support the development of a new cognitive strategy, and whether she has the appropriate receptive or expressive language for effective communication of new learning (Englert, 1996). Given the variability in performance of students with FAS/E and students with LD, what the student knows or is capable of may change from day to day or hour to hour, so it is seldom possible to design a lesson plan ahead of time and follow it exactly.

With reference to teaching reading to students with learning disabilities, Vellutino and Scanlon (1991) suggested that combining literature-based instruction with instruction in sound-symbol relationships is most effective, with the strengths of each approach compensating for the weaknesses of the other. This view was supported by Adams (1990, 1997) and Pressley & McCormick (1995). Pumphrey and Reason (1992) discussed whether phonemic awareness was a prerequisite or a consequence of learning to read, and concluded that probably a reciprocal interaction existed. They suggested that as phonemic

awareness increased, reading improved, and as reading was practiced and improved, phonemic awareness increased still more. Relating this reciprocal interaction to the Biblical story of Matthew in which the rich get richer and the poor get poorer, Stanovich (1993) coined the term "Matthew effect" to illustrate that as poor readers read less, they improve less in a variety of reading skills than do their more able peers who read more (see also Blachman, 1994; Kamhi, 1991). The improvement of more skilled readers in use of metacognitive skills, vocabulary, syntax, and knowledge about the world does not occur for students who have little reading practice, and as poor readers grow older, the absence of these skills and knowledge seems to lead to more generalized cognitive deficits (Wong, 1991). Because the learning of students with FAS/E has not been thoroughly investigated, it is not known if this reciprocal interaction is also typical for them.

My tutoring of students with LD is based on the Orton Gillingham philosophy, which was formulated in the 1920s by Samuel Orton, a neurologist and psychiatrist, and Anna Gillingham, a psychologist and remedial teacher. Although Orton believed that dyslexia was rooted in biological causes, he claimed that the intervention should be educational rather than medical (Henry, 1998; see also Ellis & Cramer, 1996). Orton emphasized that within the guidelines of being multisensory, structured, and phonetic, the teaching principles should be applied flexibly, avoiding over-standardization (Rome & Osman, 1985), "carefully structured but not programmed" (Henry, p. 9). Students should be directly taught spelling, reading, handwriting, and expressive writing (Sheffield, 1991). Sheffield added that these should be taught together as "one logical body of knowledge" (p. 42), so that the students develop a habit of looking at language analytically, using

language as they think about language, and looking for the structure that influences a large portion of the English language.

In her review of the literature on beginning reading, Adams (1990) noted that an emphasis on writing activities consistently resulted in improvements in reading achievement. As children learn to write, they come to “the most important reading insights of all” (p. 103), that the purpose of writing is to communicate, and therefore the purpose of reading is to be a part of that communication. Further, she argued that both theory and research confirm the importance of integration of reading, writing, and spelling in productive education (see also Pumphrey & Reason, 1992). The importance of creative writing in this process was stressed as well (Greene & Enfield, 1982; Sheffield, 1991; Williams, 1991). Many other teaching approaches, such as Slingerland, Project Read, Reading Mastery, and the Spaulding Road to Reading include features that are based on or similar to those of the Orton Gillingham approach.

### Spelling

Research has demonstrated that teaching spelling is an effective component in teaching reading (Adams, 1990; Williams, 1991), although Henry (1998) noted that there is little current research on teaching spelling to students with LD as compared to research about teaching reading. She said a continuum of decoding and spelling instruction should be followed, with compound words, affixes, syllables, and Latin and Greek roots and affixes being taught from Grade 3 to Grade 8.

The direct instruction of spelling and reading forms the core of my tutoring of students with LD, and in my experience, improvements in spelling are usually

accompanied by improvements in reading and writing. Spelling instruction gives practice in analysis of the phonemes that make up words and exposure to the orthographic or visual representation of the words, both of which are essential to good reading (Adams, 1997; Williams, 1991). Spelling also gives multisensory practice involving motoric, auditory, and visual reinforcement (Pumphrey and Reason, 1992) to support automaticity in reading, and automaticity in reading feeds comprehension rather than competing with it (Adams, 1990). Comprehension is impaired when a child reads slowly, because she is so busy processing the decoding that she is cognitively unable to process the meaning as well (Blachman, 1996; Englert, 1996; Pumphrey & Reason, 1992; Williams, 1991). We know how to give students a better start, Williams said, and we have a responsibility to act on the research supporting the explicit teaching of orthophonemic relationships along with other elements of a good program (see also Adams, 1997). I found little research literature discussing whether students with FAS/E are likely to be successful with this approach, but I suspect that in some cases their success may be compromised by intellectual limitations as well as learning problems as a result of their prenatal exposure to alcohol.

Teaching spelling is also useful in teaching writing. This may be because explicit orthophonemic instruction has been shown to result in better reading vocabulary, in addition to word recognition, spelling, and reading comprehension (Adams, 1997), and a more extensive vocabulary helps promote better writing. Englert (1996) claimed that students with LD need to understand that strategies are tools for learning and knowledge, and they need to be provided with guided practice across the curriculum for effective

transfer of their skills. It has been my experience that this practice in reading, writing, and spelling results in the students using various strategies more effectively in all three areas. However, I have had little experience tutoring students identified as having FAS/E, so cannot comment on whether this is also true for them.

### Writing

Most students with learning disabilities struggle with writing. Problems with the mechanical aspects of spelling, grammar, and handwriting tend to interfere with the cognitive processes of organizing, coming up with ideas, using variety in vocabulary, and revising for the purposes of effective communication. Current research supports the process approach to teaching writing, which includes instruction in the recursive, non-linear process of planning, drafting, revising and editing, emphasizes the social context of writing as communication, and requires responsive interaction between teacher and student as the text develops. In addition to process instruction, some teaching of basic skills such as grammar, spelling, and handwriting is also important for the development of good writing (Graham et al., 1991).

Many factors in the integrated teaching of written language affect writing skills. As reading improves, a student's exposure to more sophisticated models may affect content as well as use of syntax or themes in her writing (Adams, 1990). In my experience, increased self-confidence as a result of more success in reading and spelling seems to encourage a student to take more risks with variety in vocabulary and in elements such as sentence structure. Possibly a more analytic way of writing may result from the analytic way of looking at language through spelling instruction. I suspect this

improvement is similar to the reciprocal effects in reading described earlier by Pumphrey and Reason (1992), where better phonemic awareness improved reading, and increased reading practice improved phonemic awareness (see also Kamhi & Catts, 1991; Stanovich, 1993; Wong, 1991).

It is important to note that none of the above suggestions for strategies for teaching students with FAS/E has been the subject of thorough rigorous research. Although research into teaching students with LD has been more extensive than for students with FAS/E, it has been beset by methodological problems as described above, and may not be sufficiently rigorous for generalizability of results. For example, researchers studying interventions used with students with LD seldom have control in their investigations, whether in the classroom or a laboratory, and it is difficult to provide ideal research conditions (Scruggs & Mastropieri, 1994).

Many suggestions for interventions come from the anecdotal reports of practitioners and parents searching for effective teaching strategies for working with students affected by FAS/E or by LD. However, as Morse (1993) emphasized, the needs of children with FAS/E and their families demand that the development of learning and coping strategies should not wait for medical research to thoroughly identify and explain the neurological or physiological basis for these needs. Wong (1991) made a similar recommendation with reference to practice and research related to learning disabilities.

#### Life Skills and Self-Esteem

Students with FAS/E are at risk for developing secondary disabilities such as mental illness, school problems, and trouble with the law (Streissguth et al., 1994), and to



a lesser degree this is also true for students with LD (Dickman, 1996; Pumphrey & Reason, 1992; Torgeson, 1994). Because students with FAS/E (Malbin, 1993a) and students with LD (Bender, 1992) often have problems reading social cues, they often benefit from instruction in appropriate social behavior and related support to ensure healthy self-esteem (Cramer, 1996; Moats, 1996). For students with FAS/E in particular, life skills instruction and support are important because of the extent and nature of their neurological damage.

Burgess and Streissguth (1992) actually discouraged producing a curriculum for working with students with FAS/E, citing the dramatic variation of ages and abilities of students. They said that instead, academic skills must be complemented by functional skills for these students, claiming that the greatest area of deficit for these students is in adaptive living skills. It may be that it is unrealistic to expect some children with FAS or FAE to become highly literate, particularly considering that many have intellectual limitations, but after reading about the variability in strengths and weaknesses caused by FAS/E, I personally would be unwilling to display this expectation unless there had been reasonable effort made to teach them to read and write. Kleinfeld (1993) noted that much research, such as early work by Streissguth, involved the most severely damaged children, including those still living with their birth parents in high risk conditions. However, many students with FAS/E have a much higher potential, particularly when they grow up in conditions that recognize, remediate, and accommodate their weaknesses (Kleinfeld; Malbin, 1993a; Morse, 1993; Streissguth et al., 1996). Morse claimed that the most important factors in determining the success of children with FAS/E are the intervention

and advocacy provided by the family, whether that is the birth family or a foster or adoptive family. As reported above, environmental factors such as a stable nurturing home and safety from violence protect children with FAS/E from developing secondary disabilities and contribute to their academic and social success (Streissguth et al.). Students with LD are also at risk for secondary problems such as low self-esteem, depression, social problems, and anxiety (Dickman, 1996; Lyon, 1996; Pumphrey & Reason, 1992; Torgeson, 1993), although their risk appears to be lower than that for students with FAS/E.

Attention to life skills and self-esteem in individuals with LD is important to their quality of life (Moats, 1996). Individuals with FAS/E may require extensive instruction and support for independent living.

#### **Case Study Research**

Qualitative research is appropriate for examining complex issues about which there is little definitive information (Lancy, 1993). According to Marshall and Rossman (1995), case study research is appropriate when it addresses a gap in the literature, looks at an issue that has been identified by other researchers as needing investigation, and describes a problem that is important to practitioners and/or policy makers.

In the new field of research addressing learning interventions for students with FAS/E, I found only anecdotal sources of suggestions, and so it seems that closer study is needed. Morse (1993) concurred, saying that children and their families would benefit from immediate investigation of effective interventions. Similarly, in the field of LD, weaknesses in means of identification and classification as well as heterogeneity of the

population have limited rigorous study of effective interventions (Moats & Lyon, 1993; Scruggs & Mastropieri, 1994). Pumphrey and Reason added: "To wait until the experts have agreed on methods of diagnosis and effective means of intervention is to condemn many children to illiteracy" (p. 90). The statistics quoted above by Ellis and Cramer (1996) suggested the possibility that FAS/E and LD could often coexist in students, so this particular complexity of learning problems is a reality in teaching practice, making it an important issue to address.

Results of a case study cannot be generalized to a population. However, these results can instead help to "expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization)" (Yin, 1994, p. 21). Different applications could include explaining causal links in real-life interventions that are too complex to evaluate in any other traditional manner, describing a real-life context of an intervention, or exploring situations where the results or outcome of the intervention are unclear. Tracing the paths of clinical decisions or teaching strategies can be done through case study research. Englert (1996) said there is a particular need for research into the teaching-learning process. Traditional quantitative methodology is inappropriate for examining processes such as the teaching-learning process or strategy instruction, she said, and research with rich descriptive data is needed for this purpose. Pumphrey & Reason (1992) added that single-subject case studies of interventions used with students with LD may provide valuable insights.

Case study is the strategy of choice when a real-life context as opposed to a controlled laboratory setting is being studied, and when questions are asked about how or

why an event or phenomenon occurs (Yin, 1994). Yin defined a case study as empirical inquiry that looks at a phenomenon in a real-life context, where it is difficult to distinguish the boundaries between phenomenon and context, and where several different sources of evidence are used. Examining the learning of individuals in a heterogeneous population is appropriate in case study, where classification problems prevent the formation of samples with similar characteristics. In particular, intervention research and methods are needed for investigating the teaching-learning process, observing children in real-life situations where the teacher is attempting to improve a student's cognitive strategies, or where social construction of meaning is used to encourage higher-order thinking processes (Englert, 1996).

According to Marshall and Rossman (1995), a case study is appropriate for investigating issues where experimentation would be prevented because of ethical considerations. An experimental situation would require the use of the strategy or intervention that is being studied, while the flexibility of a case study would allow the researcher to use different treatments as they seem necessary, within the guidelines of the study design. It would seem to be unethical to study an educational intervention in an experimental situation, in which a control group of students would not get a treatment that is supported in the literature. According to Scruggs and Mastropieri (1994), pre-posttest, no-control group designs using standardized, norm-referenced tests assume that the norming sample of the tests represent a control group from the general population, and are thus appropriate for investigating interventions used with students with learning disabilities. However, potential problems with this design include questions about

attribution of gain scores to an intervention when other factors may have influenced scores, questions about relative effectiveness of a particular intervention, and assumptions about the local sample, which may differ from the norming sample.

The importance of integrating different strands of literature in a case study was emphasized by Marshall and Rossman (1995), who said that establishing this broad background can enhance the research itself (see also Scruggs & Mastropieri, 1994). Because a case study occurs in a real life context, it is impossible to study just one aspect of a situation or subject, as may be done in a laboratory setting. A variety of disciplines and sources in supporting literature reflects the reality of the complexity of the case being studied. For this study I looked at literature on FAS/E, LD, teaching reading, writing, and spelling, self-esteem, and qualitative and case study research methods. Within the strands of FAS/E and LD, I studied materials written from medical, educational, research, social work, and counseling points of view.

Construct validity, reliability, internal validity, and external validity are as important to consider in case study research as they are in any other research. These aspects of quality control can and should be incorporated into case study design when appropriate (Yin, 1994). Construct validity consists of the establishment of appropriate operational measures for the constructs being studied.

The reliability of a study implies that the operations of the study can be repeated to produce the same results. Yin (1994) noted that with a case study this means that the same case study must be able to be repeated, either by the same or a different investigator, for reliability to be established. He likened case study to an audit, where an auditor must

be able to follow the steps of an operation. For this reason, Yin suggested that the study be carefully documented, and as many steps as possible be operationalized, so that they could be repeated by another investigator. According to Scruggs and Mastropieri (1994), it is appropriate first to study an intervention in a controlled setting other than the classroom, then progress to use in classroom settings.

For studies establishing causal relationships, internal validity is necessary, to verify that one condition leads to another, as opposed to simply being related to another.

Although causal relationships are beyond the scope of this study, potential threats to inferences must be considered in order to establish internal validity (Yin, 1994).

External validity considers the population to which a study's results might be generalized, and is established in a study by attention to appropriate samples and universes. Yin (1994) stressed that concern about samples and universes is inappropriate for a case study, because the results of the study attempt to be analytically generalizable to theory rather than statistically generalizable to a population.

A case study should not consist merely of wordy descriptions or transcriptions and analyses of these. Yin (1994) stressed the importance of designing appropriate questions based on theory, posing thoughtful propositions, providing logic which links the data to those propositions, and establishing criteria for assessing how the data relate to the questions and propositions. In particular, he cautioned that researchers should not proceed into the data collection phase of the study until they have thoroughly investigated the theory behind their work. Not only does the use of theory guide in design and data collection for a case study, but it becomes the means for analytic generalization of the

results, as described above. My investigation of the literature has established a basis for the interventions that I have planned, although the theoretical links are weaker than is desirable because of the scarcity of rigorous research on teaching students with FAS/E (Morse, 1993) as well as on teaching students with LD (Pumphrey & Reason, 1991; Scruggs & Mastropieri, 1994).

A case study of my work as an experienced tutor with a student with FAE and LD investigates an area which is weakly addressed in the literature. It enables me to examine the teaching-learning process, to flexibly apply principles from theory, and to do this in a real-life tutoring setting rather than in a laboratory.

#### Qualities of Researcher

A good researcher conducting a case study should have an inquiring mind and should always be looking for reasons for actions and reactions. The researcher should be able to observe and absorb large amounts of information without being biased by prior beliefs (Yin, 1994). Similarly, Lancy (1993) said that a qualitative researcher must be an opportunist, intrepid in a quest to capture the reality of the study's subjects as opposed to the researcher's own reality.

The researcher should be well acquainted with the issues involved in the study, and open to evidence which might contradict expectations. According to Marshall and Rossman (1995), it is also important that the case study researcher be capable of doing qualitative research, citing the differing demands of qualitative and quantitative research.

Flexibility is an asset in doing case studies, so that the researcher can be responsive to unexpected turns in the study (Yin, 1994). Marshall and Rossman (1995) concurred,

cautioning that the questions in a case study should be considered as “guiding hypotheses” (p. 36), a term which allows for flexibility when the researcher finds that work in the field leads to different directions and different questions. However, they stressed that the research plan itself must be sound with allowance for flexibility, rather than flexibility being the organizing feature.

Given the heterogeneity in symptoms, variability within individuals, and inconsistency in diagnosis of both FAS/E and learning disabilities, it is difficult to design research in these areas that is easily replicable, or that is generalizable to a larger population. In a case study that closely examines my work with Kim, I cannot provide a picture that can be expected to reflect the learning experience of any other individual. Nor can I expect to separate which of Kim’s learning problems results from FAE and which from LD, or which from social or family problems. Similarly, it is necessary to consider that changes may result from other educational experiences or from normal development in addition to the effects of an educational intervention (Scruggs & Mastropieri, 1994) or from the individual attention of an adult (Pumphrey & Reason, 1992). However, a case study with a pre-posttest, no-control group design supplemented with qualitative records seems to be an appropriate way to explore in depth an intervention that to my knowledge has not been thoroughly investigated in students with FAS/E, with a student who has this complex set of difficulties that begs for careful observation.

This study will evaluate Kim’s progress in reading, writing, spelling, and self-esteem as a result of tutoring with a structured, multisensory, phonetic approach. In



addition, I will trace my decision-making to provide insight into strategies that are effective or ineffective for Kim.

### **Thesis Questions**

**In an adolescent student with FAE and learning disabilities, what gains in reading and spelling can be measured after tutoring with a structured, multisensory, phonetic approach in reading and spelling?**

**Hypothesis 1: Kim's reading will improve in decoding, fluency, and comprehension.**

**Hypothesis 2: Kim's spelling will improve in accuracy and automaticity.**

**How does the student's writing in the areas of content and creativity improve after tutoring in reading and spelling?**

**Hypothesis 3: Kim will demonstrate better spelling and better proofreading, which will result in improved writing.**

**Hypothesis 4: Kim will demonstrate increased variety in vocabulary and use of more context-appropriate vocabulary, which will result in improved writing.**

**What improvements in Kim's self-esteem can be observed and measured as her reading and spelling improve?**

**Hypothesis 5: Kim will display more confidence in academic tasks, as demonstrated by the use of more varied and context-appropriate vocabulary in her writing, and a higher tolerance for taking small risks when doing her work, as well as improved scores on the BASC.**

## CHAPTER THREE

### METHOD

#### Study Design

This case study of an adolescent girl with Fetal Alcohol Effect (FAE) and learning disabilities took place over a period of four months. To protect their privacy, she and her mother are identified by pseudonyms.

The aim of the study was to investigate the usefulness to this student of teaching interventions that have been recommended for working with students with FAS/E and for students with learning disabilities, and to document the decision-making process involved in the one-on-one tutoring situation. Quantitative data include standardized pre- and posttests in reading, spelling, and self-esteem, and criterion-referenced tests in spelling. To provide a more complete picture of Kim's learning than would be seen through quantitative data analysis alone, these quantitative data are integrated with qualitative data obtained through observations, interviews, and school and medical records.

#### Subject

Kim is a 14 year old Caucasian girl, living alone with her single mother, Mariah. They have been in the same home for six years and appear to be closely involved with Mariah's extended family. Kim's father lives in another community, and continues to see her regularly and support her financially. He is married with two young children, and Kim is well accepted by his new family, including his wife's parents.

Kim was reported by her mother to be a little behind in developing fine motor skills but other developmental milestones were normal. She has slightly elevated pressure in one

eye which is being monitored because her grandfather has glaucoma, but she is otherwise in good health.

When Kim was ten, Mariah requested assessment by a specialist because she had felt since Kim's infancy that she had been "different," and she wanted investigation of possible attention deficit disorder as well as academic difficulties. A pediatrician who is familiar with the relevant characteristics diagnosed Fetal Alcohol Effect (FAE).

According to the pediatrician, physical manifestations such as epicanthal folds and high arched palate in addition to behavioral and learning problems distinguish Kim from other students whose difficulties arise from learning disabilities (LD) alone. Kim knows that her mother's drinking has played a part in her learning problems, and Mariah says that at times Kim has been very angry at her for this.

Mariah reports that Kim is performing at about a Grade 4.5 level in reading, spelling, and math. Kim says this is not sufficient for her to feel successful in mainstream classes in Grade 8. Kim reports that she is extremely frustrated with being unable to read the text books in Language Arts, Science, and Social Studies (see Woodcock, 1987), and says that she is so discouraged that she would like to quit school unless she can be in classes more at her own level. According to Mariah, Kim struggles with following complex instructions, with memory for facts and with abstract concepts in reading. She has received learning assistance help from Grade 4 until the beginning of this study, and had a teacher's aide for two hours a day in Grade 7 to help with her modified program. Psychoeducational testing by the school district in 1993 and 1996 suggested Kim's cognitive functioning is in the low average range with significant weakness in short term

memory and selective attention. The school psychologist noted that in Grade 4 Kim was often able to decode reading material, but she had difficulty with comprehension. Low doses of Ritalin in 1994 apparently improved her attention and academic functioning, but she reported eating and sleeping problems and so discontinued the medication.

Having left home at age 15, Kim's mother Mariah states that she was an alcoholic for seven years before becoming pregnant with Kim, and Mariah says that she did not learn about the dangers of drinking until well into her pregnancy. She also admits to being a marijuana user for the past 25 years, to experimenting with other drugs before she was 21, and to taking cocaine once during her pregnancy when she was drunk. At the age of 25, five months into the pregnancy, she stopped drinking. She made a conscious decision to stay home with her child until Kim was nearly five, stating that she felt the bonding during this time was important to her daughter.

Mariah describes a family history of learning disabilities, which affect her, her father, and her brother. She says that Kim's father and both grandfathers are alcoholics. Emerging research suggests that paternal abuse of alcohol may be implicated in learning difficulties of children born to mothers who did not use alcohol (Malbin, 1993a; Weinberg, 1997). Thus alcohol abuse by Mariah's father and by Kim's father may have been factors in Mariah's and Kim's learning problems.

Mariah dropped out of school twice in Grade 10, but at age 25 obtained her Graduation Equivalent Diploma (GED) by studying the text on her own. Employed in the same job for the past ten years, she says that she likes it and that it pays well. She denies that poverty has been a factor in Kim's growing up. She states that groceries and rent

were always paid before the expenses of her habit, and that she and Kim have everything they want, citing as an example the fact that Kim has four stereos. From Kim's reactions to her mother's drug abuse problems, Mariah feels that Kim is unlikely to use or abuse alcohol or drugs. At the beginning of this study, Mariah was struggling with abstinence from marijuana, and had been on stress leave from work as a result.

I have chosen Kim as a subject for several reasons. As described previously, the combination of FAS/E and LD is not unusual in a child, nor are the potential complications that might come from living with her birth mother, who despite a continuing struggle with substance abuse apparently has supported Kim well and advocated effectively for her. As a result of working closely with Kim and observing her carefully in my lessons as well as some school situations, I expect to observe strategies and accommodations in this case study that will be helpful not only for her but for other students in similar circumstances. I expect to also be able to suggest specific areas for further research, such as trials of interventions to be used in similar tutoring situations, small group instruction, and classroom instruction (Scruggs and Mastropieri, 1994).

Kim is an articulate young lady who appears to be motivated to work in school, and who seems to want to succeed. However, because children with FAS/E often have better expressive language than receptive language, and often have unrealistic expectations for what they can achieve, Kim's appearance may be deceiving (Malbin, 1993a). Kim says that she would like to become a marine biologist, but admits that her academic limitations may prevent her from reaching this goal. In meetings with her school counselor, Kim was able to express some of her concerns and be her own advocate in discussing course

choices. Her mother Mariah appears to be an effective advocate for her with the school, individual teachers, counselors, other specialists, and with me. However, documents from elementary school reported that Mariah frequently canceled appointments with the school because of work commitments. Mariah describes Kim as socially active and says Kim has several long-term friends. Kim and Mariah seem to have a friendly relationship.

In February, two weeks before our tutoring sessions began, Kim entered a Transitions Program at school. This program is designed to provide a single semester of individualized teaching in English, Math, and some Science and Social Studies to 12 selected students who have been struggling with mainstream Grade 8 courses. The teacher of this program said the focus in the class is on organization, study skills, and homework habits. Kim said she looked forward to this opportunity to learn at her own rate.

As the semester progressed, I observed that the Transitions teacher seemed to have low expectations of Kim in his classroom and in the future. He described Kim as a quiet, well-behaved student but said that she had difficulty working independently, seldom completed homework assignments even though she asked for them, and did not appear to have the academic potential to return to mainstream classes. From Kim's and Mariah's reports and my observations and discussions with the teacher, it seemed that the focus in the room was more on classroom management than teaching to individual learning needs, with several boys with behavior problems requiring much of the teacher's attention. The school counselor saw Kim less often than the teacher. However, he was extremely supportive of Kim and of any work that I was doing with her during the semester.

At the end of the semester, when my work with Kim concluded, the Transitions teacher recommended that she be placed in the Pre-Employment Program in the fall of the next school year. This program is non-academic, designed to teach life skills and provide job experience for students who appear for a variety of reasons to be unsuited for the mainstream curriculum. The teacher recommended this program for Kim because he said it would be unfair to expect mainstream teachers to adapt their curricula and assignments to the level that would be necessary for her success. He expressed concern that there were no programs available for students such as Kim, who might succeed in a curriculum that was different from the mainstream but more academic than a pre-employment program. Neither Kim nor her mother were satisfied with his recommendation for placement, but in the absence of adequate supports for a student with her problems, they felt that they had no choice. In the fall of her second year of high school, the semester after our work together, Kim was registered in a Pre-Employment Program.

### Ethical Considerations

Ethical considerations of my work with Kim demand that to the best of my knowledge I cause no harm with this work. Marshall and Rossman (1995) support the use of case study research in situations where ethical considerations might prevent the use of experimentation. Because I based my intervention plans on suggestions from the literature as well as on 11 years of tutoring experience, I had reason to expect that they would be beneficial rather than harmful (Vaughn & Lyon, 1994). The flexibility of case study design permitted me to work with other strategies when a planned strategy was ineffective.

Although her commitment to work with me for a semester was important, Kim and

Mariah were clearly informed that either of them could request that our work stop at any time (Vaughn & Lyon, 1994). Mariah signed a letter of informed consent (Appendix B), in which she was again assured that she could withdraw Kim from the study at any time. Similarly, Kim signed a letter of assent (Appendix C), in which she was assured that she could withdraw at any time. To reduce any pressure on them to continue if they were uncomfortable, I told Mariah and Kim that although their commitment to the study was important, if they chose to withdraw, the study itself would not be threatened by their decision. I could have chosen from several other students to tutor if they had decided to withdraw, so they would not need to be concerned about my having done my preliminary research in vain. The principal of Kim's school signed a letter of consent as well (Appendix D).

All discussions about Kim and her progress were confidential, and her name, her mother's name, teachers' names, and her school have not been revealed in the study report (Vaughn & Lyon, 1994). The student and her mother chose "Kim" and "Mariah" as pseudonyms, to assist in concealing their identities. My requests for further information about Kim from her pediatrician and the school psychologists were done with the mother's written permission, and the correspondents were advised of the nature of the study.

Mariah was assured that she would see a copy of the research paper and have an opportunity to discuss it with me before it was circulated to the thesis committee, so that she could feel comfortable with how her story and her daughter's were being presented. She was encouraged to phone or e-mail me with any comments or concerns, and we discussed her access to a counselor should she feel the need to discuss our work with



someone besides myself. Mariah and I spoke over the phone and met in person several times during the study, and her input at the proposal stage of the study was thoughtful and useful. I gave her a copy of the study report a month before the date for my thesis defense, so that she could review it before it was presented to the public.

Because the initial contact about tutoring was made by Mariah before this study was conceived, we originally agreed on payment for lessons at my regular rate. However, in consideration of the extra involvement I was asking of them for this study, as well as the fact that Mariah is a single parent who had been off work, I gave two lessons per week free of charge. Testing by the psychologist was done at no charge to Mariah, and I paid any fees such as those for copies of files from the pediatrician.

### Procedure

#### Tutoring and Setting

Two weeks after the new semester started in mid February, I began tutoring Kim in my home. Our lessons were scheduled for her first class of the day, three days a week, which gave the potential for a total of 47 hours of tutoring. Kim, Mariah, and I met with the Transitions teacher before tutoring began. We discussed his expectations of Kim in his class, and how we could best fit our tutoring sessions in, considering that she had to leave his class to come to my home for these sessions. Because teamwork is an important feature of my tutoring, we discussed ways that I could work with Kim to complement the flexible curriculum of his class, and ways that he could integrate my instruction to facilitate transfer of her learning. We arranged to communicate by e-mail to discuss Kim's performance, and compared schedules to facilitate telephone conversations as well. I

explained my approach to tutoring in written language and brought a sample of a typical lesson plan for his information, and he described the general structure of his classes. We planned to continue my lessons until the end of the semester in mid June, and to reassess the situation at that time.

The reality of tutoring Kim in conjunction with her participation in her individualized program in this class made it unlikely that any learning gains could be attributed solely to my tutoring or solely to the program (Pumphrey & Reason, 1992; Scruggs & Mastropieri, 1994). However, the combination of one-on-one tutoring along with school interventions may reflect the typical experience of other students as well.

In answer to the school's concern about liability should Kim come to harm while she was off the premises during school hours, I agreed to meet her at school and walk her the two blocks to and from lessons. I did this as unobtrusively as possible, waiting for Kim in the school parking lot so that she was not likely to be embarrassed by having to meet with me (Vaughn & Lyon, 1994). Lessons took place at my kitchen table, which sits in a bright corner with large windows facing east over my flower garden and south looking on the treed back yard of our neighbors. Drapes can be closed if the view from the window is too distracting, but I have found that most students find it calming. An answering machine ensures that phone calls will not interrupt our lessons, and because my husband also works out of our home, he answers the doorbell if it rings.

During our first lesson together, I once again explained to Kim the basis for my tutoring, that when I work with students with learning disabilities I first look for what they do and do not know, and then I look for ways that I think they would learn better.

Usually this involves direct multisensory teaching of sound-symbol relationships, spelling rules and generalizations, and strategies for improving comprehension, writing, and memory. I explained that this is different for every student, and because her learning is affected to some degree by her mother's use of alcohol during part of her pregnancy, I was not sure what techniques would be best for her. She seemed pleased that her work with me might help other students who struggle the way she does.

Also on that first day, I administered a criterion-referenced spelling test and obtained a sample of her creative writing. I obtained other samples of writing at later dates, after instruction in punctuation, sentence structure, spelling, and strategies such as organizing information with webbing and generating ideas with brainstorming.

Later during the first week, Kim met with a psychologist who administered the Wide Range Achievement Test 3 (WRAT 3) spelling test (Wilkinson, 1993) to measure her spelling level and the Woodcock Reading Mastery Test - Revised (WRMT-R) battery (Woodcock, 1987) to measure her reading capabilities. Kim completed the Behavior Assessment System for Children (BASC) self-report form, her mother completed the parent report form, and near the end of the semester the teacher completed the teacher report form (Reynolds & Kamphaus, 1992). Except for the teacher report form of the BASC and the criterion-referenced tests, these tests and questionnaires were administered again at the end of the study. I report pre- and posttest results in the Results chapter.

### Instrumentation and Measures

Case study is a method of choice for investigating complex issues in real-life context, especially where several different sources of information are used (Yin, 1994). A

case study of a student such as Kim was a way of taking a close look at the complex picture of the combination of FAE and LD. The study considered not only my observations, but those of Kim's mother, her teachers, and her school counselor. Pre- and posttesting with the WRMT - R and the WRAT 3 spelling subtest were done by a psychologist, and the psychologist's observations and data were included in the study. Information from Kim's school files, from reports of two school psychologists, and from a report by her pediatrician was also considered.

The requirement for construct validity (Yin, 1994) was addressed by administration of pre- and posttests, as described above. As mentioned earlier, use of standardized norm-referenced tests implies a control group from the general population. However, even with standardizing and norm-referencing, validity may be threatened by potential problems such as attributing gains to a single factor when other factors might be involved, or being unable to report the efficacy of an intervention relative to other interventions (Scruggs & Mastropieri, 1994). This is particularly true in cases such as this one, where the student has a learning disability and the norming sample is not restricted to students with learning disabilities. I chose the WRAT 3 spelling test as a way of assessing Kim's spelling progress with a standardized, norm-referenced tool. In addition, I used criterion-referenced tests to get an estimate of her mastery of specific orthophonemic patterns and to give me direction in what to teach her, much as a classroom teacher would use curriculum-based measures (Pumphrey & Reason, 1992). The WRMT-R measured her reading progress, providing standardized, norm-referenced data about changes in specific elements of the reading process such as decoding and comprehension. This test is

useful as a diagnostic tool, provides a record of individual progress over a short or long time frame, and is appropriate for use in research for investigating the effectiveness of educational interventions (Woodcock, 1987). To informally assess Kim's writing, I obtained and analyzed writing samples taken early in the study and at the end. I looked for better spelling and proofreading, more variety in vocabulary, and an improvement in sentence structure and sentence variety.

I arranged to assess Kim's self-esteem with the Behavior Assessment System for Children (BASC) measure of self-esteem before and after our work together, with report forms completed by Kim, her mother, and her teacher. Reynolds & Kamphaus (1992) claimed that all three report forms had high levels of validity as demonstrated through factor analysis of empirical support, as compared to other behavioral measures, and as used to discriminate particular groups of children with certain clinical diagnoses. They also claimed that these measures had high internal consistency and test-retest reliability.

To establish external validity, a case study must be well documented so that a researcher or other researchers can replicate it (Yin, 1994). Therefore, I recorded each of my lesson plans, including notes about Kim's correct or incorrect responses and my interpretations of errors or apparent strengths or weaknesses, as well as descriptions of effective or ineffective strategies, appropriate pacing and transitions, and of her reactions when applicable. Tutoring a student with learning problems should be a process that responds to individual student strengths and weaknesses, so these notes were intended to help make explicit the elements of decision-making involved in this process. The notes on my lesson plans were thorough so that they were available as a reference for writing my

final report and for replication should I or another researcher decide to repeat the study with another student. Kim's notebook and computer disc containing writing projects provide further information about her work with me.

This careful documentation is important for establishing reliability as well, again, to make replication of the study possible. Because the roles of researcher and tutor may be difficult to separate in the intimacy of a tutoring relationship such as this one, I arranged to have all testing except the criterion referenced spelling administered by a psychologist. I did this to ensure that pre- and posttest scores were more likely to be affected by the results of tutoring itself rather than by subtle signals from me that Kim may have learned to recognize during our tutoring relationship.

### Reflexivity

It is important that a researcher doing a case study is capable of doing qualitative research (Lancy, 1993; Marshall & Rossman, 1995), and my daily tutoring, university learning, and continuing professional development have prepared me for this kind of research. The nature of my daily work of tutoring students with LD is in essence made up of instants of qualitative research, calling for intensive observation and attention to detail, analysis of areas or patterns of strengths and weaknesses, and a prescriptive responsiveness to students' actions based on these observations (Englert, 1996). My daily tutoring experience over the past 11 years has been supported and enhanced by my postgraduate coursework in language in education at the University of Northern British Columbia (UNBC), as well as my recent work with Judith Lapadat at UNBC on a

research project involving multiple case studies examining emergent literacy in preschool children.

As a means of continuing my professional development I take advantage of a variety of opportunities, including professional sharing with colleagues, attending international and provincial conferences on LD, and attending provincial and local workshops on teaching strategies for use with students with LD and FAS/E. In my work as a trainer of tutors and teachers who work with students with LD, I frequently discuss a variety of learning problems with others in the field of education, and this is always a learning experience for me. The combination of my practical experience and my continuing professional development with my study of literature on FAS/E, LD, teaching reading, and case study research gave me a solid foundation on which to build this case study of Kim's learning and my tutoring. My intention is to provide and report prescriptive, responsive remediation that could not only help this student in particular, but also suggest strategies that might be useful with other students.

### Clinical Decision-Making

One challenge in this case study was to make explicit my tacit knowledge of working with students with LD, so that I could describe the signs that led me to use a particular strategy in remediating a specific weakness. A trainer who has been influential in guiding my work insists that teaching students with LD is both a science and an art. The science is relatively easy to teach, she maintains, because it is based in theory, and because the trainer can give the budding tutor explicit directions on how to teach a particular element, such as a new language generalization. But the art is more based on

observation, intuition, and experience, and on a tutor's ability to be diagnostic, prescriptive, and responsive to each student's needs in each lesson (Arlene Sunday, personal communication). Similarly, Mayer (1987) claimed that an expert in a field must have both problem-solving abilities and extensive domain-specific knowledge and experience on which to base decisions about teaching strategies and materials. My elaborations on the art described by Sunday and discussions of the rationale behind my decisions should provide useful insight to others working with similar students (Englert, 1996).

Flexibility is an asset to a researcher doing a case study, but this must operate within a thoughtful case study design, being guided by hypotheses but not constrained by them should the work in the field go in an unexpected direction (Marshall & Rossman, 1995; Yin, 1994). If flexibility is an asset to a researcher, it is essential to an effective tutor of students with LD (Englert, 1996). In my 11 years as a tutor I have worked with so many students of so many ages and abilities that I have developed a variety of alternative strategies, most of which have been practiced to automaticity.

Along with flexibility, Yin (1994) recommended that a researcher in a case study should have an inquiring mind without bias, always open to unexpected changes or reactions in field work (see also Lancy, 1993; Miles & Huberman, 1994). However, Vaughn and Lyon (1994) warned that no researcher is without bias, and that particularly in the field of LD a researcher must recognize and monitor subjectivity. I investigated this student's learning because I was curious about the potential for the Orton Gillingham approach for teaching reading and spelling to students similar to Kim, and observation of a



student's responses is a skill that I have cultivated over the past 11 years of tutoring. With their heterogeneity as a population and their variability as individuals, my students have long ago taught me to expect surprises even in everyday situations. I knew better than to go into an unfamiliar situation with firm expectations. Because of my awareness of the complicating factor of FAE affecting my student's learning difficulties, I was particularly conscious that this student's learning strengths and weaknesses might be different from those of other students I have tutored. This awareness provided constant nudges to my subjective observations, prompting me to be on the alert for results or reactions that might differ from what I would expect from most students with LD.

## CHAPTER FOUR

### RESULTS

#### Summary of Data Sources

This study was designed to investigate the usefulness of tutoring an adolescent student with Fetal Alcohol Effect (FAE) and learning disabilities (LD) using a structured, multisensory, phonetic approach. I had hypothesized that Kim's reading would improve in decoding, fluency, and comprehension, and that her spelling would improve in accuracy and automaticity. Better spelling, proofreading, and increased variety in her use of more context-appropriate vocabulary would demonstrate improvement in her content and creative writing. Further, I had hypothesized that Kim would display more confidence in academic tasks, showing this through higher tolerance for taking small risks when doing her work, and again, through more variety and context-appropriate vocabulary.

This study is both quantitative and qualitative. I report the quantitative pretest results first, with criterion-referenced spelling and Wide Range Achievement Test 3 (WRAT 3) Spelling pretest scores, and Woodcock Reading Mastery Tests-Revised (WRMT-R) pretest scores. I follow this with the results of the initial parent and student reports of the Behavior Assessment System for Children (BASC).

However, test scores tell only a small part of the story of working with a student such as Kim. In this chapter I examine my clinical decision-making process as linked to ongoing formative assessment and to Kim's learning and learning needs as they emerged and changed over the time of the study (Palincsar, Brown, & Campione, 1994). Tutoring a student with learning problems is a responsive process in which the tutor immediately

and constantly adapts lesson plans according to the student's successes or struggles (Englert, 1996; Pressley & McCormick, 1995). The qualitative data in this study describe the cyclical process by which I continually assessed, remediated, and reassessed Kim's spelling, reading, and writing skills and describe the intricate decision-making involved in adapting lessons to meet her learning needs (see Englert; Palincsar et al., 1994). This qualitative explication of the tutoring process begins with analysis of the student's spelling in the criterion-referenced tests, an analysis which is more useful to the tutor than the test scores alone. The qualitative data also include observations about her learning in spelling, reading and writing over the course of our time together, and my perceptions of her self-esteem during our lessons. Because examples of decisions about teaching strategy suggest directions for other teaching events (Englert), this chapter is lengthy, and contains many preliminary speculations which lead to a more general concluding discussion in the Discussion chapter. Table 3 summarizes the sources of data for this report.

**Table 3**  
**Summary of Data Sources**

<b>Stage of Research</b>	<b>Data</b>	<b>Source of Data</b>
<b>Pre-intervention</b>	<ul style="list-style-type: none"> <li>- Case history *</li> <li>- Pretests **</li> </ul>	<ul style="list-style-type: none"> <li>- Interviews with mother, student, school counselor, school psychologist</li> <li>- School records</li> <li>- Pediatrician's report</li> <li>- WRAT 3, WRMT-R, BASC, criterion-referenced tests</li> </ul>
<b>During intervention</b>	<ul style="list-style-type: none"> <li>- Informal measures **</li> <li>- Observations *</li> <li>- Clinical decision-making *</li> </ul>	<ul style="list-style-type: none"> <li>- Criterion-referenced tests</li> <li>- Lesson plans</li> <li>- Treatment notes</li> <li>- Notes from psychologist</li> <li>- Student notebook</li> <li>- Computer disc with student writing projects</li> <li>- Interviews with mother, school counselor, classroom teacher</li> <li>- Treatment notes supporting dynamic assessment</li> </ul>
<b>Post-intervention</b>	<ul style="list-style-type: none"> <li>- Posttests **</li> <li>- Discussion of implications*</li> </ul>	<ul style="list-style-type: none"> <li>- WRAT 3, WRMT-R, BASC</li> <li>- Treatment notes</li> </ul>

**Note.** \* Qualitative data; \*\* Quantitative data.

Following the reporting of the quantitative data and qualitative data which includes ongoing informal, formative assessment reports, I report the posttest results of the WRMT-R, WRAT 3 Spelling, and the BASC. I compare these with the pretest scores, and discuss their implications. I then discuss my interpretation of the relationship between the qualitative observations and the quantitative measures.

## Quantitative Pretest Results

### Spelling

Among the most useful diagnostic tools for me as a tutor are criterion-referenced spelling tests. These tests are not meant for assessing grade level or relating a student's performance to a norm, a function which is met in this study by the WRAT 3. Instead, a criterion-referenced spelling test is a curriculum-based assessment that gives the teacher or tutor information about what a student already knows and what she needs to be taught (Pumphrey & Reason, 1992). In a school setting, a criterion mark would be set as a goal, with the student proceeding to new work after reaching the designated mark. In my practice, the criterion mark is less important than the specific errors that the student makes, because the errors provide me with information about what the student needs to learn. Analysis of these errors helps me to work with the student at the level that Vygotsky described as the zone of proximal development. This zone is found by considering both the child's independent problem-solving ability and her potential ability as demonstrated when she works with the guidance of an adult or peer (Palincsar et al., 1994). The student's mastery of the spelling patterns in each spelling list is my ultimate goal.

Curriculum-based assessment consists of simple direct measures which are relevant to classroom curriculum and are more useful in guiding and monitoring instruction than are standardized tests (Algozzine, 1991). It includes systematic analysis of variables such as instructional organization and materials, how the student interacts with the materials and her peers, student engagement in the learning task, and the student's specific

performance and error patterns. This analysis is followed by diagnostic teaching, in which teaching is guided by observations of successes and errors and specific learning needs (Algozzine; Englert, 1996). The criterion-referenced word lists which I have used have been designed to evaluate the student's knowledge of a general sequence of spelling patterns which are loosely grouped at specific grade levels (see Appendix E). I have adapted the spelling lists for Grades 1 to 4 that I used with Kim from those of Sunday (1994), reflecting the scope and sequence of teaching for our school district, as described by Russell and Bond (1995). The Grades 5-10 test and the Grade 8 through adult test are from Sunday's manual, and used with her permission. Russell and Bond described their manual as a tool for teachers to use in assessing the skills of students, and noted that individual student readiness must be considered in addition to information derived from this diagnostic tool.

In initial testing during her first lesson with me, Kim made no errors on the criterion-referenced spelling tests at the Grade 1 to 2 level and the Grade 3 to 4 level, and scored 80% at the Grade 5 to 10 level. These scores alone provide little direction for teaching, but I describe the significance of the testing for a teacher or tutor in detail in the qualitative data.

Scruggs and Mastropieri (1994) claimed that pre- and posttesting with a standardized, norm-referenced test assumes that the norming sample of the tests implies a control group from the general population, which they said is appropriate for investigating interventions used with students with LD. In this situation, because the norms are not for a learning disabled population, they reflect how Kim's results compare to the general

population rather than to other students with learning disabilities. I arranged for Kim to write the WRAT 3 spelling subtest, a standardized norm-referenced measure of written encoding which claims to measure the codes that are necessary for learning the basic skills of spelling. It also provides an informal assessment of types of error patterns, which is useful in planning spelling instruction (Wilkinson, 1993). Kim's standard score in the pretest was 78 ( $M=100$ ,  $SD=15$ ), placing her at the 7th percentile for her age. In presentation of the qualitative data, I analyze and relate her errors in the WRAT 3 to analysis of her errors in the criterion-referenced testing.

### Reading.

As recommended by Scruggs and Mastropieri (1994) for studies without access to a control group, I used a standardized norm-referenced tool to assess Kim's reading. Again, the norms for this tool are from the general population and not from students with LD. Woodcock (1987) claims that the Woodcock Reading Mastery Test - R (WRMT-R) tests reading ability as a global ability that involves visual-auditory learning, letter identification, word identification, word attack, word comprehension, and passage comprehension. He adds that it is useful for measuring growth and program effectiveness over a short period of time. I chose this battery for the study because it is designed to be sensitive enough to measure treatment effects over the planned time of the experiment (see Fuchs & Fuchs, 1994). Although scores of individual items are important for pointing out specific strengths and weaknesses, I report clusters of subtest scores in this battery, to prevent interpretation of the score of one subtest as representative of a student's skills in the complex process of reading. The use of these clusters contributes to higher validity

and generalizability of scores than if individual subtest scores were used (Woodcock, 1987). I have summarized Kim's Cluster scores for the WRMT-R in Table 4.

Table 4

**Pretest Scores on Clusters of Woodcock Reading Mastery Test - Revised**

Cluster Score	Standard Score	Percentile
Readiness	49	0.1
Basic Skills	86	17
Reading Comprehension	71	3
Total Reading	79	8

**Note.** Mean = 100, SD = 15

The Readiness Cluster of the WRMT-R looks at Letter Identification and Visual-Auditory Learning. In Letter Identification, the student identifies individual letters presented in a variety of scripts or letter forms, some of which may be unfamiliar to her. In Visual-Auditory Learning the student reads material made up of rebuses, or words represented by figures or pictures, as a means of simulating the task of learning to read. Kim's standard score for this cluster was 49 ( $M=100$ ,  $SD=15$ ), which placed her at the 0.1 percentile for her age. This indicates that her skills in these areas are significantly below those of her peers, and that she will have difficulty with grade-level work related to these skills.

According to the psychologist who administered the test, Kim's very low score on the Letter Identification scale was not a matter for concern, because she made only two errors, both being with letters written in script that was unfamiliar to her and both looking dissimilar from their printed forms. One or two errors by a student of her age on this scale would be unusual but probably not important to her learning. However, her low score on the visual-auditory learning task was more significant. It may be that she has difficulty with cross-modality learning tasks (Woodcock, 1987), being more successful with either



visual tasks or auditory tasks than a combination of the two. If this appears from our lessons to be the case for Kim, then the multisensory teaching recommended by the FAS/E and learning disabilities literature may not be effective. It may be that she is slow to process language, resulting in slow understanding of an unfamiliar task and slow production of answers. Abstraction is often difficult for students with FAS/E or learning disabilities, so it is also possible that she struggled with the abstract concept of the use of rebuses in reading.

For the Basic Skills Cluster, the student reads isolated single words in the Word Identification subtest, and to demonstrate her ability to use sound-symbol relationship and structural analysis skills, she reads uncommon words and nonsense words in the Word Attack subtest. This cluster assesses the student's ability to read words without reference to word meaning or context clues. Kim's standard score for this cluster was 86, at the 17th percentile for her age. The examiner noted that she seemed to rely on phonetic analysis in reading isolated words, but that she did not apply her orthophonemic knowledge consistently. She also noted that Kim did less guessing and was more consistent when reading nonsense words, possibly because she knew she could not quickly supply a real word that she thought was close. Her score appears to demonstrate a strength in decoding of individual words, with it being her highest standard score and highest percentile in this battery. It may be that decoding is stronger because she learns better with orthophonemic and word analysis skills, or it may be that she has had more instruction in this aspect of reading than in comprehension. However, even though this score is the highest for her, it is still well below what most of her peers can achieve.

In the Word Comprehension task of the Reading Comprehension Cluster, the student reads words and orally supplies single word answers in subtests of antonyms, synonyms, and analogies, with the analogy subtest being considered to be the most cognitively difficult and the most relevant to the process of reading words in context. In the Passage Comprehension subtest of this cluster the student silently reads a short passage and provides a key word which has been left out. This task is designed so that the student must understand the whole passage in order to be able to answer correctly. In the Reading Comprehension cluster, it is important for the examiner to observe whether the student appears to struggle with meaning in these tests as a result of being unable to decode the words correctly, or if she is unable to answer correctly even when she has decoded the words (Woodcock, 1987). Kim's standard score in the Reading Comprehension Cluster was 71, at the 3rd percentile for her age. This indicates that Kim has difficulty with comprehension tasks at her grade level.

Kim's problems on the Reading Comprehension Cluster appeared to be more with comprehension than with reading the individual words, suggesting that she probably needs instruction in comprehension and might also need to improve her decoding (see Garner, Alexander, & Hare, 1991). The examiner noted that Kim did not appear to think much about the meaning of words, and that she could often decode a word but not necessarily know its meaning. She noted Kim's apparent lack of attention at times, describing how on several occasions she apparently did not read the whole word before answering. It is also possible that Kim's score on these subtests was affected by slow language processing or by word retrieval difficulties, both of which are common in students with FAS/E or LD.

Only one-word answers are acceptable, which could be especially detrimental for students with word retrieval problems, because they often struggle to find the right word even in everyday situations.

The examiner noticed that Kim had more difficulty with synonyms than antonyms in the Word Comprehension subtest, and I wonder if this may relate to the perseveration that is common in children with FAS/E and sometimes in children with learning disabilities. If her performance was affected by perseveration, she may have been unable to get beyond the word she had been given, which may have seemed to her like the best or only way to say something, in order to retrieve another word with a similar meaning. Another factor to be considered is that the Passage Comprehension task requires the student to read silently, and Kim may be more successful at understanding what she has read if she reads aloud, seeing and hearing at the same time. The examiner noted that as the comprehension task got more difficult, with more inference involved, Kim needed to read the passage more often before answering. She used picture cues, and found the abstract concepts more difficult.

Claiming to provide a broad measure of global reading ability, the Total Reading Cluster-Full Scale combines the scores of the four reading achievement tests of Word Identification, Word Attack, Word Comprehension, and Passage Comprehension. This cluster has higher validity and reliability because it measures more aspects of reading and is based on a greater number of items than the component clusters. It is useful for identifying students who are delayed in overall reading development, with scores on subtests and other clusters being useful for focusing on specific skills (Woodcock, 1987).

Kim's standard score was 79, at the 8th percentile for her age. This cluster is a measure of broad reading ability, and as I had expected from her history, it demonstrates that Kim's reading is delayed for her age. Although this score does not place her more than two standard deviations below the mean for her age, it indicates that Kim will probably have practical difficulties with reading tasks. This is consistent with reports from her mother, her teachers, and the school psychologist when Kim was in Grade 4. The other clusters described above have given indications of possible reasons for Kim's poor performance on reading tasks, and have provided implications for instruction in reading. These implications guide observations in the qualitative data, and their accuracy will be confirmed or queried in the continuous cyclical analysis of these data.

Because the focus of this study was on reading and spelling, with writing only included as part of the integrated, reciprocal process of teaching written language, I did not include formal evaluation of Kim's writing in my intervention. I describe her writing with the qualitative data.

### Self-Esteem.

I had hypothesized that learning success in the tutoring situation would have a positive effect on Kim's self-esteem. To assess this, I arranged for Kim, Mariah, and the teacher to complete the student, parent, and teacher report forms respectively of the Behavior Assessment System for Children (BASC). As with the WRMT-R, clusters of scale scores are used to give a more complete picture of a student's behavior than would be possible from examining individual scale scores in isolation, contributing to higher validity and generalizability of results. However, individual items are more useful

indicators of specific problems that affect the student's general behavior. Because behaviors are usually interrelated, patterns of strengths and weaknesses can be seen when comparing individual scales (Reynolds & Kamphaus, 1992).

The composite scores of the BASC student report are useful for making broad descriptions of a student's adaptive and maladaptive behavioral tendencies (Reynolds & Kamphaus, 1992). The authors noted that the interpretation of the composite scores should be complemented by attention to specific critical single items on the questionnaire. Kim completed the student report form in February, near the end of her first week of tutoring. I show Kim's scores in three composites and two additional scales in Table 5.

**Table 5**  
**Pretest Student Report Scores on Behavior Assessment System for Children (BASC)**

Composite or Scale	T score	Percentile
School Maladjustment Composite	43	30
Clinical Maladjustment Composite	55	72
Depression Scale	58	82
Sense of Inadequacy Scale	59	80
Personal Adjustment Composite	56	68

Note. M=50, SD=10.

In the School Maladjustment, Clinical Maladjustment, Depression, and Sense of Inadequacy scores, T scores of 70 or higher are clinically significant, while scores of 60 to 69 indicate at-risk status. In the Personal Adjustment Composite, T scores of 30 or lower are clinically significant, while scores of 31 to 40 indicate at-risk status.

The School Maladjustment Composite measures sensation-seeking and attitude to school and teachers, giving a picture of the student's adaptation to school. Because significant problems in school seldom exist in isolation, these scores should be considered with reference to other composites (Reynolds & Kamphaus, 1992). Kim's T score on this Composite was 43, at the 30th percentile for her age, with a mean of 50 and standard deviation of 10. In these composites, scores below 70 are in the acceptable range. Kim's

scores suggested that she was well-adjusted to operating in the school environment, although in interviews she expressed discouragement and a feeling that teachers did not understand her or listen to her when she had problems.

The Clinical Maladjustment Composite measures atypicality, locus of control, somatization, social stress, and anxiety, and can be related to the internalizing scores on the parent and teacher reports (Reynolds & Kamphaus, 1992). Kim's T score was 55, at the 72nd percentile for her age, within acceptable limits.

In addition to the composite scores of the student report, it is important to consider individual scales that measure depression and sense of inadequacy when assessing a student's feelings about herself. The Depression Scale is designed to highlight such depressive symptoms as loneliness, pervasive sadness, hopelessness, and pessimism, and should be compared to the Depression Scale on the parent and teacher reports, especially if the score is 60 or over (Reynolds & Kamphaus, 1992). Kim's T score on the depression scale was 58, at the 82nd percentile, which is in the average range but approaching the at-risk level.

The Sense of Inadequacy Scale assesses the student's perception of her belief in her ability and her perception of her lack of success, particularly academic success. Students with high scores on this scale tend to lack persistence in tasks that they perceive as being too difficult. Kim's T score on the Sense of Inadequacy Scale was 59, at the 80th percentile for her age, which is in the average range but close to the at-risk level. However, during interviews, both Kim and Mariah have said that when homework is too hard for Kim she just gives up and does not try it. The school psychologist reported that,

in Grade 4, Kim made several comments to the effect that “I don’t have a good memory, you know,” or “I can’t do this.”

The Personal Adjustment Composite includes relations with peers, interpersonal relations, self-esteem, and self-reliance. This composite in the student report measures positive features of behavior, so high scores are desirable and low scores warrant caution. Kim’s T score was 56, at the 68th percentile for her age, with all scales within acceptable limits. Because the Personal Adjustment Composite measures positive behaviors, scores of 30 or lower are clinically significant, and scores of 31 to 40 indicate at-risk status.

The parent report and the teacher report questionnaires provide parallel categories of questions to be answered by the parent of the student and by her teacher, although the Behavioral Symptoms Index on the teacher’s report includes a scale measuring learning problems that does not appear on the parent’s. Several of the scales differ from those in the student report form. Kim’s mother Mariah completed the questionnaire in February and in June. However, because the Transitions teacher did not complete his first questionnaire until near the end of the study, in mid May, it was not appropriate to have him do a second report within weeks of the first one. Therefore I record his observations from mid May with the posttest results of the parent report from early June. Even though there is only one form of the report from the teacher, it is helpful to compare his perceptions of Kim’s behavior to her mother’s perceptions. Table 6 summarizes the Composite scores for the parent report of the BASC.

**Table 6**  
**Pretest Parent Report Scores on Behavior Assessment System for Children (BASC)**

<b>Composite</b>	<b>T Score</b>	<b>Percentile</b>
Externalizing Problems	50	59
Internalizing Problems	58	82
Behavioral Symptoms	54	71
Adaptive Skills	53	59

**Note.** M=50, SD 10.

In Externalizing Problems, Internalizing Problems, and Behavioral Symptoms, T scores of 70 or above are clinically significant, while scores of 60 to 69 indicate at-risk status. In Adaptive Skills, scores of 30 or below are clinically significant, while scores of 31 to 40 indicate at-risk status.

The Externalizing Problems Composite of the parent reports of the BASC measures the parent's perceptions about the student's hyperactivity, aggression, and conduct problems. Reynolds & Kamphaus (1992) suggested that symptoms of problems measured by this composite are usually more stable, easier to see in a student than internalizing problems, and tend to carry a poorer prognosis. On this composite of the parent report, the T score measuring Mariah's perception of Kim's negative behaviors was 50, at the 59th percentile for her age, with a mean of 50 and standard deviation of 10. In these composites, scores below 70 are in the acceptable range. Mariah had expressed concern about Kim's hyperactivity, but her score of 46 on the Hyperactivity scale suggested that this behavior was not significantly problematic.

The Internalizing Problems Composite includes scales measuring anxiety, depression, and somatization. Adolescents with high scores in this composite may often have their problems overlooked because they tend to be compliant, rather than disruptive individuals (Reynolds & Kamphaus, 1992). The T score indicating Mariah's perception of



Kim's affect was 58, at the 82nd percentile for her age, within the average range but near at-risk level.

The Behavioral Symptoms Index considers scores for hyperactivity, aggression, anxiety, depression, atypicality, and attention problems. This combination of specific scales from the clinical composites provides a picture of the overall level of problem behavior (Reynolds & Kamphaus, 1992). The T score measuring Mariah's perception of Kim's behavior was 54, at the 71st percentile for her age, within acceptable limits.

The Adaptive Skills Composite includes measurements of social skills and leadership. This composite differs from the other clusters of scales in that it measures positive rather than negative behaviors, so that low scores in this composite are cause for concern, and higher scores are more desirable. The T score indicating Mariah's perception of Kim's positive behaviors was 53, at the 59th percentile for her age, in the acceptable range of 40 or above.

On all of the clusters of the parent report form, as on all of the clusters of the student report form, scores were in the acceptable (not at-risk or clinically significant) range. Mariah's responses in this report indicated that she perceived her daughter's behavior to be normal and acceptable for her age. The parent and student reports of the BASC suggested that Kim's behavior was within acceptable limits, but highlighted areas that could become cause for concern. However, initial interviews with Mariah and with Kim's counselor suggested a greater level of concern than was indicated by the BASC results.

## Qualitative Results

In a tutoring situation, quantitative data such as that previously shown is perhaps the least important data for prescribing teaching activities. It is important to be able to quantify a student's progress and to show her strengths and weaknesses with norm-referenced tools; this can suggest implications for instruction and school placement. However, it is also critical to analyze her errors, looking for more clues about her strengths and weaknesses and for what she already knows, so that future work can build on those. Each observation provides the seed for a working theory about what this student needs, and each subsequent observation can either support the theory, disprove it, modify it, or suggest another theory. Each lesson becomes a dance of observations, each observation having something to say, with useful interpretation of these observations being the big challenge.

### Spelling

Initial Assessment. Qualitative data from the initial spelling assessment are complex, and include notes about Kim's errors, speculations about her learning strengths and weaknesses, and implications for tutoring based on these observations. I had hypothesized that interventions during the study would help Kim to increase automaticity and accuracy in her spelling, and the interventions I chose depended on these observations and my interpretation of them.

The flexibility that is required of a tutor and of a qualitative researcher was called into play during that first session with Kim. Based on her mother's reports, her own description of her spelling and reading, and notes from her elementary school, I had

expected her to demonstrate problems with basic spelling patterns as examined in the criterion-referenced spelling tests. As noted above, she made no errors on the spelling test at a Grade 1 to 2 level (Appendix E). Given that various reports indicated that she was reading and spelling at a Grade 4.5 level, I expected to see at least one or two errors in the Grade 3 to 4 spelling test (Appendix E), but she made no errors in this list either.

Although these tests are sometimes used to assess spelling at a particular grade level, to an experienced teacher or tutor they are usually more useful for displaying what the student knows and does not know than for suggesting grade levels. Students with LD tend to have difficulty remembering what words look like, more often in spelling than in reading (Pumphrey & Reason, 1992), and often having more problems with words such as “half” or “does” that cannot be spelled phonetically. My reading in this area led me to suspect that students with learning problems as a result of FAS/E have similar difficulties.

Instruction in spelling for students with LD provides practice in analysis of the phonemic structure of the word as well as practice recognizing the visual or orthographic image of the word, which in turn contributes to proficient reading (Adams, 1997; Williams, 1990). In my experience, students with LD usually benefit from direct multisensory instruction in spelling of non-phonetic words, in spelling generalizations, and in patterns of spelling that commonly appear in their work. To illustrate these patterns, I have summarized several basic spelling generalizations in Table 7. Most of the generalizations in the table were included in the Grade 3-4 criterion-referenced test, in which Kim made no errors.

**Table 7**  
**Examples of Spelling Generalizations in Grades 3 - 4 Criterion-Referenced Test**

Generalization	Example
"ck," "tch," "dge," and "ckle" follow a short vowel.	thick, catch, ledge, trickle
In a one-syllable word with one short vowel ending in one consonant, the final consonant is doubled when adding a suffix starting with a vowel.	zipper
"i" before "gh" is usually long.	high
"aw" is usually at the end of a word or before an "n."	straw, lawn
"ew" is usually at the end of a word.	new

I was surprised when Kim appeared to have no problems with the words on these tests. It was not clear at this point whether she differed from most other students with LD in her patterns of strengths and weaknesses, or whether her success was based on effective past remediation of the weaknesses.

In the criterion-referenced test designed for students in Grades 5 to 10, Kim began to have some difficulty. About Grade 4, after most basic encoding should have been mastered, new spelling patterns increase in complexity, and this is less according to a common scope and sequence but more random, according to course content or student interest. The broad grade range in this test represents a variety of spelling patterns that emerge over these five years. With a score of 80% in the Grade 5 -10 test, Kim's errors included her spelling "sneak" as "sneek," "brief" as "bref," "nervous" as "nervis," "mesh" as "meish," and "wrench" as "rench," as shown in Table 8.

**Table 8**  
**Generalizations in Kim's Spelling Errors in Grade 5-10 Test**

<b>Spelling Word</b>	<b>Kim's Spelling</b>	<b>Generalization</b>
sneak	sneek	Use of "ee" instead of "ea"; incorrect vowel team
brief	bref	Failed to use vowel team "ie"
nervous	nervis	Failed to use suffix "ous"
mesh	meish	Used a vowel team when not needed
wrench	rench	Failed to use silent initial letter

To teachers who believe that their students learn to read and spell whole words, this test may have demonstrated that Kim needed to learn the five words she misspelled, and to practice those she struggled with. To me, the test spoke volumes more. Although the school psychologist reported that she was better at remembering auditorily-presented material, Kim's responses in this testing suggested to me that she may have a strength in remembering what she sees. Firstly, she was able to recognize when she had made a mistake. In my experience, people who struggle with remembering what they see usually find it difficult to spot mistakes, especially in their own writing. Secondly, she had developed the strategy of writing out different ways that she thought a word could be spelled, possibly so that she could recognize the correct spelling by sight, or perhaps because she had learned that the motoric involvement of writing was useful to her (Pumphrey & Reason, 1992). Thirdly, she spelled several non-phonetic words correctly, which could be because she has seen them so frequently in her reading and spelling, or because as high frequency words they may have been explicitly taught.

Most students with LD struggle with more complex words, usually about Grade 4 or 5, when the volume, variety, and sophistication of what they read and write increases. According to Nelson (1994), children in primary school are learning to read, and in later elementary school years they are reading to learn about their world. From Grades 4 to 6 students begin to learn about the world through reading materials that inform without requiring prior knowledge of the subject. This changes from Grades 7 to 9, when they begin to read about subjects that are totally new to them, and they are exposed to totally new vocabulary. Usually as the volume, variety, and sophistication of their reading increases, so does the volume, variety, and sophistication of their writing and spelling.

In using the above strategies, Kim also displayed self-monitoring skills, but whether this demonstrated memory strengths or metalinguistic awareness was not clear. I planned to investigate this in subsequent lessons, to assess whether she would likely benefit more from strategies to improve her memory for whole words or from strategies to increase her awareness of the mechanics of language. Wong (1991) emphasized the importance of teaching metacognitive strategies to students with learning disabilities, stating that these students seldom use such strategies without direct instruction and practice across subject areas. Kim's use of planning and strategies will be discussed in more detail later in this paper.

Several of Kim's errors and self-corrected spellings suggested that she would probably benefit from instruction and practice in using different vowel teams (as seen in her problems with "brief," "sneak," "surround," and "trout"). Her misspelling of "nervous" suggested that it would be useful to give her instruction and practice in the use

and meanings of suffixes, so that she could choose correctly from the suffixes “es”, “est”, and “ous”, which sound similar but have different meanings. Spelling “mesh” as “meish” could have indicated that she had a problem with auditory discrimination, or that she thought the word was too simple to be in this list so it had to be harder than it seemed and she should add a letter or two. When she wrote and rewrote her corrections of errors she was possibly demonstrating that she knew generally what the words looked like, but didn’t have mastery of the relevant generalization or rule.

For example, Kim’s way of dealing with her uncertainty when she struggled with spelling “surround” provided a hint about one of her possible learning strengths. First she wrote “surrond,” but recognized immediately that it was incorrect. She inserted “u” in the appropriate spot, but was still unsure, so rewrote the word, including the “u”. Still uncertain, she crossed out that spelling, which had been correct, and wrote it the same way again. This time, after viewing it three times correctly, she was satisfied with her efforts. Her strategy was similar when she wrote “lonely” as “lonly”. Recognizing it as incorrect, she crossed it off, wrote “lonley”, crossed that out, and then made two more partial attempts at the word before spelling it correctly. She took three similar tries before she was satisfied with her spelling of “trout”, but was unsuccessful with this strategy when trying to correct her spelling of “brief”. With her repeated use of the writing-rewriting strategy, Kim demonstrated that she was monitoring her work, that she may have a strength in remembering what looks correct in a word, or that she may have been using the motoric reinforcement of writing and rewriting to figure out the spellings (Pumphrey & Reason, 1992). A copy of Kim’s work on the criterion-referenced spelling tests is

included in Appendix F, to illustrate the process by which she verified and corrected her spelling. Figure 1 illustrates the process by which I made deductions about her strengths and weaknesses, and how I used these deductions to guide my teaching plans.

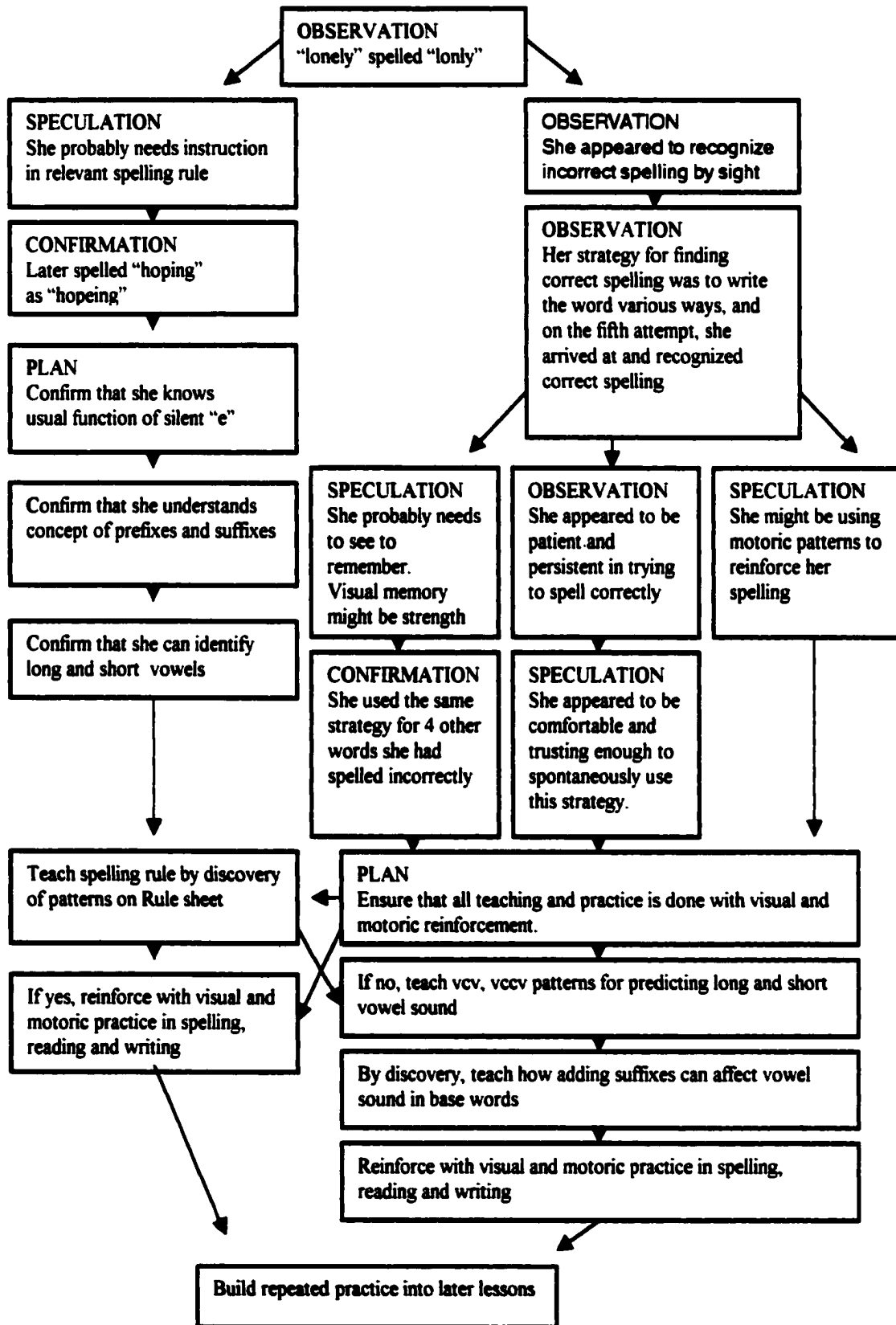
Kim demonstrated other strengths, such as apparent competence with the rule about doubling a final consonant when adding a suffix starting with a vowel (for example, zipper, smelled, grabbing). This competence suggested to me that at some point she had probably been taught some spelling generalizations and rules, and that knowing these was an effective tool for her. I planned to continue to assess the potential of teaching generalizations and rules as an effective strategy for improving her spelling.

Following the spelling tests, Kim wrote two sentences from dictation (Appendix F). Her only error was to spell "hoping" as "hopeing," which confirmed my speculation that she had problems with the rule about what to do with the final "e" when a suffix is added to a base word.

Even the way Kim wrote her tests was worthy of note. Almost all of her work during this lesson was double spaced, and she wrote her spelling words across the page rather than straight down in a list. The double spacing suggested to me that she may be more comfortable with materials that have plenty of "white space" in them, or that she was unaware of different ways of formatting lists or other written material. Perhaps she wrote her spelling words across the page because that is how I had written them in my notebook, because her thinking tends to be more global than linear, or simply because she was trying to be frugal in her use of paper. Kim preferred to print rather than use cursive writing, which might suggest that she had had difficulty learning to do cursive writing. However,



Figure 1. Example of decision-making based on one spelling error



because her printing was fairly neat and she seemed comfortable with this, I made no attempts to encourage cursive writing over printing.

Finally, Kim's use of the strategy of writing and rewriting words she was unsure of suggested to me that she was comfortable in the tutoring setting. Although we had met several times before tutoring began, both in my home and in meetings at the school, the first lesson could have been stressful for her. Testing results are usually affected to some degree by student anxiety and, in my experience, students with learning disabilities often appear to be even more strongly affected by the stress of testing. However, Kim seemed cheerful and chatty, and comfortable with using a strategy that she thought could improve her test scores.

After this initial spelling assessment, I had made many observations. These observations were hints about ways that Kim might learn best, and ways that she struggled. My speculations about their significance formed little working theories in my notes, theories that would be supported, modified, or disproved by information from other testing and by observations in future lessons.

In view of Kim's high scores on the basic levels of spelling tests, on our second day together I quickly administered a criterion-referenced test at the Grade 8 through adult level, as a means of assessing her knowledge of higher level spelling skills. She spelled only one word correctly, so I abandoned this test about a third of the way through. According to the results of this exercise, Kim struggled with when to use advanced spelling patterns such as "ch" sounding like /k/, "ie," soft "c," and "ar" and "or" as suffixes. She correctly used the suffix "ic," silent "e" after a "v" at the end of a word, and

“sch” in “scholar.” However, she did not appear to be consistent in spelling words at this level. This inconsistency is typical of students with FAS/E and LD.

**Spelling During Writing Tasks.** Based on the positive results of my initial assessment of Kim’s spelling and the very basic level of her initial writing sample (to be discussed in a subsequent section), I decided that improvement in writing rather than spelling would be the primary focus for our second lesson. However, Kim was required to spell as well as write in composition exercises, so that even then, a secondary focus was on her spelling. At this point I discuss only Kim’s spelling problems during the writing exercise, describing the actual writing process more fully later.

Spelling during writing tasks is often affected by interference from the cognitive processes involved in writing (Levine et al., 1993; Pumphrey & Reason, 1992). Because I had hypothesized that Kim’s spelling would improve in accuracy and automaticity as a result of tutoring, this possible interference was of particular concern in my study. I now describe how Kim’s spelling varied according to the nature of her writing task, how it varied from day to day, and when and how proof-reading was included in our lessons.

Spelling usually suffers when a student with LD concentrates her cognitive processes on remembering what she needs to write in a dictated sentence, or what she is trying to say in a composition or answer (Lahey & Bloom, 1994; Levine et al., 1993; Pressley & McCormick, 1995; Pumphrey & Reason, 1992). Lahey and Bloom added that emotional factors can also interfere with the cognitive processes required for writing. This may be the case for Kim, who faced writing tasks with a negative attitude because of the difficulties she has had with reading, writing, and spelling during her school career.

Kim was no exception to my picture of students who spell better in lists of words than they do in composition. Whereas her paragraph on the first day had been eight lines of mostly one-syllable words, her composition on the second day describing the same picture was 28 lines long. In the first composition she had one spelling error, and several run-on sentences and one other punctuation error. In the second composition she left endings off short words and made errors with vowel teams, even though she had spelled them correctly the day before in her spelling test. This inconsistency, spelling correctly in one situation but not another, or misspelling simple words but spelling more difficult words correctly, is quite typical of the writing of students with LD who I have worked with in the past.

Kim used punctuation and capital letters inconsistently in this second paragraph. In writing a dialogue, she included no quotation marks, and she again wrote several run-on sentences. Because the focus of this composition was to encourage Kim to expand her ideas and her vocabulary in creative writing, I did not ask her to proof-read or correct her spelling or punctuation. Graham et al. (1991) claimed that students must be aware of communication as the primary purpose of writing, and that too much emphasis on the mechanics may interfere with this purpose. Students with LD often struggle not only with spelling, punctuation, sentence structure, and proof-reading, but handwriting and copying as well (Hornsby, 1984). Even when they do get all their errors corrected, they may still copy incorrectly and end up with the same errors again, or entirely different ones. I planned that proof-reading for spelling, punctuation, and sentence structure would be more of a focus in later lessons.

Spelling and writing are integrated with the reading portion of the lesson when the student writes answers to questions about what she has read. During this second lesson, Kim read three pages from a book about the Titanic (Ballard, 1993), material which interested her intensely. Initially, to find out whether she understood what she was reading, I asked Kim literal comprehension questions about the story. Her oral responses were relevant to the questions, but sometimes vague and non-specific.

Because it has been my experience that students with LD can often easily provide an oral answer about their reading but then have difficulty writing down that same answer, I wanted to find out how much the cognitive processes of writing and demonstrating her comprehension appeared to interfere with her spelling. For the first question that I asked her to respond to in writing, Kim seemed to have little difficulty writing an answer, with automatic spelling of basic vocabulary. However, this would be a frequent point for observation in later exercises, particularly when the vocabulary was more difficult for her.

Kim answered the question in a complete sentence that was interspersed with capital letters where they were not necessary. Most spelling was correct, with errors in some advanced patterns but not in others. Again, this inconsistency in performance is typical of students with FAS/E or with learning disabilities. They often do isolated tasks at a level of difficulty that is unexpected because they may make many errors in simpler tasks, or they may struggle with a concept such as vowel teams on one day or with one word, but then use the same vowel team correctly even in the same assignment. I expected that as Kim achieved greater automaticity in spelling, these types of errors in her work would be reduced.

During writing exercises over the first three weeks, Kim worked on the computer because she found it easier and “funner,” and seemed to be more productive. Pumphrey & Reason (1992) claimed that student writing improved with the use of word processing, with better vocabulary, variety in sentence structure, general interest, and technical accuracy (see also Graham et al., 1991). As our lessons progressed, Kim’s spelling improved. She correctly spelled more sophisticated words but frequently had problems with endings of words, vowel teams, unnecessary capital letters, and rules such as what to do with a final “e” or “y” when adding a suffix to a base word.

Because I wanted to encourage Kim to become more automatic at noticing and correcting her errors in her handwritten work as well as in her computer writing, I asked her to first proofread without using the spell-checking function of the computer. She spotted many of her spelling errors just by rereading her composition, but was even more successful when she read it aloud. This strategy had also been recommended by her school psychologist, and provided her with auditory as well as visual input. Multisensory reinforcement such as this has been recommended for students with FAS/E (Malbin, 1993a) and students with LD (Henry, 1998). Kim also may have been more successful when proofreading with this strategy because reading aloud made it more difficult for her to skim too quickly over what she had written, with her eye movements being slowed by the need to read and speak word by word.

In subsequent lessons, Kim often needed to be reminded to read her work aloud to help her proofreading, and we discussed ways that she could use this strategy in class and on exams. It is questionable whether just discussing a strategy to be used in a different

setting would be sufficient to lead Kim to use it elsewhere. Students with LD (Wong, 1991) and students with FAS/E (Malbin, 1993a) tend to have difficulty transferring learning from one setting to another, so it may be necessary to sit with Kim during a class assignment or a practice exam and guide her through the process several times to facilitate transfer of this useful strategy. It would probably require some advocacy at her school, either by herself, her mother, or me, so that she could verbalize as necessary in various school situations and settings. Due to the time limitations of this study, I did not work with Kim in other settings, but I did recommend to the teacher, counselor, Kim, and her mother that this strategy might be beneficial in other situations.

Kim was comfortable working on the computer, and found the spell-checking function useful because she could usually recognize the correct spelling of a word when it was in front of her. Some students with LD struggle with choosing the correct spelling from words that look similar, so she is fortunate that this is not a significant weakness for her. The limitations of the spell-checking function in recognizing errors in homonyms would need to be addressed by teaching homonyms directly.

In summary, Kim's spelling in writing exercises was significantly less accurate than in spelling exercises with lists of isolated words, or with dictated sentences. She benefited from working on the computer rather than writing longhand, and from reading aloud when proofreading.

Teaching Spelling Generalizations and Strategies. Accuracy and automaticity in spelling were important goals for Kim's learning in this study. In my experience, explicit teaching of spelling generalizations, syllable types, and affixes helps students with LD

become more accurate and automatic in their spelling and reading. Multisensory practice of these elements with immediate feedback on successes and errors helps to reinforce them to a point of automaticity.

A month after our lessons began, the focus in our lessons moved from writing to spelling. Having observed Kim's difficulties with more complex words, I wanted to give her ways to improve her word attack skills at this level. Teaching students with LD about syllable types provides them with a new set of tools for encoding and decoding words (Henry, 1998; Hornsby, 1984; Moats, 1988; Pumphrey & Reason, 1992), particularly for words of more than two syllables.

Syllabication enables a student to break words into shorter, more manageable units for reading or spelling, and awareness of the pronunciation and spelling of each of the six syllable types makes it easier to predict how to read or spell a word. It also lays a foundation for teaching spelling generalizations such as the rule about adding a suffix to a word ending in silent "e." Kim remembered that a teacher had once taught her how to divide a word into "claps" but was unfamiliar with the term "syllable." She seemed receptive to my demonstration of open and closed syllables, being able to identify and pronounce isolated syllables correctly. Considering Kim's ability to identify many whole words from memory, and keeping in mind the psychologist's caution that she often guesses with real words but applies her orthophonemic knowledge to nonsense words, I gave her an exercise in dividing and decoding nonsense words with open and closed syllables. Although she was successful with dividing and reading real two-syllable words, the same task was puzzling for her with nonsense words. I wondered if she had already



internalized what I was trying to show her, and if I was confusing her with my words. Murphy (1993) described the reaction of a child with FAS to being overwhelmed by too much explanation, when the child pleaded, "Shut up and talk to me" (p. 198). Perhaps Kim already understood the principles of syllabication, and my explanations were interfering with her internalized understanding. Suspecting that this might be causing her confusion, I backtracked to giving her real words to read and spell, and she continued to be successful with these.

Having given Kim the tool of syllabication to help her spell and read longer, more complex words, I began to increase the complexity and difficulty in the words that I asked her to spell. The purpose of spelling exercises is to provide multisensory practice in known phonograms and rules, to the point of overlearning (Lutke, 1993; Pumphrey & Reason, 1992; Sheffield, 1991; Williams, 1991). As each word is completed, I ask questions to elicit responses that demonstrate her analysis of errors. For example, if she had spelled "shameful" as "shamful," I would ask her to give me the base word ("shame"), to name the suffix ("ful"), whether the suffix starts with a consonant or a vowel, and what happens to the silent "e" when the suffix starts with a consonant. Often just drawing the student's attention to the fact that she has written a base word is enough to alert her to think about rules for adding suffixes, and none of the other questions are needed. Following this immediate constructive feedback (Pressley & McCormick, 1995), she would correct her error and spell one or two more words using the same generalization. This immediate correction prevents her from practicing her error (Gelzheizer & Clark, 1991), and spelling more words using the same rule reinforces its correct use. An

additional advantage of this strategy of immediate correction is that the student finishes her work with no errors, which is encouraging for students with FAS/E or LD who seldom have that positive experience. The use of eliciting questions immediately followed by relevant practice is an integral part of the Orton Gillingham approach to teaching students with learning disabilities (see also Nelson, 1994; Palincsar et al., 1994).

The next focus in our spelling work was affixes, and the concept that prefixes and suffixes are added to base words or roots to change their meanings. Because it is representative of how I teach new sounds and generalizations to students with LD, I describe the process in detail. I have found understanding of the concept of affixes to be useful for students who struggle with choices for spelling some words, as Kim demonstrated with her spelling of "nervous" as "nervis." For example, /d/ in the final position can be spelled "d" as in "land" or "ed" as in "hummed." When a student understands that a word tells what happened in the past, she understands that the /d/ sound at the end of the word should be spelled "ed." Similarly, /fl/ can be spelled "fl" as in "flop," "fle" as in "rifle," or "ful" as in "handful." It is helpful for the student to know that some spellings, such as "fle" and "ful," are usually in only the final position (Stanovich, 1991), and the meaning of the suffix "ful" guides her in deciding whether to spell the final sound as "fle" or "ful." Direct instruction in meaningful units of language or morphemes helps students with both reading and spelling (Moats, 1988).

The function of affixes in changing the meanings of base words and roots is important for reading comprehension as well as for spelling, with a student often demonstrating understanding of commonly-used affixes such as "un" in "unlock" or "er" in

“baker,” but not understanding less common affixes such as “bi,” “dis,” “pro,” or “ous” and the effects these have on the meaning of what she is reading (Henry, 1998; Hornsby, 1984). Instruction in this area in spelling usually results in better reading comprehension because of the student’s new awareness of the effects of affixes on meaning (Wong, 1991). In my experience, practice in analyzing language in this way also usually helps a student to become more analytical in reading, presumably similarly to the way practice in reading helps to develop other related cognitive abilities (Stanovich, 1993; Wong).

It is important for a teacher or tutor to test assumptions about the student’s prior knowledge when teaching a new concept, particularly in view of the inconsistent performance of students with LD (Moats, 1988) or FAS/E (Malbin, 1993a). Before I teach a student the meaning and spelling of a specific affix I need to confirm that she understands the way that an affix affects the meaning of a base word or root, which parts of a word are prefix, suffix, base word, and root, and what she already knows about each.

Because Kim has demonstrated problems with abstract concepts, and because diagrams are often useful teaching tools for students with FAS/E (Lutke, 1993), I illustrated the concept of affixes by drawing a tree to show the left-to-right positions of prefix, base word, root, and suffix. I extended this visual image by printing prefixes on green paper cut into leaf shapes, base words on brown log shapes, and suffixes on red leaf shapes, which Kim was able to manipulate on a picture of a large tree trunk to create words like “unlocked,” “pretest,” and “hunter.”

When I thought that Kim had demonstrated in this concrete way that she understood the function of affixes in common words, I gave her groups of words to read,

having her identify base words, prefixes, and suffixes. I then asked her to deduce the meaning of the commonly-used affix in each group. This was a difficult task for her, possibly because of problems with word retrieval. Kim seemed to be actively thinking about the application of this work on other words, asking if “resubmit” had two prefixes, “re” and “sub,” and if or how the meaning of the prefix “pre” applied to “precaution” and “prefix.” Interestingly, these words were not in front of her at the time.

My procedure for teaching a specific affix includes the student’s discovery of patterns. I say a word, the student repeats it, and after several words the student is usually able to identify the sound that is common to all of the words (/us/), its position in the word (final), and often even its spelling (“ous”). This process confused Kim, possibly because she struggled with remembering sequences or isolated details that have been presented auditorily (Pumphrey & Reason, 1992), so we backtracked to identifying the commonalities in pairs of words instead of a whole list. When she had demonstrated that she could isolate the sound and its position, I asked her to tell me the meaning of the suffix. Again, defining the meaning was difficult for her, but she was able to use several words in sentences to demonstrate her understanding.

When I had determined that Kim could auditorily discriminate the sound (/us/) and that she understood its meaning, I showed her the spelling of the suffix (“ous”) and explained that it means “full of.” I presented her with the suffix printed in large letters on a card, and she practiced by simultaneously tracing the letters and saying their names aloud, followed by pronouncing the suffix (/us/) and saying its meaning (“full of”). She repeated this practice 18 times on a variety of textures. In her resource binder, she

recorded the suffix, its meaning, and a key word for remembering it. She read a list of words and several sentences containing the suffix, spelled 10 related words and read them aloud, and composed sentences using three words with the suffix. To further reinforce her learning, I intermittently asked her throughout this practice to give me its meaning. In subsequent lessons, Kim would read this and other known affixes on drill deck cards and say their meanings, write known affixes from my dictation of their meanings, practice spelling words with the affixes, read them in word lists, and identify them in other reading and writing exercises. The aim of this repetitive multisensory practice is automaticity, so that she can automatically apply what she has learned, without thinking about it (Malbin, 1993b; Pressley & McCormick, 1995; Pumphrey & Reason, 1992). Pressley and McCormick added that research has shown physical practice to be useful in improving student performance, and that distributed practice over several lessons is more effective than practice that is concentrated in one or two sessions.

It might seem that this was a very long ponderous process to follow to teach one suffix, one little element of language. However, I have noticed that most of my students with LD are interested in how things work. Perhaps this is why, after repeated multisensory practice in analyzing and practicing patterns such as this one, they usually begin to look at other language tasks in an analytic manner rather than just guessing or giving up. I tell them that they are learning how to look for clues, so that they can become better word detectives and learn to figure out what words sound like, what they mean, or how they are spelled. In my experience, simply defining the affix for them and even

having them practice it in spelling and reading is less successful than this repetitive multisensory approach.

Because of the impact of FAE on Kim's learning, I was unsure of whether this approach would also be effective for her. However, her success with syllabication had suggested that looking at language in an analytic way might be a useful strategy for her, and repeated practice with this affix and others in subsequent lessons confirmed this. Later lessons included similar instruction in several spelling rules, and she responded positively to the direct instruction and multisensory practice.

An important goal in this study was to improve Kim's accuracy and automaticity in spelling. When Kim was writing responses to comprehension questions or doing creative writing, the cognitive processing required by these tasks interfered with those required by spelling, resulting in more errors than might be expected from her spelling of words in isolation. Explicit multisensory instruction in the use of syllable types, spelling generalizations, and affixes was an effective way to help her be more accurate and automatic in her spelling. Practice in proofreading strategies complemented this instruction by giving her ways to focus her attention on correcting spelling errors in her writing.

### Reading

I had hypothesized that tutoring in reading and spelling would lead to improvement in Kim's decoding, fluency, and comprehension. In my informal assessment during the first lesson, her comprehension was weak at a level where decoding and fluency seemed to be strong, which was consistent with reports from the school psychologist who tested her

in Grade 4. Because of this, I planned to make improving her comprehension the first priority in the reading portion of subsequent lessons.

“The literate use of language in all forms” is the emphasis of an integrated curriculum for teaching language and literacy (Calfée et al., 1990, p. 83). Integrating the teaching of reading, writing, and spelling is important for teaching reading in general (Adams, 1991), and to students with LD in particular (Henry, 1998; Sheffield, 1991; Silliman & Wilkinson, 1994; Wallach & Butler, 1994). For this reason, I included reading practice and writing in most of my lessons with Kim, for 10 to 20 minutes per session. Most often she read from a book or article, and wrote answers to comprehension questions following her reading. On other occasions she read sentences in cloze exercises when she had to fill in blanks to practice correct use of homonyms, and she read and reread her own compositions as she was editing and proofreading them.

During our first lesson, my aim was to establish Kim’s reading level and to make some preliminary observations about the nature of her reading difficulties and the types of strategies she employed (see Palincsar et al., 1994). Therefore I asked Kim to read aloud from an article and two books, starting with the easiest because I was not yet sure of an appropriate instructional level for her. The first two were at Grades 2 and 3 levels, and easy for her to read, with no apparent problems with decoding or fluency. She preferred to read them aloud without first prereading silently, and had no problems orally answering the questions I asked when trying to assess her literal and inferential comprehension.

The third book was about the Titanic (Ballard, 1993), which interested her greatly. She had seen the movie “Titanic” three times in recent months, played the movie sound

track CD at least once a day, and was fascinated by the historical account and photographs in this book. For successful comprehension, it is important that a student be interested in what she is reading and that she have some domain knowledge (Garner et al., 1991), so I thought this was appropriate for her to work on in our lessons. Again, decoding and fluency did not appear to cause problems for Kim. At about a Grade 4 level, the book seemed easy for her to read. She was able to read aloud with expression, which suggested to me that she understood what she was reading. However, when I asked her a literal comprehension question about the ship, she was unable to answer. After I pointed to the paragraph containing the answer, she read it aloud again, commented that she had not read the last part of the paragraph on her first reading, and orally gave me the correct answer, reading directly from the book. She was also unable to answer a second literal comprehension question without re-reading the material, and again she read her answer directly from the book.

Had I not heard her read so expressively, I would have assumed that Kim's main problem was with comprehension. However, listening to her reading fluently and with expression in her voice, I felt that she must be understanding the material as she read it. I wondered if she was unable to retain that understanding in her memory after only one reading. Kamhi (1991) claimed that while decoding difficulties are at the root of most comprehension problems, many students struggle with comprehension even when their reading is smooth and apparently competent (also see Henry, 1998). Kamhi also suggested that vocabulary knowledge, semantic syntactic knowledge, schema knowledge and metacognitive processes can be at the root of comprehension problems other than



those resulting from poor decoding skills, and that affective and motivational states might be factors as well. Garner et al. (1991) added that confusion about task demands, low self-esteem, and low interest could also be factors. Because it is hard work for her and because what she is required to read for school is beyond her instructional level, reading has not been a positive experience for Kim, and she reads only when she must. Negative experiences with reading over the years may have contributed to affective and motivational states that are factors in her apparent comprehension problems. Kim's limited reading experience is also important to consider in light of claims that vocabulary, semantic and syntactic knowledge, and metacognitive processes are factors that influence reading success and are positively influenced by reading practice in a reciprocal way (Ehri, 1991; Stanovich, 1993; Wong, 1991).

Memory problems in a student with language learning disabilities may result from an interrelationship between memory and processes, such as poor retrieval of stimuli, weak speech-motor planning, speed of language processing, or difficulty with phonological processing (Lahey & Bloom, 1994). Stress in one processing function may interfere with other processing functions, and task analysis of a student's work must consider the effects of this interference on her cognitive processes. The challenge is that it is difficult to measure one aspect of processing (Lahey & Bloom), particularly when performance often is variable. When Kim was reading fluently and with expression, phonological processing did not seem to be an interfering factor, but given her poor word attack skills as demonstrated in the Woodcock Reading Mastery Test - Revised (WRMT-R), it may be that much of her cognitive functioning was focused on making the reading

smooth and interesting. It is also possible that slow language processing may have been a factor in what appeared to be very poor memory for what she had just read (Malbin, 1993a). Perhaps her apparent competency with expressive language masked underlying comprehension problems, as is common in children with FAS/E (Malbin; Morse, 1993).

In addition to her apparent problems with comprehension and memory, Kim found it difficult to answer questions in her own words. Was this related to word retrieval problems? In view of her limited reading experience and her lack of confidence, did the words in front of her seem like the best or the only way to say something? Was she demonstrating the tendency of children with FAS/E to be able to parrot material without really understanding it (Malbin, 1993a; Morse, 1993) and thus without being able to put it into her own words? In my experience, most students with LD find expressive language tasks more difficult than providing the same information through a receptive task. This seems to be the case with Kim as well.

Because of Kim's interest in the Titanic and because our work together was just beginning, I was reluctant to move on to reading material which would offer her more challenge in decoding and fluency. I felt that continuing with material that was apparently easy for her to read would give me the opportunity to look at her puzzling comprehension or memory problems more closely without the complicating factor of greater cognitive demands of her reading at a more difficult level. For the next three lessons we continued to work with this book, with her challenge being more in writing answers to comprehension questions than in the reading of the material. In an attempt to address Kim's apparent problems with comprehension and memory as well as verbalization of her

understanding of text, I suggested several strategies for Kim to try. I provided explicit instructions, guided Kim's practice, and gave her independent practice, which usually leads to independent performance (Garner et al., 1991). The first strategy was to have her read each paragraph silently and then aloud, and write the answer to a question about this short passage rather than a longer passage (Roth & Spekman, 1991). The multisensory reinforcement of reading the material aloud the second time did seem to be more successful than her silently reading only once, but even with the shorter passage her memory for what she had just read was still limited. Blachowicz (1994) claimed that rereading is a simple but effective strategy that some students regard as "cheating" rather than a means of getting important details from the material. Kim seemed to feel slightly discouraged that she wasn't able to answer questions after only one reading, but she showed no resistance to reading again aloud.

When the rereading strategy was less successful than I had expected, I tried providing Kim with comprehension questions prior to her reading of a passage (Bender, 1992). While this made it easier for her to search for and remember the information required for the task, it seemed to ensure that she remembered no other details.

The third strategy to improve Kim's comprehension and memory was to have her summarize what she read. Some students need to be explicitly taught to identify main ideas of a text, and to summarize the text (Pressley & McCormick, 1995) because these strategies do not occur naturally to them. Pressley and McCormick claimed that research had conclusively demonstrated that instruction in summarization strategies improved both comprehension and memory. I modeled summarizing paragraphs, verbalizing the way that

I chose what to report and what to leave out. I guided Kim through the process, asking her to point out important details before she produced her summary. Having Kim tell me what a paragraph was about before giving her the comprehension questions seemed to be slightly more effective than the strategies described above, but she often related details that were unimportant and usually failed to identify the main ideas of the passage.

Because we had used webs to organize her thoughts for composition, I suggested creating webs to visually map the relevant elements in a paragraph. However, it was still difficult for Kim to isolate important details and the main idea. Perhaps it would have been more effective to have her eliminate trivial or redundant information, which then might have made it easier for her to identify the main idea of a passage (Blachowicz, 1994).

In an effort to help Kim to recognize the important details in a passage, I introduced a form of reciprocal teaching (Palincsar et al., 1994) in which she would read a paragraph and I would formulate a question for her based on the passage. She would answer orally, then she would read another paragraph and make up a question for me to answer. After practicing this during three lessons, I gave her passages to read for homework, from which she created questions for me to answer the next day. One of the goals of reciprocal teaching is to provide appropriate modeling but to gradually make the student responsible for what began as a shared exercise. My hope was that my modeling and instruction along with immediate constructive feedback about her practice would encourage Kim to develop the strategy of asking herself questions about the main idea when she read independently (Garner et al., 1991; Pressley & McCormick, 1995). However, Kim continued to have difficulty isolating important details from her reading,

composing questions that asked me about insignificant details like hair color of a character or what kind of clothes he was wearing. Garner et al. suggested that asking more inferential questions than literal questions often provides enough direction for a student to enhance inferential comprehension. I did not find this to be true with Kim. When I discussed my concerns about Kim's comprehension and memory with her mother Mariah, Mariah stated that as a child she had struggled with exactly the same kind of problems as her daughter's, and that she still does.

After four weeks of lessons we began reading about Laura Ingalls Wilder (Wilder, 1980), an article which appealed to her because she had enjoyed the television series based on Wilder's books. This article was more difficult, but she read it aloud quite fluently, accepting my assistance with words such as "ancestors" and "Wisconsin." I wrote questions for her to read and respond to in writing. She seemed to be more comfortable providing me with the answers orally before writing them, which I accepted because it provided multisensory reinforcement as recommended for students with FAS/E and with LD. However, her answers failed to answer the questions accurately and seemed to relate only generally to key words in my questions (see Blachowicz, 1994). For example, when I asked her who was the character Almanzo in real life, she said he was from the east. When I questioned her further, she eventually wrote that he was "a farm boy in the east before he went west," and did not notice until I read the passage aloud that the author had specifically stated that the story of Almanzo was the story of her husband. To the question, "What was this author the first writer to do?" she responded orally that Wilder had written a book about a family on the prairie. When pressed to find what the book said

Wilder was the first to do, she was unable to answer this, even after I showed her the paragraph containing the information and she reread it silently. After I repeated the question, reminded her to look for what Wilder was the first to do, and had her read the paragraph out loud, she was finally able to tell me that Wilder was the first to write a children's novel of several volumes.

Because Kim seemed to struggle more with the comprehension questions on this article even though she could read it aloud fluently, we stopped reading for the day and moved to other activities. In my experience, students with LD have such variable performance that I wanted her to try reading at this level again on another day, rather than drop it on the assumption that it was too difficult for her. During our next lesson we returned to the article, and I asked questions orally. She still had difficulty with responding specifically to questions, even orally, so we finished reading the article, discussed the hardships described in it, and I planned to return to easier reading materials in subsequent lessons. It seemed to me that as the difficulty of the material increased, the cognitive load was such that her comprehension and memory were compromised even though she could read it aloud fluently (see Lahey & Bloom, 1994). Working with easier materials would be more useful when I was teaching her strategies for understanding, remembering, and demonstrating her understanding on paper.

In subsequent lessons we continued to work on understanding, remembering, and demonstrating her understanding in writing, using a variety of articles from Marshall's (1984) text. This comprehension text has adapted news stories into half-page passages complete with several levels of comprehension questions. The text is at about a Grade 5

level, and most students enjoy it because the stories are short, and about real people. I observed that she continued to find it difficult to answer questions in her own words, and that she had little memory of the first paragraph by the time she had read the fifth. Even at this level of reading, she struggled with providing accurate answers, usually responding with details that were related but did not answer the question. For example, she responded to the question, "Why did the swimmer lose so much weight?" with the answer, "Twelve pounds." Perhaps with her slow processing of language and her eagerness to respond, she skimmed the question so quickly that she was unable to process each word in the question before providing an answer.

Because Kim tended to answer with incomplete sentences, I asked her to restate the question when writing her answers. I felt that manipulating the words in the question might encourage her to focus on relevant details to improve her comprehension and memory, and to manipulate the words in the text so that she could respond in her own words rather than quoting the text (see Pressley & McCormick 1995). However, she was totally confused by my instructions about restating the question in the answer, even when I explained and modeled the process several times for her.

This concept of manipulating words seemed to be an abstract concept that Kim could not grasp. To make it more concrete, I wrote the questions on strips of paper and explained and modeled cutting them into chunks and rearranging them to turn the question into part of an answering statement. For example, for the question about defecting Russian dancers, "How did they think life in the United States would be better for them?", I cut the strip with the question into chunks which read, "They think life in the United

States would be better for them...," and had Kim complete the answer orally. After doing this for about ten minutes during each of the next three lessons, with me gradually withdrawing my support and encouraging her independence (Garner et al., 1991), Kim was able to restate the question without resorting to cutting up the strips. In subsequent lessons, she usually answered with complete sentences, and restating the question seemed to help her to be more accurate in her answers.

In reading the articles from the Marshall (1984) text, Kim demonstrated empathy for many of the characters and their dilemmas. In particular, she identified with the struggles of a disabled woman in a wheel chair, the problems of apartheid in South Africa, and the conflicting emotions of a defecting Russian ballerina. Even when she had difficulty demonstrating memory for details of what she had read, she retained this sense of empathy by the end of each article. I thought that this was a life-skills kind of strength that could be important in her career considerations, and mentioned it to her mother, teacher, and counselor when we were discussing possible job-shadowing placements for her.

Following four weeks of Kim's practice with reading and writing answers at this level, I decided to introduce more difficult reading for the last six weeks of our lessons. Kim had mentioned that she was distantly related to artist Emily Carr, and I was able to find a book on Carr at an appropriate reading level (Endicott, 1981) at the library. Garner et al. (1991) claimed that domain knowledge (also see Pressley & McCormick, 1995) and high interest in the task were important to comprehension, so I felt that this book would be suitable for Kim. Because the book had only black and white pictures of Carr's family,



I also provided one with full page color prints of her art, which Kim enjoyed even though she was unable to read it. She remembered a few details that her grandfather had told her about the artist, and tried to relate them to what she was reading. However, once again her empathy for the characters seemed to be stronger than her recall of detail.

Blachowicz (1994) described students who were able to identify a general topic from their reading but were less successful at attending to details, while others tended to recall isolated details but failed to recognize the overall structure of the material. It seemed that Kim either recalled trivial information, such as the color of a character's hair, or a general impression, such as the empathy she felt for the young Emily Carr. In either case, she was demonstrating an inflexible use of strategies, paying attention to details that were irrelevant to the main idea, or finding a main idea but not paying attention to details that might contradict her initial impression (Blachowicz). Time limitations of this study prevented me from providing more instruction and practice, which might have enabled Kim to increase her use of strategies to improve her reading comprehension. Pressley and McCormick (1995) claimed that internalizing the necessary cognitive processes for effective comprehension strategies would require more than just a few months of instruction and practice.

In our lessons, Kim demonstrated comprehension and memory problems in reading, even when she was competent with decoding and fluency. I provided instruction, modeling, guided practice, and independent practice in a variety of strategies, including rereading, reading aloud, summarization, reciprocal teaching, extracting the main idea and important details, and multisensory reinforcement by reading aloud and writing.

Comprehension and memory continued to be a struggle for Kim. Time limitations of this study prevented the thorough teaching and practice of strategies across different subject areas.

### Writing.

I had hypothesized that tutoring in reading and spelling would help Kim to improve in her writing. I thought that higher accuracy and more automaticity in spelling would help reduce the cognitive load required for writing, so that she would demonstrate better spelling and proof-reading as well as increased variety in vocabulary and more context-appropriate vocabulary. In addition, I thought that more practice in reading increasingly difficult material would provide her with models of good writing. My hypotheses were supported by current research, which recommends the integration of student writing with work in spelling and reading (Adams, 1991), particularly for students with LD (Calfée et al., 1991; Henry, 1998; Sheffield, 1991; Silliman & Wilkinson, 1994; Wallach & Butler, 1994). These students usually struggle more with spelling and writing than they do with reading (Hallahan et al., 1996; Pumphrey & Reason, 1992), and tend to have a limited writing vocabulary because they use words they can spell rather than words that they would use orally (Hallahan et al.). In my experience this usually occurs even when correct spelling is not required for the assignment. The tendency to avoid long or unusual words, which they seem to automatically perceive as being hard to spell, appears to result from a desire to avoid taking risks and to make as few errors as possible. At times it seems as though they think that specific, descriptive vocabulary is for other

writers, “good” writers, but not for “dummies” like themselves, so entrenched are their attributions to lack of ability rather than to effort.

Writing is a recursive process of planning, writing, and revising (Graham et al., 1991; Pressley and McCormick, 1995; Pumphrey & Reason, 1992). Students with LD often have problems with several elements of this process. They usually have difficulty producing the mechanical aspects of writing such as spelling, punctuation, grammar (Graham et al.), and handwriting (Hornsby, 1984), and these problems interfere with cognitive processes such as organizing their thoughts, coming up with ideas, or using expressive vocabulary. Their limited knowledge of writing, ineffective use of strategies, or difficulty with retrieval of effective strategies may also affect the cognitive processes necessary for good writing (Graham et al.). Hallahan et al. (1996) added that students with LD score lower than non-LD students in vocabulary, thematic maturity, and word usage, use less complex sentence structure, have weaker organization, and use fewer components that are important to good writing. Students with LD may write at a developmental level that does not appear to be age-appropriate (Lahey & Bloom, 1994), and because they often lag developmentally in different areas (Morse, 1993; Malbin, 1993a) this is probably also true for students with FAS/E.

Current research supports the process approach to teaching writing, which includes instruction in the recursive, non-linear process of planning, drafting, revising and editing, emphasizes the social context of writing as communication, and requires responsive interaction between teacher and student as the text develops. In addition to process instruction, some teaching of basic skills such as grammar, spelling, and

handwriting is also important for the development of effective writing (Graham et al., 1991; Hallahan et al., 1996). Hallahan et al. added that "mechanics should not overshadow instruction in communication in writing" (p. 292). This is particularly important for students with LD, who struggle with so many elements of the writing process (Graham et al., Hallahan et al.).

According to Graham et al. (1991), the most effective model for instruction in writing is similar to that for reading, with direct instruction, modeling, and guided practice leading to independent performance (see also Pressley & McCormick, 1995). While some benefits of instruction in a writing strategy may be visible after a short term of a few weeks, multifaceted instruction that includes a variety of strategies over months or years is especially important for students with LD (Pressley & McCormick). Although the focus of this study was on direct multisensory phonetic instruction in reading and spelling, it also included integration of writing as recommended in the literature (Adams, 1991; Calfee et al., 1990; Henry, 1998; Silliman & Wilkinson, 1994).

During our first lesson, I wanted to observe the process by which Kim constructed a composition. I was interested in seeing whether her poor spelling seemed to interfere with the writing process, whether she could imagine a story from looking at a picture, what means she used to organize her thoughts, and to what extent she demonstrated knowledge of conventions of writing. Allowing students to choose their topics encourages their ownership of the task, and often helps them to organize and plan better because they usually choose a topic that is familiar (Graham et al., 1991). In order to provide her with choice, I gave Kim three pictures depicting different scenes that I

expected her to find interesting, and asked her to write a story about the one she chose. For about a minute, she looked at a picture of a man and a boy fishing, noting that she often went fishing with her grandfather. She then wrote a linear sequence of events based on the picture. This paragraph was eight lines long, single-spaced, with mostly one-syllable words, some incorrect punctuation, and simple sentences except for one run-on sentence. However, she did indent to begin writing, her first sentence introduced the characters and said that they were fishing, and her final sentence provided a good conclusion by telling how they cleaned their catch and had it for supper.

From this brief exercise, I concluded that Kim was aware of some conventions of writing such as introductory and concluding sentences, as well as some mechanical aspects such as indentation, capital letters and basic punctuation. When I asked her to check it over before I read it, she demonstrated editing skills by rereading her composition and dividing one run-on sentence into three simple sentences, although she missed her only spelling error, where she had spelled "not" as "no." In this composition, spelling was not a problem for Kim, but as suggested by Hallahan et al. (1996), her writing vocabulary was limited to simple words that she could spell. She did not appear to consider revising the order or content of anything that she had written.

After observation of Kim's first writing exercise, I felt that Kim's writing would improve greatly if I provided her with simple strategies for organization of her ideas (Graham et al., 1991). I expected that this improvement would lead to her production of greater quantities of writing, and because the strategies would make it easier to perform the task, it would provide more practice with less cognitive interference. For this reason,

in addition to reading and spelling we worked on strategies for improving her planning, revising of content, and editing of mechanical errors in writing. While this instruction and practice in writing strategies appeared to be helpful to Kim's writing, it interfered with answering my thesis questions about improvement as a result of instruction in reading and spelling, as I discuss below.

Hallahan et al. (1996) claimed that informal subjective evaluation of writing such as I have just described is valuable, but that it should be supplemented by formal evaluation. However, formal evaluation of writing was beyond the scope of this short study. Hallahan et al. added that evaluation of the work of students with LD should always consider the variability in their performance, so that any one sample or test result is not considered to be typical of their work.

Teaching students strategies for planning their compositions is an effective way to improve their writing (Graham et al., 1991; Pressley & McCormick, 1995). One strategy that I have found particularly useful for my students is webbing or mapping (Graham et al.), with the student writing ideas on spokes radiating out from the main topic. In my experience, instruction in and use of this strategy usually results in students' production of more details and better organization, presumably because the planning process helps reduce the cognitive load for the rest of the writing process. I have found instruction in the strategy to be most effective when I scaffold the learning, first providing instruction and modeling, then guiding practice, and gradually withdrawing my guidance as the student becomes more independent in her performance (Silliman & Wilkinson, 1994). For example, for webbing, I usually compose a web that provides details about a picture,

verbally going through the steps I would use in developing the web. In a subsequent lesson I scribe a web from details dictated by the student, and we might compose several webs in this manner before progressing to my modeling writing from the web, and eventually to the student writing from the web she has dictated to me. As the student becomes more competent, she takes over the tasks I have been modeling and gradually becomes independent in her use of this strategy. Most of my students have grasped this planning tool quickly and with little practice, finding it a way to limit the many ideas floating in their heads so that they can decide what to write about and just get started at writing them down.

In order to observe if the webbing strategy would be useful for Kim, I showed her how to make a web based on the picture from our first session. She had been taught the strategy in the past so was comfortable in dictating ideas for me to write on the web. With this strategy she generated many more details about the picture and story than she had in her first composition. I encouraged her to think of words that would add to the story, giving examples of adjectives, adverbs, and action verbs to provide models (Pressley & McCormick, 1995). This exercise elicited adjectives describing the setting, the boy when he caught a fish, and the man's reaction to the catch. Whereas Kim's first composition had been eight lines long with un-descriptive vocabulary, her second composition was 29 lines long, and contained many more details, including adjectives and descriptive phrases. In addition to the effects of using webbing and having me elicit descriptive words, another factor in the improvement in her writing may have been that Kim felt more comfortable working with me during this exercise than she had during her

initial assessment. This exercise occurred during her second lesson with me, so spelling and reading instruction were not factors in the improvement in her writing.

Because the purpose of this assignment was to encourage Kim to communicate through writing, I did not ask her to proofread. I wanted to encourage her to use strategies that would help her to write more easily, so that the quantity of her writing would increase. I felt that as her writing increased in quantity she would begin to consider using vocabulary that was more difficult to spell, which would then challenge her to practice using the kinds of words we studied in spelling exercises. Pressley and McCormick (1995) claimed that too much attention given to the mechanics of writing such as spelling and punctuation leaves little cognitive processing available for producing content, and that negative feedback about mechanical problems can be discouraging for a student. They said it is more important to focus first on content and meaning, then revise to improve those features, and finally edit for mechanics only when the communicative purpose has been met (see also Graham et al., 1991). In this paragraph proofreading was not a significant issue because it contained only five spelling errors, and despite some sentence structure problems it was easily understandable. For comparison of the two writing exercises, Appendix G contains copies of Kim's first and second compositions.

As noted above, integrating reading, writing, and spelling is important for students with learning disabilities. A common way of doing this is to have students write answers to comprehension questions related to their reading. When we were working on reading, Kim had difficulty answering questions accurately, often providing an answer from the text that contained key words from the question but not actually answering the question. Early



in her sessions she used simple vocabulary, but as our work on spelling generalizations, syllables, and affixes progressed she became more confident with using words such as “electricity,” “gallery,” “accidentally,” “stupid,” and “difficult” in her written work. Although she often spelled these words incorrectly when she wrote her responses, she seemed to feel confident that she would be able to correct them when she reread her response, or that they would be acceptable if they were misspelled.

Another means of integrating reading and writing is to have a student write a summary of what she has read. Students with comprehension problems usually benefit from instruction in summarization (Pressley & McCormick, 1995), and essay writing is more effective for learning content material than taking notes and answering questions (Scott, 1994). To help address Kim’s comprehension weaknesses while providing her with instruction and guided practice in writing, I asked her to summarize a portion of her book on the Titanic (Ballard, 1993). Because she was fascinated with anything to do with the Titanic, I felt that the first launching of the ship would be a topic that she would find engaging and that she would be motivated to explore in writing (Graham et al., 1991). She dictated the details from several paragraphs for me to write on a web. This summarization was a more difficult task for her than generating her own ideas, probably because it was hard for her to give me details in her own words and not quote directly from the text. Although I again encouraged her to include descriptive words in the web, she was less successful than in her previous composition. I suspect this was at least partly because of cognitive interference as she struggled to use her own words and avoid quoting directly from the book.

When she began writing from the web, Kim seemed to have benefited from this summarization exercise. She integrated details from the text with her own sense of how the workers on the Titanic felt when the ship was launched. I felt this was an important development for her, especially considering that it was so difficult for her to write without directly quoting the text. I thought that writing about her empathy for the workers demonstrated a growing awareness of communication as the purpose of writing (Adams, 1990; Graham et al., 1991; Pressley McCormick, 1995), and perhaps more maturity in her theme (see Hallahan et al., 1996; Lahey & Bloom, 1994).

Sharing of student writing in some form is one way of encouraging students to view writing as communication and not just a school task (Graham et al., 1991). When Kim came to a lesson very excited about a pep rally she had attended the day before, I seized the opportunity to have her write a letter about the event. She decided that she would like to write to her grandmother, with whom she would be visiting for spring break a few weeks hence. She dictated the details of the web for me to write and did a rough copy in her notebook. I later transferred the text (errors and all) to the computer for easier proofreading during the following lesson. As mentioned above when I described her spelling, Kim enjoyed working on the computer, seemed to be able to compose more quickly, was successful in manipulating the spell-checking function, and demonstrated pride in the tidy finished product. Graham et al. (1991) claimed that it is encouraging for students with LD to be able to do composition by word processor. Like Kim, they benefit from the support of spelling and grammar checkers, appreciate the relative ease of manipulating their work during revision, and enjoy the polished, professional look of the

finished product (see also Pumphrey & Reason, 1992). Research suggests that the combination of word processing and good writing instruction results in improvement in compositions of students with LD, but no improvement results from word processing alone (Graham et al.).

Because the most important goal of writing is communication (Adams, 1990; Graham et al., 1991), I worked with Kim on revising the content and message of what she had written before she turned her focus to proofreading for mechanical errors such as spelling and punctuation. It is confusing for students with LD to attend to too many details at once, particularly with complex processes such as writing, so in this letter I focused on helping her improve her transitions between topics. For example, she had moved directly from describing the pep rally to listing questions for her grandmother about their upcoming spring break visit. When I pointed this out, she recognized that she had changed topics and should start a new paragraph, but she did not recognize that the list of questions needed some introduction. In previous writing exercises she had been writing one paragraph about one topic, so this was the first time I had seen this problem with transitions. Eventually, Kim bridged the gap between the two topics by writing: "I wanted to ask you something."

Reading aloud had been useful to some extent in helping Kim with memory and comprehension in reading exercises, and I thought that it might be useful for her as well in revising her writing. Although reading aloud did not bring her attention to portions to revise in this composition, the strategy proved to be effective for her in later sessions,

when she recognized that what she had written did not make sense, or on one occasion, “sounded rude.”

I wanted Kim to learn to see errors such as spelling, sentence structure, and punctuation so that she would be able to do this when she was writing without the benefit of a computer. The first step in helping her to notice her errors was to have her reread her composition, followed by reading it aloud. As in her spelling exercises, she was often able to pick out and correct misspellings in her first rereading, and she noticed some punctuation errors as well. However, reading her composition aloud seemed to be the most effective for her, both for spelling and for punctuation. Multisensory reinforcement seems to be a key strategy for Kim in all her work with written language.

I had included informal analysis of Kim’s writing in this study because research indicates that instruction in reading, writing, and spelling is reciprocal, with work in each one affecting the other (Adams, 1990; Henry, 1998; Sheffield, 1991; Silliman & Wilkinson, 1994; Wallach & Butler, 1994). I had expected improvement in Kim’s spelling and proofreading as well as more variety in vocabulary as a result of integrating instruction from all three areas.

The writing portion of this study clearly illustrates one of the dilemmas facing those doing research on interventions with students with LD. This case study described a real-life situation with a student who came to me for help, and not a laboratory setting with isolation from other instruction or with strict controls over content and script in an intervention. While I was interested in seeing how spelling and reading instruction affected Kim’s writing, I felt that it would have been unethical of me to have her work on

composition without giving her a simple tool to help improve her planning and organization, or without drawing out her use of more colorful vocabulary. I felt that these strategies encouraged her to apply her new spelling knowledge as her compositions expanded in volume and improved in variety of vocabulary.

After instruction and practice in these aspects of the writing process as well as instruction in reading and spelling Kim's writing improved, with more context-appropriate vocabulary, better organization, and greater volume. However, questions arose as a result of this additional instruction. I was unable to clearly or systematically separate the effects of writing instruction and practice, a reduction in cognitive interference as her spelling and reading improved, or her increased comfort in the tutoring situation. Because of the variety of strategies learned and practiced in our lessons, there is no way of isolating the effects of each one. The cumulative effect was positive, but in this real-life situation I cannot attribute the improvement in Kim's writing to reading and spelling instruction alone.

### Self-Monitoring and Planning

Although not considered in the research questions for this study, Kim's self-monitoring and planning are two factors in her learning that are worthy of mention because they are typical of students with FAS/E or LD and impacted the intervention process. Wong (1991) claimed that students with LD have problems with metacognition, which she described as a student's awareness of her own resources for thinking about things as well as the fit between herself as a learner and the demand of the particular learning task. She said this metacognition would take into account the student's belief

about her skills and abilities, her awareness that different tasks demand different processing, and her knowledge of strategies and when to use them.

In our lessons together, Kim spontaneously used strategies on several occasions, which showed that she was monitoring the task, recognizing that a strategy was necessary, and retrieving and using a strategy that she had found to be useful in the past. Often when she used a strategy or followed a rule that I had taught her, she would grin to show me that she had done this consciously. For example, after many admonitions about starting sentences with “because,” she wrote a sentence with “because” in the middle. “Ha!”, her grin seemed to say, “You can’t trick me!”

However, Kim was inconsistent in her application of strategies, using them in one exercise but not in another. In most lessons she referred to the text during reading or to the web I had scribed for composition in order to check the spelling of a particular word. On other occasions she did not use this strategy, either asking me for the spelling or failing to recognize that that a word was misspelled. Another example of her inconsistent application of strategies was in her remembering to use a web to organize her writing on some occasions but not others. This inconsistency in application of strategies is common in students with LD, and these students usually benefit from direct instruction and practice in strategy use across different subjects (Swanson, 1993; Wong, 1991).

Many of the strategies that Kim used spontaneously suggested that she had discovered personal learning strengths. When we were working on syllabication as it affects vowel sounds, she listed the vowels in the margin for reference, commenting that she didn’t know the consonants, but did know the vowels. During this same exercise she

made a quick note in the top margin with examples of words with open and closed syllables and whether the vowel was long or short in each. To encourage her to continue to use such strategies, I commented on her recognition and use of a strategy that was obviously effective for her. "If I write it down I remember better," she responded. She described the classroom of one elementary school teacher which had displayed visual representations of many aspects of language. She said that she could still recall those posters and still sometimes used her memory of them to help with her spelling or reading. To me, this response and the use of these strategies suggested that Kim benefited from visual representation of concepts (see Lutke, 1993; Malbin, 1993a; Henry, 1998), and possibly that she found the motoric reinforcement of writing to be effective (Pumphrey & Reason, 1992).

Earlier, I described the process of writing and rewriting that Kim went through when she recognized that she had made a spelling error, and I wondered if that process indicated that she relied on her visual memory for what the word looked like or if it was the motoric reinforcement of rewriting that helped her spell the word correctly. Similarly, when responding to a comprehension question Kim often wrote what she was thinking, then wrote the answer again in better language. I suspect the cognitive processes required for thinking of an answer and writing it down interfered with those required for composing and spelling, but after the draft of her answer was complete she was able to concentrate on context-appropriate vocabulary, syntax, and the mechanics of spelling. Whether the visual reinforcement or the motoric reinforcement was more useful to her was unclear, but she had discovered for herself that this was a useful strategy for her. She

also claimed that she had to write quickly or she would forget what she was writing, and said that for this reason she often had to redo school assignments because her writing was too messy when she hurried. Kim's insight suggested to me that she might benefit from instruction in strategies for jotting down main ideas before writing her answers, and from having extra time for completing exams and assignments. During the previous semester she had used the services of a scribe during important exams, and she said this was a very helpful accommodation for her.

In our spelling lessons, I dictated two or three sentences for Kim to write, in addition to lists of words. On several occasions she demonstrated another effective strategy when she came to a word that she did not know in a sentence. In the spot where the word should go she wrote one or two letters to remind her how the word started, left a blank space, and finished writing the rest of the sentence. In this way, she demonstrated an awareness that if she stopped to figure out the problem word, she would possibly forget the rest of the sentence. Usually when she had finished writing, she was able to correct and complete the word that she had struggled with when the cognitive load had been heavier because of remembering and writing the sentence. It may also be that once the whole sentence was written down, she was able to use the context of the sentence to support the retrieval process.

When we were working on the book about the Titanic (Ballard, 1993), Kim was so enthusiastic that she often interrupted me or herself with comments and questions, with an impulsivity that was to be a common feature of future lessons. Because at that point we were just starting our tutoring relationship and I felt it was important to establish a bond



and build trust, I allowed these interruptions but guided her back to the task at hand quite quickly. Impulsivity is common in students with learning disabilities (Hornsby, 1984) and in students with FAS/E (Malbin, 1993a), so strategies to help her reduce her impulsive digressions would follow in later lessons.

During our work on the book about Emily Carr (Endicott, 1981), Kim's impulsivity became more of a problem than it had been in most earlier lessons. I wondered whether it was because she linked the story with her grandfather's stories about Carr and was distracted by referring back and forth between the book and her grandfather's anecdotes. The reading level was more difficult than in the Marshall (1984) text, so this may have caused stress by compromising her concentration. However, another factor might have been that the weather had turned sunny and warm, and Kim would have preferred to be outside. On several of these sunny days she requested that the curtains beside our tutoring table be drawn, apparently aware that this reduced distractions for her and made it easier for her to attend to her work.

To help her recognize and reduce her impulsive interruptions of our lessons, I explained that I would remind her each time she interrupted, and that I would make a quick note about the topic of her interruption so that we could talk about it at the end of the lesson. After three lessons with these gentle reminders, I told her that I would now bring her attention to her digressions from the work at hand by simply and silently keeping a tally at the top of my lesson plan. In my experience, this unobtrusive strategy usually helps a student to recognize the disruptive behavior and remind her to focus back on her

work. It was effective during our lessons, but its transfer to other learning situations is questionable (Malbin, 1993a; Wong, 1991).

Distractibility is common in students with FAS/E (Lutke, 1993; Malbin, 1993a) and in students with LD (Hornsby, 1984). Kim described how difficult it was for her to concentrate in the classroom, especially when she was reading. She said that it was hard for her to concentrate when she could hear other students turning pages and moving around, and that she was able to focus much better if she worked in a study carrel in the library. I saw a strong demonstration of Kim's distractibility when I attended a parent-teacher interview night with Kim and her mother Mariah, where I observed impulsive behavior in Kim that I had not seen in our lessons. The interviews were held in the school gymnasium, with teachers seated at little tables around the perimeter, chairs lined up in front of the tables for parents waiting their turn, students coming and going with platters of cookies and drinks, and a constant buzz of activity all around. Kim was unable to sit still, kicking the chair in front of her, squirming or getting up and dashing off in different directions while we waited, always looking around in a scattered manner, chattering with no apparent focus, and interrupting conversations frequently to a point of being rude. Her restlessness and overstimulation were almost palpable. Kim had recognized for herself that working in a study carrel was an effective strategy for her in the classroom situation, and this experience in the gymnasium was ample demonstration for me that her distractibility was a weakness that required consistent use of such accommodations where possible.

The psychologist who administered testing at the beginning of the study noted Kim's use of picture cues to augment her comprehension of text during testing. Kim continued to use these when possible during our lessons. For example, when I asked her what she liked best about the Titanic, she turned to a photograph of a stateroom (Ballard, 1993) and described features of that room, skirting the reading comprehension question by making use of the picture cues. The strategy was effective for her, but it led me to be more careful about my questions in subsequent lessons, ensuring that she would need to use the content of her reading to answer a question correctly.

Kim's teacher mentioned that her written work for him was very disorganized, often starting at any point on the page and apparently not following a linear progression down the page. This lack of organization was less noticeable in our sessions than the teacher reported in class, with her paragraphs and sentences starting at the top of the page and near the margin when we worked together. In our one-on-one situation, I was able to provide cues when her impulsivity interfered with work as well as other cues which kept her on task, and this structure may have reduced the cognitive load required by self-monitoring. It may also have been that Kim found the classroom to be more distracting than my quiet kitchen, and that her organization in class suffered because of this.

However, as our spelling practice became more challenging with polysyllabic words and new rules, Kim's placement of words on the page began to show weak organization. During one lesson, she started by writing three words one after another on the top line, then the fourth word double-spaced below the first, and her second attempt on the fourth word five lines below that, with arrows drawn to link the two versions of the

.word. A copy of the spelling list in the order of dictation as well as Kim's work on this lesson illustrates the apparently haphazard organization of her work, as well as her use of writing and rewriting as a strategy (Appendix H). While this disorganized approach had no apparent impact on her spelling, it is important to note because students who organize their work poorly also often organize their possessions, their thoughts, and their time poorly, and may need training to improve in these areas (Hornsby, 1984). As the cognitive load is reduced by better organization, it becomes more available for functions such as comprehension, memory, writing, editing, and proofreading.

Kim's disorganization as demonstrated in her haphazard arrangement of spelling words on a page also showed in the weak organization of her thoughts. She was able to write simple answers to questions or simple compositions, but a lengthy response such as to the question about what she liked on the Titanic seemed to confuse her. In our writing practice we had used webs to organize her ideas, so in reading we used webs to pick out important details from paragraphs in the book. This appeared to be a useful strategy for her. Such application of strategies across subject areas is important for transfer of learning for students with FAS/E (Malbin, 1993a) and for students with learning disabilities (Bender, 1992; Wong, 1991).

Students with problems with organization usually also have problems with planning, whether they are planning their conversation, their writing, their homework, their schedules, or their lives. Many external factors can support or undermine a student who struggles with planning, and structured environments at school and at home are recommended for students with FAS/E (Lutke, 1993; Malbin, 1993a) and students with

LD (Hornsby, 1984). Structure was not a strong feature in Kim's classroom, where students worked independently much of the time, and where scheduling was so flexible that it seemed to be almost nonexistent. On several occasions Kim mentioned that she wished she had come to me on days when she had not been scheduled for a lesson, because the class had just watched a movie or played basketball or baseball. For example, on the day that I had arranged to observe Kim in her classroom, the teacher of another class was absent, so Kim's teacher took his class and the other teacher's class outside to play baseball.

Kim's home life was similarly unstructured. Her single mother Mariah had a job that required shift work, which made development and maintenance of a schedule for homework or even meals and bedtime very difficult. On several occasions, appointments for school meetings had to be canceled because Mariah was called to work, and as the main supporter of her family she felt she could not give up extra shifts. Another factor which may have affected structure at home was Mariah's ongoing struggle to withdraw from her 25 year marijuana habit. Mariah was a strong and persistent advocate for her daughter, but it was very difficult for her to provide the structure at home that could have helped Kim to plan her time for homework or even to ensure that she got adequate sleep.

Planning problems affected our lessons in various ways. On several occasions, Kim said she needed to phone home to ask her mother to bring her a lunch or gym bag because she had forgotten hers, or to bring supplies that she needed for her sewing class in the afternoon. Several times she asked if we could return to school early from our lessons because she needed to meet her friend to borrow shoes for gym class. She wanted to sell

me chocolate bars as a fund-raiser for her class trip, but despite varied efforts at reminding herself over a space of three weeks, she never did manage to bring me any bars to buy.

Perhaps a more important manifestation of the lack of planning in Kim's life was the number of lessons she missed because she decided that morning that she wanted to partake in a social activity at school, or because she and her mother had decided to take a long weekend. However, another reason for Kim's poor attendance may have been a reduced sense of commitment because I was giving two thirds of her lessons free of charge. It has been my experience that attendance at regularly-priced lessons is usually more reliable than at discounted or free lessons. Missed lessons because of illness are to be expected, but by my calculations, Kim took part in 31 of 47 possible lessons with me, with 4 absences due to illness, 2 due to school holidays, 4 because I was unavailable, and 6 because she or her mother had made other plans. For example, during our second-to-last lesson, Kim announced that she would not be coming for the final scheduled lesson because her mother had been able to schedule time off work for a short holiday. As a result of this sudden cancellation, I was unable to administer the posttest of the criterion-referenced spelling tests. Her absence for 34% of our planned lessons had a significant effect on what we were able to accomplish during this study.

Kim demonstrated use of self-monitoring when she spontaneously used strategies in reading, writing, and spelling, and when she recognized how reducing distractions affected her learning. Over the course of the study she became more effective at monitoring her impulsive interruptions of lessons as a result of instruction in this area.

Kim's limitations in planning and organization also affected my planned interventions, and she benefited from instruction in organization in the writing process.

### Self-Esteem

When I hypothesized that Kim's self-esteem would improve as her reading and spelling improved, I thought this would be demonstrated by Kim displaying more confidence in academic tasks, as seen by the use of more varied and context-appropriate vocabulary in her writing, and a higher tolerance for taking small risks when doing her work.

Based on reports from her mother, elementary school teachers, and her counselor as well as my own impression from our meetings before lessons started, I had expected Kim to be a passive, cooperative student, doing as I asked without question. Early in our tutoring relationship this was the case. She seemed to be eager to learn, receptive to any strategies that I suggested, and quick to share her experiences when our work related to work she had done earlier in her school career. However, I noticed that she tended to attribute many problems to external factors beyond her control, such as "I was late because the dog ate my watch," or "I couldn't do my homework because my Mom was on the computer." Other problems she attributed to failures within herself, such as "I can't do math," or "I will forget that by next time." The school psychologist's report mentioned similar negative statements by Kim in Grade 4. During the last month of our lessons, Kim began to complain that new work was too hard or too confusing, and that she couldn't do it. My pointing out how effective she was at thinking of examples of similar tasks and using them as models did little to change her mind. Perhaps as the work became more

challenging she had less confidence that she could do it, although she still was cooperative in trying to do any task I gave her. Schunk (1989) claimed that students who doubt their capabilities tend to be less persistent and expend less effort than those who believe they can perform well (see also Bender, 1992; Bryan, 1986).

It seemed to me that Kim initially avoided taking risks in spelling unfamiliar words in her writing. Vocabulary that was common in her conversation did not appear in her compositions, and it seemed that she preferred having her spelling mostly correct rather than risking spelling more difficult words incorrectly (see Hallahan et al., 1996).

Introduction of webbing as a planning tool expanded her writing, and she began to use more complex sentences and more varied vocabulary, including adjectives and descriptive phrases. It is impossible to conclude whether this was because of instruction in reading and spelling, practice in the writing process, increased confidence in her writing ability, or improved self esteem. More probably, her writing improvement resulted from a combination of all of these factors.

As our lessons progressed, Kim seemed to take a more active role in some of her learning, such as when we were working on affixes and she questioned whether words like "precaution" and "prefix" had affixes. She began to demonstrate increased metalinguistic awareness, asking questions about language, wondering why "y" and "w" were considered to be vowels sometimes, or why an apostrophe should be used to mark possessives when she thought it was only supposed to be used for contractions. The discovery process that I use when teaching students new concepts or generalizations may have encouraged her to think analytically about words beyond those in our exercises. I felt that this more active



learning role was a positive development, with her being confident enough to ask questions to satisfy her curiosity.

One factor that might have affected Kim's self-esteem during our lessons was an apparent inconsistency in her mother Mariah's attitude towards school. Homework with Kim had always been a struggle for both of them, with her limited reading skills making grade-level assignments impossible, and with her frustration with this causing conflicts with her mother about working on and completing assignments. At one point during our lessons, Kim asked me to assign her some homework. However, when I spoke to Mariah about giving Kim brief assignments, she was adamant that it was not "worth the hassle" to get her daughter to do the work. On the other hand, Mariah wanted Kim to take both English and Social Studies in Grade 9 in the fall, which seemed to me like an unrealistically high expectation in view of the limitations of Kim's reading and writing skills. Kim said to me, "I know I'll fail," and her low expectation for success in taking both of these mainstream courses in the same semester was probably realistic. It must have been confusing for her to hear that her mother thought she was capable of doing mainstream courses but not of doing brief homework assignments that were designed especially for her level of performance. I wonder what effect this had on her self-esteem.

It is difficult to say whether behaviors that I observed represented improved self-esteem (as in better writing and more active learning) or diminished self-esteem (as in saying tasks are too hard for her), or simply more realistic self-assessments. Probably the variability in performance that is typical of students with FAS/E (Lutke, 1993; Malbin, 1993a) and students with learning disabilities (Pumphrey & Reason, 1992) helped to

confuse the picture. My observations about behaviors that I perceived to demonstrate high or low self-esteem are subjective, and may actually be about behaviors that demonstrate Kim's self-confidence or self-efficacy instead. In a study such as this my observations are at risk of being colored by my goals for Kim, and as I address the question of self-esteem I realize that interpretation of my observations is limited by their being intuitive rather than expert. However, because a case study examines a real-life situation, I have described behaviors that I saw as important in my lessons with Kim, and relate them below to measures obtained on the Behavior Assessment System for Children. I have come to realize that I was naive to expect an improvement in self-esteem over the short course of this study, particularly because Kim hardly had time to recognize improvement in her skills, much less have this recognition affect her self-esteem.

#### Comparison of Qualitative and Pre- and Posttest Quantitative Results

##### Spelling

I had hypothesized that Kim's spelling would improve in accuracy and automaticity as a result of tutoring with a structured, multisensory, phonetic approach in reading and spelling. In addition to the continuous dynamic assessment described above, I measured her spelling formally with the Wide Range Achievement Test 3 spelling subtest (Wilkinson, 1993), a standardized norm referenced tool that claims to measure the codes which are necessary for learning the basic skills of spelling, with the grade level ratings being useful for giving a general instructional level. Kim's pretest standard score from February 26 was 78, at the 7th percentile for her age. Her posttest standard score from June 16 was 88, at the 21st percentile, with a mean of 100 and standard deviation of 15.

To demonstrate the practical significance of these score changes (Glass and Hopkins, 1996), I calculated Cohen's  $d$  effect sizes (Cohen, 1992). Cohen's operational definitions of effect size claimed that values of 0.2 to 0.5 represent a small effect size for independent means, 0.5 to 0.8 represent a medium effect, and 0.8 and above represent a large effect size. Because Kim's scores are dependent variables and Cohen's operational definition considers independent variables, the Cohen's  $d$  values for change can be considered to be deflated (Glass & Hopkins). The value of Cohen's  $d$  for Kim's spelling scores was 0.66, which shows that Kim's spelling score increased by .66 standard deviations in 3.5 months. This is conservatively considered to be a medium effect size.

These results demonstrate that, as hypothesized, Kim's spelling improved as a result of tutoring. Without intervention, I would have expected Kim's standard score to decrease over time as she fell further behind her peers. Therefore a neutral or positive effect size can be considered to be a positive result of the intervention. However, her percentile scores indicate that her spelling performance is still very low for her age and is an area of difficulty for her in academic tasks. Because of the cancellation of her last scheduled lesson, I was not able to administer the posttest criterion-referenced test. However, the results of the WRAT 3 are consistent with my ongoing assessment as described in my earlier qualitative observations.

### Reading

I had hypothesized that Kim's reading would improve in decoding, fluency, and comprehension after tutoring with a structured, multisensory, phonetic approach in reading and spelling. In addition to the continuous dynamic assessment described above, I

formally assessed Kim's reading with the Woodcock Reading Mastery Test - Revised (WRMT-R, Woodcock, 1987), a standardized, norm-referenced tool which measures six aspects of reading. Woodcock claimed this test is appropriate for use in research for investigating the effectiveness of educational interventions over a long or short term. Pretesting was done February 26, and posttesting was done June 16.

I report clusters of subtest scores, because this contributes to higher validity than individual subtest scores (Woodcock, 1987). To demonstrate practical significance of score changes, I have calculated Cohen's  $d$  effect sizes, as described above. I summarize Kim's pre- and posttest scores and percentiles and Cohen's  $d$  values in Table 9.

Table 9  
Comparison of Pre- and Posttest Scores on Woodcock Reading Mastery Test - Revised

Cluster	Standard Score		Percentile		Cohen's $d$
	Pretest	Posttest	Pretest	Posttest	
Readiness	49	60	0.1	0.4	0.7
Basic Skills	86	86	17	17	0
Reading Comprehension	71	76	3	5	0.3
Total Reading	79	81	8	10	0.1

Note. Mean = 100, SD = 15.

Cohen's  $d$  values of 0.2 to 0.5 conservatively represent small effects, 0.5 to 0.8 for medium effects, and 0.8 and above for large effects.

Cohen's  $d$  values of comparison of WRMT-R pre- and posttesting results conservatively demonstrate practical significant improvement, with a medium effect size in the Readiness cluster and a small effect size in the Reading Comprehension. The Total Reading cluster showed slight improvement without practical significance, and the Basic Skills cluster showed no change. As noted above, without intervention I would have expected Kim's standard scores to decrease with the passage of time as she fell further behind her peers. For this reason, a neutral or positive effect size can be considered to be

a positive result of the intervention. However, as with her spelling, Kim's percentile scores indicate that her reading performance is still very low for her age. These results are consistent with earlier qualitative data on Kim's reading performance, and indicate that Kim is unlikely to be successful with reading materials for her grade level.

Although the scores on the test clusters are more valid than individual subtest scores, the subtest scores are useful for examining specific areas where Kim progressed and where she did not. Table 10 summarizes Kim's subtest scores, percentiles, and Cohen's *d* values.

**Table 10**  
**Comparison of Pre- and Posttest Subtest Scores on Woodcock Reading Mastery Test - Revised**

Subtest	Standard Score		Percentile		Cohen's <i>d</i>
	Pretest	Posttest	Pretest	Posttest	
Visual-auditory Learning	49	71	0.1	3	1.46
Letter Identification	67	65	1	1	-0.13
Word Identification	86	83	17	13	-0.2
Word Attack	87	94	20	34	0.46
Word Comprehension	75	84	5	15	0.6
Passage Comprehension	74	69	4	2	-0.3

Note. Mean = 100, SD = 15.

Cohen's *d* values of 0.2 to 0.5 conservatively represent small effects, 0.5 to 0.8 for medium effects, and 0.8 and above for large effects.

Cohen's *d* values of comparison of WRMT-R subtest pre- and posttesting indicate a large improvement of practical significance of 1.46 in Kim's Visual-auditory score, which represents early reading strategies. Cohen's *d* values demonstrate a moderate practical improvement of 0.6 in Word Comprehension, and a small practical improvement of 0.46 in Word Attack. These scores were likely affected by instruction and practice in decoding and encoding, with work with affixes also affecting Word Comprehension.

The Word Identification subtest is considered to be a measure of sight word

vocabulary and the Passage Comprehension subtest requires the student to decode a passage and identify words that are missing, measuring both her decoding skills and her comprehension (Woodcock, 1987). Although Kim's raw scores in these subtests remained essentially unchanged, her standard scores declined, showing a small effect size decrease. The testing psychologist noted that Kim's decreased score in the Letter Identification subtest was not a matter for concern, because it resulted from her failure to recognize letters that were written in scripts that were unfamiliar to her, and this would not be an important task in reading most materials.

It was difficult to assess reasons for Kim's decreased standard scores in the Word Identification and Passage Comprehension subtests, but one factor may be that they represent the variability in performance that is common to students with FAS/E and LD. In Passage Comprehension she had to demonstrate her understanding by filling in blanks with one-word answers, and this may have been particularly difficult for her because of word-retrieval problems. The examiner noted that during pretesting, Kim was often able to decode words without understanding their meaning, and this could be expected to have a negative impact on her performance in this subtest. The decrease in the Passage Comprehension subtest score reduced the positive impact of the increase in Word Comprehension, resulting in a small effect size of improvement for the Reading Comprehension composite. Similarly, the decrease in Letter Identification reduced the positive impact of the large increase in Visual-auditory Learning, resulting in a neutral effect size of improvement in Basic Skills, and the decrease in Word Identification reduced

the positive impact of the moderate effect size of improvement in Word Attack, resulting in a small effect size.

As I had hypothesized, pre- and posttesting results of the WRMT-R show practical significant improvement in Kim's reading skills over the course of the study, with decreases in several subtests reducing the impact of increases in others. However, her performance is still low for her age, indicating that she would find it very difficult to read and understand materials written at her grade level.

### Self-Esteem

To formally measure changes in Kim's self-esteem as a result of structured multisensory phonetic tutoring in reading and spelling, I arranged for her to complete the student form of the Behavior Assessment System for Children (BASC, Reynolds & Kamphaus, 1992). As with the WRMT-R, clusters of scale scores are used to give a more complete picture of a student's behavior than would be possible from examining individual scores in isolation, contributing to higher validity. Kim completed the pretest student form February 26 and the posttest form June 11. I calculated Cohen's  $d$  values to demonstrate practical significance of score changes, as described above. Table 11 summarizes the pre- and posttest T scores, percentile scores, and Cohen's  $d$  values on the student report of the BASC.

Table 11

**Comparison of Pre- and Posttest Scores on Student Report of Behavior Assessment System for Children**

Composite or Scale	T Score		Percentile		Cohen's $d$
	Pretest	Posttest	Pretest	Posttest	
School Maladjustment	43	38	30	9	0.5
Clinical Maladjustment	55	39	72	14	1.6
Depression	58	43	82	18	1.5
Sense of Inadequacy	59	52	80	64	0.7
Personal Adjustment	56	37	68	12	-1.9

**Note.**  $M=50$ ,  $SD=10$ .

In the School Maladjustment, Clinical Maladjustment, Depression, and Sense of Inadequacy scores, T scores of 70 or above are clinically significant, while scores of 60 to 69 indicate at-risk status. In Personal Adjustment, scores of 30 or below are clinically significant, while scores of 31 to 40 indicate at-risk status.

Cohen's  $d$  values of 0.2 to 0.5 conservatively represent small effects, 0.5 to 0.8 represent medium effects, and 0.8 and above represent large effects.

The School Maladjustment and Clinical Maladjustment composites and separate Depression and Sense of Inadequacy scales examine negative behaviors, so that a lower score represents progress. The Personal Adjustment score measures positive behaviors, so that a higher score indicates progress. Kim's responses in the posttest report form indicate that she felt she had improved in all areas except for Personal Adjustment.

Cohen's  $d$  values conservatively suggest a large effect size in the Clinical Maladjustment Composite and the Depression Scale, a small effect size in the School Maladjustment Composite and a medium effect size in the Sense of Inadequacy Scale.

On the Personal Adjustment Composite, the Cohen's  $d$  effect size was 1.9 in a negative direction, suggesting that her lower score on this Composite represented a decrease in positive behaviors at a level of large practical significance. However, examination of her second report form shows that a score of zero in the self-esteem



category resulted from her being unsure of how to answer two questions in one subtest. This significantly affected her score on the second Personal Adjustment Composite, and made its value questionable.

Kim's perceptions of her behavior are consistent with subjective observations I made earlier, that her self-esteem seemed to improve over the course of the study. I had speculated that she had started to attribute learning success to her effort (Bender, 1992; Bryan, 1986), so I compared her scores on the Locus of Control subtest. Her T scores were 53 on the pretest and 41 on the posttest. Cohen's  $d$  value was 1.2, demonstrating a large effect size, which supports my speculation about a change in attribution to effort rather than lack of ability.

To supplement measures of Kim's perception of her behavior during the study, I arranged for her mother Mariah to complete the parent report of the BASC, which she did on February 26 and June 12. Table 12 summarizes pre- and posttest scores, percentile scores, and Cohen's  $d$  values from the parent report form.

Table 12  
Comparison of Pre- and Posttest Scores of Parent Report of Behavior Assessment System for Children

Composite	T Score		Percentile		Cohen's $d$
	Pretest	Posttest	Pretest	Posttest	
Externalizing Problems	50	60	59	86	-1.0
Internalizing Problems	58	63	82	90	-0.5
Behavioral Symptoms	54	64	71	91	-1.0
Adaptive Skills	53	41	59	19	-1.2

Note.  $M=50$ ,  $SD=10$ .

In Externalizing Problems, Internalizing Problems, and Behavioral Symptoms, T scores of 70 or above are clinically significant, while scores of 60 to 69 indicate at-risk status. In Adaptive Skills, scores of 30 or below are clinically significant, while scores of 31 to 40 indicate at-risk status.

Cohen's  $d$  values of 0.2 to 0.5 conservatively represent small effects, 0.5 to 0.8 represent medium effects, and 0.8 and above represent large effects.

Higher scores in the Externalizing Problems, Internalizing Problems, and Behavioral Symptoms of the parent report form suggest an increase in negative behaviors. A lower score in the Adaptive Skills Composite represents a decrease in positive behaviors. Although Kim's scores on the student report form indicated that she saw improvement in most areas, the scores on the parent report form indicated that her mother Mariah perceived that Kim's behavior in all areas had deteriorated from February to June. Cohen's  $d$  values conservatively estimate the effect size of this deterioration to be large in Adaptive Skills, Externalizing Problems, and Behavioral Symptoms, and medium in Internalizing Problems. Although I was not able to discuss these results with Mariah at the time, I wondered if her negative view was affected by Kim's greater distractibility (described earlier) as the sunny weather arrived, by frustration with what Mariah saw as lack of effectiveness in Kim's Transitions classroom, or by end-of-semester concern for Kim's future academic plans. Mariah's perception may have been affected by her state of health when she filled in the second report form, as she had been ill for some time with a respiratory infection. She was also struggling with depression as a result of employment problems as well as ongoing withdrawal from her long-term marijuana habit.

Because Kim's teacher did not fill out the initial teacher report form of the BASC until mid-May, shortly before the end of the study, I did not give him a second report to complete. Table 13 shows the scores from the teacher's report form of the BASC.

**Table 13**  
**Teacher Report of Behavior Assessment System for Children**

<b>Composite or Scale</b>	<b>T Score</b>	<b>Percentile</b>
Externalizing Problems	49	61
Internalizing Problems	50	62
School Problems	58	80
Behavioral Symptoms	52	65
<b>Adaptive Skills</b>	<b>40</b>	<b>17</b>

**Note.**  $M=50$ ,  $SD=10$ . In Externalizing Problems, Internalizing Problems, School Problems, and Behavioral Symptoms, T scores of 70 or above are clinically significant, while scores of 60 to 69 indicate at-risk status. In Adaptive Skills, scores of 30 or below are clinically significant, while scores of 31 to 40 indicate at-risk status.

Although the teacher's form was not completed until mid-May, measures of his perceptions of Kim's behaviors near the end of the study are similar to those of her mother Mariah at the beginning of the study, before she perceived deterioration in Kim's behavior and affect. He indicated that he perceived Kim's behaviors to be within the normal range, but her adaptive skills to be at risk.

Comparison of quantitative measures and qualitative observations about Kim's self-esteem are inconclusive. I now realize that my expectation that Kim would demonstrate improvement in self-esteem over such a short time was unrealistic. Our period of intervention was too limited in duration to enable her to recognize and internalize her learning success to a level that could be expected to affect her self-esteem. Pre- and posttesting scores on the BASC were all within normal limits on the student, parent, and teacher reports, except for the teacher's perception of her adaptive skills as being at risk.

In summary, quantitative and qualitative results indicate that, as hypothesized, Kim's reading, writing, and spelling improved during this study. My hypothesis about improvement in her self-esteem was not conclusively supported. However, during our

lessons I observed that, more than just instruction in decoding in reading and encoding in spelling and writing, Kim needed strategies for self-monitoring and memory, (Swanson & Cooney, 1991), organization (Graham et al., 1991), comprehension (Henry, 1998; Kamhi, 1991; Lahey & Bloom, 1994), writing (Graham et al.), analysis of phonological structure of language (Henry, 1998), and proof-reading (Hallahan et al., 1996). She needed support for elaborating on details in her writing (Pressley & McCormick, 1995), for making inferences in her reading (Garner et al., 1991), for managing her time (Hornsby, 1984), and for self-advocacy and making small decisions in her daily life (Ellis and Friend, 1991). She also needed support in developing positive attributions, so that she would credit effort and practice instead of “good guessing” for her improvement in language tasks (Bender, 1992; Bryan, 1986).

Because I provided instruction in writing, comprehension, attribution, and self-monitoring in addition to planned interventions in spelling and reading, I am unable to attribute improvements in Kim’s spelling, reading, and writing to the planned intervention. The effects of our tutoring sessions on Kim’s self-esteem were inconclusive, with her BASC results differing dramatically from the report form completed by her mother, with the teacher’s response near the end of the study being similar to her mother’s response at the beginning, and with my observations of improvement being subjective rather than based in firm knowledge about signs of self-esteem in a student’s behavior. Discussion of the implications of these results follows.

## CHAPTER FIVE

### DISCUSSION

Recognition of the similarity of learning problems in individuals with Fetal Alcohol Syndrome or Effect and those with learning disabilities (see Table 1) prompted me to investigate whether similar teaching strategies would be useful for individuals from both groups (see Table 2). My review of the literature supported multisensory, structured, direct instruction for students with Fetal Alcohol Syndrome or Effect (FAS/E)(Lutke, 1993) and for students with learning disabilities (LD) (Henry, 1998). I found little research that specifically discussed teaching reading, writing, and spelling to students with FAS/E , and anecdotal reports were inconclusive in that some supported the use of the whole language approach and others recommended code-emphasis instruction. However, Adams (1997) recommended explicit instruction in sound-symbol relationships as well as in connected reading, meaning, and other aspects of language for teaching written language to all but 1% to 3% of beginning readers.

Based on the recommendations of Adams' (1989) survey of research as well as literature on teaching students with LD (Henry, 1998), I tutored an adolescent girl with FAE and LD, using a structured, multisensory, phonetic approach to teaching reading and spelling. I chose a case study design to allow for flexibility in tutoring strategies in response to Kim's learning needs, to demonstrate a real-life rather than laboratory situation, and to avoid depriving a control group of an intervention which was supported in my review of the literature. In my thesis questions, I asked what gains in reading and spelling could be measured after tutoring Kim for three hours a week for four months with

this approach. I also asked whether her writing would improve in content and creativity as a result of the tutoring, and what improvements in her self-esteem would be seen as her reading and spelling improved.

Over the course of the study, Kim's spelling accuracy and automaticity improved at a moderate level of practical significance, and her reading decoding, fluency, and comprehension improved slightly. Informal subjective evaluation of her writing showed longer compositions with better use of vocabulary and improved spelling and proofreading. As described in the preceding chapter, the effects of tutoring on her self-esteem were difficult to assess.

In addition to describing Kim's learning outcomes using both quantitative and qualitative measures, I intended to trace my decision-making during ongoing assessment, planning and intervention to provide insights into the enactment of the intervention process in practice. My examination of this decision-making process demonstrated that it is even more complex than I had anticipated. Description of the process enabled me to illustrate how I employed dynamic assessment and chose tutoring strategies that were effective for Kim.

Because the complexity of the tutoring process significantly influenced my teaching during our lessons, I first describe implications of the study for my practice. This is followed by implications for Kim's learning, implications for practice in general, limitations of the study, contributions of the study, suggestions for future research, and my conclusions.

### **Implications for my Practice**

As I described my decision-making in detail for this study, I reflected on my practice as a tutor. My initial research questions asked whether multisensory phonetic instruction in reading and spelling would help to improve Kim's reading, spelling, writing, and self-esteem. Examination of my decision-making and choices of teaching strategies demonstrated for me that these original questions had been deceptively simplistic and that they did not adequately consider the complexity of the tutoring process.

During each one-hour tutoring lesson with Kim, I made many quick decisions about how to solve a variety of problems beyond those in just reading and spelling. The qualitative data in this study demonstrated that knowledge of problem-solving alone or of language tasks alone would not have been sufficient to support decisions about appropriate interventions. Instead, expertise is a combination of good problem-solving strategies and extensive knowledge about relevant domains (Mayer, 1987). As an experienced tutor, I used problem-solving strategies that were influenced by my domain-specific knowledge in areas such as phonological and morphological structure of written language, teaching strategies and resources, monitoring strategies, student attributions, and recognition and support of students' learning strengths and weaknesses. In addition to these skills and strategies, I needed patience and persistence in order to deal positively and constructively with Kim's often puzzling learning problems, and I needed respect for her as an individual with particular interests and strengths.

Although I had expected that this study would illustrate the complexity of working with students such as Kim, I found that I had significantly underestimated this complexity.

I had based my thesis questions on the assumption that the focus of my tutoring would be on spelling and reading, with writing for practice and reinforcement. The literature supported this integration of reading, writing, and spelling (Adams, 1991; Calfee et al., 1990; Henry, 1998) in the language arts curriculum, and in my practice I intentionally include some of each in every lesson. However, until I began examining data for this study, I had not realized how often moments of instruction in various other strategies arose in a typical lesson. Although Kim's reading, spelling, and writing did improve over the course of the study, I came to realize that it was unlikely that my instruction in reading and spelling alone accounted for this improvement.

The number and variety of strategies that emerged during "teachable moments" in our lessons underscored how responsive the tutoring process is to the needs of the student, and how complex (Englert, 1996). Through the process of dynamic assessment (Palincsar et al., 1994; Pressley & McCormick, 1995), I observed the level at which Kim was able to perform a task only with assistance, and used that level as a starting point for my teaching.

As "teachable moments" arose in our sessions and I could respond to them without seriously disrupting the flow toward the original goals of the lesson, I used those moments as springboards for teaching appropriate strategies. For example, teaching, modeling, and practice of organizational strategies such as webbing occurred during both reading and writing exercises (Graham et al., 1991), with this teaching and practice across the language arts curriculum being intended to encourage Kim's generalization of strategies (Swanson, 1993; Wong, 1991). Instruction in organization of writing was a part of



reading exercises when Kim wrote answers to comprehension questions, and review and reinforcement of her work in spelling was also a part of this when she proofread her answers. There was more writing practice to support Kim's self-advocacy when she chose to write a list of her concerns to be presented at a school meeting that she was unable to attend with her mother, her teacher, and me. Most writing exercises included spelling review and practice, particularly at the proofreading stage. Reading practice occurred when Kim proofread a composition that she had written several days before, and when she did cloze exercises, filling in blanks to reinforce the correct use of homonyms.

I observed the extent to which other areas for instruction were intertwined with this integrated instruction and practice in reading, writing, and spelling. Instruction in memory and comprehension strategies was necessary to address Kim's cognitive and language processing problems as they affected her reading comprehension (Lahey & Bloom, 1994; Pressley & McCormick, 1995). Attribution training took place each time I praised a particular element of Kim's work, or provided specific, constructive criticism (Bryan, 1986), such as use of eliciting questions (Gelzheiser & Clark, 1991) during spelling or reminders of strategies that she had found helpful in past situations (Ellis & Friend, 1991). Moments of instruction in metacognitive strategies appeared in most lessons as I encouraged Kim to think of her strengths and how she could use them in particular strategies to support her success in learning tasks (Wong, 1991). Self-monitoring was a focus when I helped Kim to reduce impulsive interjections which disrupted her work (Swanson & Cooney, 1991). Instruction in time management (Hornsby, 1984) occurred when she discussed her distress about a sewing project that was

overdue, and instruction in organization (Henry, 1998) occurred when she kept forgetting to bring fund-raising chocolates for me to buy.

Looking back at the decisions I made in tutoring Kim, I am struck by the elaborate intertwining of teaching strategies that appeared even when the intended focus of teaching was simply on spelling or reading. If my tutoring of a single student was this complex, how complex must be the teaching of this student in a classroom situation, where the teacher is responsible for managing and teaching 20 or 30 students with their myriad of strengths, weaknesses, and behaviors? Recognizing this complexity, Stahl (1994) described good teachers of language arts as “flexible, eclectic pragmatists” (p. 140) who look for teaching strategies that work and then apply them flexibly as needed by different students and different classes.

When I provide tutor training workshops, I point out to participants that teaching or tutoring students with LD is a complex, responsive process that must consider the individual learning needs of different students (Englert, 1996). As a result of this study, in future training I will emphasize even more that teaching decoding and encoding is only a start for working with students with LD, and that strategies for writing, organization, memory, and comprehension (Henry, 1998), self-monitoring and metacognition (Wong, 1991), and self-advocacy (Swanson & Cooney, 1991) are also important.

In summary, my investigation of research for this study as well as analysis of the quantitative and qualitative data has validated, supported, and enriched my practice as a tutor of students with LD. This in turn has led me to broaden the scope of the training I

present to parents, tutors, and teachers, to place more emphasis on responsiveness to student needs and on areas for instruction beyond reading, writing, and spelling.

### **Implications for Kim's Learning**

Kim is an adolescent girl with FAE and LD. My work with her drew on my experience as a tutor of students with LD as well as on the parallels I saw in the literature about recommended interventions for students with FAS/E and with LD. Her mother had asked me to tutor Kim because she was reading and writing at about Grade 4.5 level, but was attempting to cope in a mainstream Grade 8 classroom. I planned to tutor her with a multisensory, structured, phonetic approach to reading, writing, and spelling, and expected to see improvements in her reading, writing, spelling, and self-esteem.

Kim's IQ was in the low average range, and she had problems with reading, writing, spelling, math, abstract concepts, comprehension, slow language processing, poor selective attention, impulsiveness, short and long term memory, organization, generalization of learning, and storage and retrieval of information. Her performance was variable from one day to another, and her pragmatic use of language was weak.

Structured environments, consistent routines and forms of communication, multisensory instruction with repetition and practice to the point of overlearning, and teaching to the skill level and need of each student were recommended in the literature describing interventions with students with FAS/E (Lutke, 1993; Morse, 1993) and for students with LD (Henry, 1998). Kim seemed to respond well to these features in our tutoring sessions. In particular, she seemed to benefit from extensive practice of new work across reading, writing, and spelling (Adams, 1997), structure in lessons and

assignments, an environment with minimal distractions, and visual representations of new and review work (Lutke). She remembered information better when she read aloud than when she read silently (Henry; Lutke), and better when she read a short passage than when she read a long one (Roth & Spekman, 1991). Kim seemed to respond well to immediate feedback (Gelzheiser & Clark, 1991) in the form of specific praise or criticism that was contingent on her performance (Bryan, 1986). My unobtrusive monitoring of her moments of distractibility appeared to help her to begin to self-monitor her impulsive interruptions of work (Swanson & Cooney, 1991).

Instruction in organization of her ideas (Graham et al., 1991) as well as drawing out more expressive vocabulary (Pressley & McCormick, 1995) seemed to have a positive effect on Kim's compositions. Her initial writing sample was short and immature in vocabulary and sentence structure (Lahey & Bloom, 1994), but a reciprocal process of improvement in spelling, reading, and writing developed as she learned to spell more difficult words and as she read more and wrote more (Adams, 1990). Her written vocabulary became more descriptive, and her compositions became longer and more complex as the study progressed.

I had predicted that Kim's self-esteem would improve as a result of tutoring in reading and spelling. I expected this improvement to be displayed as more confidence in academic tasks, use of more varied and context-appropriate vocabulary in her writing, and a higher tolerance for taking small risks in doing her work, as well as improved scores in the BASC. My subjective observations suggested that Kim's self-esteem did improve over the study, with her displaying more confidence in many tasks, particularly

composition. However, while she made no self-deprecating comments near the beginning of the study, these did occur later. I was unable to determine whether these comments represented decreased self-esteem as the study progressed, or a feeling that she was safe to express her feelings with me as our relationship developed.

Incidences of Kim's more active participation in learning indicated that she began to occasionally attribute her learning progress to her effort rather than just passively accepting her perception of her lack of ability (Bender, 1992), and this suggested an improvement in her self-esteem. For example, when she was reading, she noticed and commented on words using rules she had learned in spelling, displaying a shift from her passive manner of learning to more active participation by asking about a particular application of a spelling rule. This shift is consistent with her perceptions of locus of control as measured by the student report form of the BASC, in which she indicated an improvement with a high level of practical significance over the course of the study. Active participation in learning contributes to greater persistence and independence in reading (Bryan, 1986), and presumably in other areas of the curriculum as well.

As I had expected, Kim began to use more varied and context-appropriate vocabulary in her writing, and to take more risks in doing her work, especially composition. Whereas these may represent improvement in confidence and self-esteem, as I had hypothesized, they also reflect the result of instruction in specific writing strategies, such as webbing (Graham et al., 1991) and elaborating on details (Pressley & McCormick, 1995). Therefore improvements in her writing cannot be attributed to an improvement in self-esteem alone.

Quantitative measures of Kim's self-perceptions at the beginning and at the end of the study indicated that she saw improvement in all areas of her behavior except for the Personal Adjustment composite. The results of this composite were questionable because her confusion about two questions provided a score of zero on one subtest. However, her mother Mariah's perception differed from Kim's and mine in that, over the course of the study, Mariah saw deterioration in behaviors in all composites on the parent report of the BASC. Kim's teacher did not fill out his report form until near the end of the study, but his responses indicated that his perception of Kim's behavior near the end of the study was similar to Mariah's at the beginning, before she perceived deterioration. Because Mariah's negative perception of Kim's behaviors was inconsistent with the results of Kim's reports on the BASC, because my observations were subjective rather than objective, and because of the short duration of the study, it is difficult to draw firm conclusions about changes in Kim's self-esteem during the study.

My findings in this study have implications for strategies and accommodations that would be useful for Kim in school, and for other students with similar problems. In meetings with her mother, her teacher, and the counselor, I discussed my observations of effective strategies, and these were related to strategies that had been tried at home and in her classroom. Although it is unlikely that she would have access in school to systematic and intensive interventions such as I provided during our one-on-one sessions, general recommendations from the literature for interventions could be implemented in several different ways. Kim's need for structure should be provided by placing her with teachers based on the degree of structure in their classrooms and assignments, as well as for their

patience, their respect for students as individuals, and their understanding of the unique learning needs of students with FAS/E or LD. Course materials at her level of reading and modification of assignments that consider her level of comprehension and writing would be useful, and in the past she has benefited from extended time and the services of a scribe for exams. Books on tape or recorded lectures are possible accommodations, although listening to them is very time-consuming and Kim may not be strongly enough motivated to do this. A reduced course load that allows her a block of time each day in the Learning Resource Room would help to prevent learning overload, and access to assistance in the Resource Room would provide support for study skills and homework. Providing her with the teacher's notes from class lectures or assigning a buddy in the class to share notes with her would enable her to concentrate on what the teacher is saying rather than increasing the cognitive load by requiring her to write important points down as well. Because of funding limitations, it is unlikely that she would be placed in a small class with intensive teaching, but Kim's distractibility could be addressed by providing her a carrel to work in when appropriate, with headphones to help filter out distractions. Visual representation of reminders for her learning could be provided in the form of posters on the wall or in the form of her own personal resource book where these are recorded.

Specific to learning about written language, Kim would benefit from participation in a class that includes direct multisensory phonetic instruction in reading and spelling, with extensive practice and reinforcement through reading, writing, and spelling. Spelling errors should not be a focus in marking of assignments, although she should still be expected to proofread her work to the level of her capabilities. Kim's teacher and

counselor noted how difficult it might be to provide this intensive instruction for her, but that it would be less problematic to arrange for modification of assignments and a reduced emphasis on spelling in her written work.

As a result of my work with Kim, I have concluded that structured, multisensory, phonetic teaching of written language was useful to her. She seemed to benefit from learning other strategies related to organization, comprehension, memory, and self-monitoring. These strategies were probably particularly effective for Kim because they emerged as a result of the dynamic assessment process in a situation where the expertise and perception of an experienced tutor could be flexibly applied to planning and instruction. Another factor that may have contributed to her progress was access to reading material that held a personal interest and was written at her reading level. Her performance in reading, writing, and spelling improved, but my perception (and hers) of improved self-esteem was inconclusive because of her mother's report of deterioration of behavior over the course of the study, and because the study was too short for significant changes in self-esteem to develop.

#### Implications For Practice in General

In the literature review chapter of this study, I related what research says about teaching students with LD to what is written about teaching students with FAS/E who seem to have similar learning problems. I looked at the relationships between research in the two fields because in my reading of the literature about LD, I found little reference to the learning problems of students with FAS/E (see Bender, 1992), and in literature about FAS/E I found few references to research about LD. When I recognized common



patterns of learning problems in the two groups (see Table 1), I investigated whether there were also commonalities in recommendations for intervention with these groups (see Table 2). I then applied my expertise in tutoring students with LD to tutoring Kim, a student with FAE and LD. For teaching reading to populations with and without learning disabilities, much of the research literature recommends explicit instruction in sound-symbol relationships as well as in connected reading, meaning, and other aspects of language (Adams, 1997; Bender, 1992; Phillipot, 1993; Stanovich, 1993; Vellutino & Scanlon, 1991). In the absence of strong guidelines specifically for teaching students with FAS/E, these recommendations supported my tutoring approach with Kim.

The cause of learning disabilities is now assumed to have a neurological basis but the treatment is educational (Ellis & Cramer, 1996; Henry, 1998). This is even more true for FAS/E (Morse, 1993), and effective treatment requires teachers who are experts in domain-specific knowledge as well as problem-solving (see Mayer, 1987). Patience and respect for their students as individuals are important attributes for teachers working with students with FAS/E. It is essential for teachers of students with FAS/E to be aware of the effects of alcohol-related brain damage on their students (Malbin, 1993a). Adaptation of environment, concrete representations of teaching, and awareness of some students' inability to generalize or predict, their need for structure and consistency, possible limitations in their communication, and behavioral manifestations of overstimulation must all be considered when teaching students with FAS/E (Lutke, 1993; Malbin, 1993a; Morse, 1993). For example, for Kim, a minor environmental adaptation such as closing the curtains by our tutoring table significantly reduced her distractibility. She found

concrete learning resources helpful, including visual representations of spelling rules and manipulative pieces for learning affixes. Practicing new spelling work in different ways across reading, writing, and spelling encouraged generalization of her learning. Structure in lesson plans provided predictability that reduced cognitive confusion, and my monitoring of impulsive interruptions supported her recognition of these and encouraged her self-monitoring.

Because of the neurological damage they have suffered as a result of prenatal exposure to alcohol, many students with FAS/E would benefit significantly from small structured classes with minimal disruption in environment, routine, and staff (Lutke, 1993; Malbin, 1993a). Consistent with this recommendation, Kim was placed in a small class, where her counselor expected that reduced class size would be helpful to her. However, with loose structure and infrequent direct instruction in the classroom she made little progress. She found the behavior problems of several students in the class to be distracting, which further limited her success in that situation. She professed a preference for working in the school library or in my kitchen rather than in her classroom, because of fewer distractions in those settings. Kim's response to being placed in a small class demonstrated that size of the group alone may not be effective for students with problems with distractibility and selective attention, but that other elements such as structure, quality and responsiveness of teaching, high-interest reading material at an appropriate level, and adaptation of environment are also important.

Greater awareness of the unique learning requirements of students with FAS/E is essential so that families, educators, social workers, and other professionals can advocate

more effectively for appropriate support and intervention (Streissguth et al., 1996). The absence of physical manifestations of prenatal alcohol exposure does not eliminate the possibility of cognitive manifestations, and these cognitive problems may be as severe in an individual with FAE as in an individual with full FAS (Burgess & Streissguth, 1992; Mattson et. al., 1998). Given that learning problems may exist in a child who has no physical markers of the problem, many researchers suggest that the possibility of FAS/E be considered for all children who have learning problems of unknown etiology (Mattson et al.; Shaywitz et al., 1980; Weinberg, 1997). It is particularly important that the neurological basis for learning and behavior problems associated with FAS/E be accepted at home, in school, and in the community (Malbin, 1993a), and that recognition of the condition and appropriate support be provided as early as possible to prevent the development of secondary problems such as depression, anxiety, school problems, employment problems, and trouble with the law (Streissguth et al.). As a result of her mother's persistent advocacy, Kim had been well-supported during elementary school, and this history of support contributed to Kim's willingness to accept support and advocate for herself in planning meetings in high school. However, she began to show signs of anxiety about her academic weaknesses early in Grade 8, and her mother reports that in Grade 9 she has had some social and discipline problems associated with school.

The frustration of many educators who work with students with FAS/E or learning disabilities was summed up by Kim's teacher when he noted the limited choices available for Kim in her high school, with the life skills focus of the pre-employment program being the only alternative for her outside of a normal academic stream. Placement in either

program would be unfair to Kim, he said, with the demands of mainstream classes being beyond her capabilities, and the narrow focus of the pre-employment program failing to support her learning potential. Also important to consider, he added, was that her placement in the regular academic stream would be unfair to her teachers because of the amount of work that would be required for them to adapt their curricula to her skill level. Better awareness of the learning needs of Kim and others like her might lead to more appropriate support for them, for their parents, and for their teachers in the school system (Streissguth et al., 1996).

While researching for this study I learned how important it is for teachers of students with FAS/E to consider the neurological basis for learning and behaviors in this population. These students benefit from expert teaching in small structured classes, with minimal distractions, consistency in routine and communication, direct multisensory instruction with extensive reinforcement and practice, and modification of requirements for reading materials, assignments, and exams. Their performance and behavior are variable, and are often limited by impulsiveness, inability to predict consequences, and shallow communication skills. Because these limitations are based in neurological damage, teaching for these students must include environmental adaptations and realistic expectations, as well as support from other professionals in the fields of medicine, social work, and counseling.

#### Limitations of Study

The strength of this case study lies in its microanalysis of the tutoring process as it affected Kim's learning and my tutoring practices. Some might argue that a weakness of a

case study is that it cannot be generalized to a population. However, I chose case study design so that I could look closely at a piece of the puzzle of teaching students with FAS or FAE, with this piece contributing to a larger picture containing studies of the learning of other students. Bryan (1986) noted that the results of only a few studies should not be overinterpreted and endorsed, and this caution would apply to the results of a single study with a single subject. This study demonstrated that strategies that I have used effectively with students with LD seemed to be effective with Kim. However, further research is needed which documents the expert teaching of other students with FAS/E or a combination of FAS/E and LD.

One limitation of this study is its duration. Even with its original design, in which three hours of tutoring per week were scheduled over four months, it would have been too short to confirm the long term value of the tutoring (Pumphrey & Reason, 1992), particularly as it related to self-esteem. The fact that Kim missed 34% of our scheduled lessons for various reasons had a significant impact on her progress and provided a reminder that other factors beside a planned intervention can affect a student's learning, especially with students with FAS/E.

Another limitation of the study is its limited relevance to most educational practice, in that intensive instruction such as this is available to few students. School resources can seldom provide access to this kind of one-on-one instruction, especially with a teacher or tutor who is experienced in working with students with learning problems. Particularly as students reach high school, the emphasis is on learning content matter and on higher level thinking skills, and little support is provided for the student who reads, writes, or spells

poorly and who also has problems with comprehension, memory, inefficient use of strategies, and self-monitoring. Because one-on-one or small group work in these areas of need is unusual in high school settings, it is unlikely that the intervention practices found to be effective in this study with Kim would often be implemented as systematically and intensively in typical school situations.

Several limitations of the study were specific to the evaluation of changes in Kim's self-esteem. Because of the subjective nature of assessing this potential improvement, I was unable to provide conclusive evidence that Kim's self-esteem improved over the course of the study. I was also unable to eliminate possible rival explanations for my subjective observations, such as the benefits of individual attention of one-on-one tutoring (Pumphrey & Reason, 1992) and the benefits of working in a less distracting environment than the classroom, or the effects of events that might be happening at home and school, or developmental changes as she matured. Inconsistency between Kim's BASC results and her mother's further limited conclusive evaluation of Kim's self-esteem, as did the short duration of the study.

When analyzing the data for this study, I came to realize how difficult and unwise it is to attribute improvement in performance to the efficacy of a single intervention (see Scruggs & Mastropieri, 1994). In a study that combines quantitative and qualitative analysis, it is difficult to balance the traditional requirements of quantitative reporting with the flexibility and responsiveness that are strengths of qualitative reporting. As "teachable moments" appeared in lessons, I often taught strategies that seemed appropriate for the situation, but that were outside of the planned instruction in reading and spelling.

However, by introducing instruction in areas other than those described in my thesis questions, I made it impossible to isolate the effects of my planned intervention with reading and spelling from this other instruction. It was also impossible to rule out rival hypotheses, such as the effects of individual attention in one-on-one instruction (Pumphrey & Reason, 1992) or the benefits of fewer distractions in our tutoring environment as compared to the classroom. Although this complexity of influences on learning is a reality in any teaching situation, it limits the ability of a researcher to make conclusive claims about the efficacy of a particular intervention.

As a result of this study, I have concluded that it is difficult to provide a tutoring intervention for students in a manner that responds to the complexity of student learning needs without compromising conclusive interpretations of the effectiveness of the particular intervention. Also as a result of the study, I have begun to question the usefulness of laboratory studies of interventions that have been done in isolation from other factors that affect learning, or of classroom studies that ignore important variables such as teacher expertise and individual and sample differences. The strength of a qualitative study such as this is that it reflects a real teaching situation rather than a laboratory setting that bears little relevance to the real teaching-learning interactions. By tracing the clinical decision-making process I gained insights into the interactions between my instruction and Kim's learning, information that is not provided by analysis of pre- and posttest scores, but that has important instructional implications. Consequently, the results of a qualitative study such as this can be useful in guiding practice.

### Contributions of Study

This study contributes to knowledge about working with students with FAS/E by summarizing findings from literature about FAS/E and relating them to literature about LD. Comparison of learning problems in students in the two populations showed many common patterns (see Table 1), and comparison of recommended interventions showed similar parallels (see Table 2). Kim's progress in this study supported my hypothesis that similar interventions would be effective with both populations.

The other contribution of this study is its demonstration of the complexity of the responsive tutoring process (see Englert, 1996). It demonstrated the need for extensive domain-specific knowledge in the phonological and morphological structure of language, teaching strategies and resources, monitoring strategies, student attributions, and recognition and support of individual learning strengths and weaknesses, as illustrated in Figure 1. It also demonstrated the time-consuming nature of this tutoring, particularly because it is necessary to provide reinforcement to over-learning (Pumphrey & Reason, 1992), with practice across the curriculum to facilitate generalization (Swanson, 1993).

### Implications for Future Research

Ideally, research into the effectiveness of a multisensory structured phonetic approach to teaching reading, writing, and spelling to students with FAS/E would include emphasis on reading and writing as communicative processes. It would be longitudinal (Lyon, 1996; Pumphrey & Reason, 1992), preferably following a large cohort of individual students from preschool into adolescence, with a consideration of the effects of various settings on the learning of each individual. It is important that there be a



qualitative element to this study, which could document individual strengths and weaknesses and individual responses to various strategies and interventions, as well as features of the variable performance (Malbin, 1993a) of each student. In addition to ongoing dynamic assessment, this research should include routine standardized, norm-referenced assessment of IQ and reading and spelling, although this assessment could be less than ideal because its standards may not be relevant for the population being studied (Pressley & McCormick, 1995). Attention should be paid to development and support of self-esteem, which would also need to consider the effects of the student's history, home environment, and social interactions (Morse, 1993). Prevention of the development of secondary characteristics could be a useful focus (Streissguth et al., 1996; Torgeson, 1994), with particular attention to ways of supporting families and schools in this regard. Ongoing thorough review of the growing bodies of literature on both FAS/E and LD would be advisable in order to identify both similarities and differences between the populations with respect to effective interventions. Research on educational interventions with students with FAS/E would benefit from medical support in the form of early and skilled diagnosis of FAS/E (Morse, 1993) in subjects as well as medical intervention as necessary. Attention to other professional support, such as counselors, psychologists, social workers, public health workers, and cultural workers where relevant would be advisable. Because the damage caused by prenatal exposure to alcohol is preventable, research on effective programs which work to reduce alcohol consumption during pregnancy could be an important part of this research picture. Preventive programs are particularly important for individuals with FAS/E who are at risk for substance abuse

themselves (Streissguth et al., 1994), and who may also have limited cognitive resources for preventing unwanted pregnancies.

It is difficult to establish consistent classifications or categories for students' learning problems, and there is inter- and intra-individual variability in learning characteristics of students with FAS/E (Morse, 1993) and students with LD (Lyon, 1996). Lack of consistency in classification due to conflicting views of what qualifies as a learning disability leads to a great difficulty in identifying samples of similar subjects, and this variability in sample characteristics makes it difficult to design studies that can be replicated, or results that can be generalized (Catts, 1991a; Lyon, 1996; Moats & Lyon, 1993; Pumphrey & Reason, 1992; Torgeson, 1994; Williams, 1988). This difficulty is even more of a limitation in studies on FAS/E (Morse). Financial realities limit implementation of longitudinal studies, as do the problems of retaining subjects over a period of years, and maintaining consistent professional support for the intervention in the form of knowledgeable teachers, researchers, psychologists, counselors, social workers, doctors, and other professionals who might be involved.

It is important to students with FAS/E that educators and researchers try to implement potentially useful interventions even in the absence of perfect research conditions (Morse, 1993). Claims of efficacy of an intervention researched in less than perfect conditions are inconclusive, but provide a basis for further research (Pumphrey & Reason, 1992). The collective results of several such systematic studies can demonstrate patterns that in turn provide hypotheses to be tested further.

## Conclusion

The primary goal of this intervention was to help an adolescent student with FAE and LD improve her reading, writing, and spelling skills, with this improvement having a positive effect on her self-esteem. Kim's reading, writing, and spelling skills did improve. Kim and I perceived that her self-esteem improved, although her mother disagreed with our perception. The second goal of the intervention was to examine my decision-making process as an experienced tutor of students with LD. This examination provided a picture of complex decision-making that required both problem-solving skills and extensive domain-specific knowledge acquired through 11 years of experience in tutoring practice and ongoing professional development.

The literature review for this study provided a concise picture of the similarities and differences between learning problems of students with FAS/E and students with LD, as well as a summary of the similarities and differences between recommendations for intervention and support for each group. The parallels between learning problems and teaching recommendations for the two groups indicate that students with FAS/E may benefit from being taught according to research recommendations for students with LD, but with particular consideration of the behavior and learning problems that result from neurological damage as a result of prenatal exposure to alcohol. Kim's learning progress during this study supports this conclusion, although further research with more students is needed for generalizable results.

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**Appendix A**  
**Sample Lesson Plan**

**LESSON PLAN**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

I. DRILL DECK (Visual Drill)

II. AUDITORY DRILL (student writes isolated sounds)

---

III. WORD LIST - ORAL READING

---

IV. SPELLING - NO NEW WORK!!

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_

Phrases or sentences

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IV. NEW MATERIAL

A. Teach sound, rule, etc.

B. Read word list

C. Words to spell (6 to 10) \_\_\_\_\_

---

V. ORAL READING \_\_\_\_\_

VI. RECAP OF NEW MATERIAL

**Appendix B**  
**Sample of Parent's Consent Form**

**Sample Letter of Consent**

**Dear Parent:**

I am asking your permission for your daughter to participate in a case study of tutoring a student in written language. The study will help to show whether multisensory phonetic tutoring is an effective way to teach spelling, reading, and writing to a student who has Fetal Alcohol Effect and learning disabilities. The study is being done to complete the requirements for my Master's degree in Education at the University of Northern B.C.

Your daughter's participation will consist of being tutored an hour a day, three times a week, in my home, for the next semester. The times and days of these lessons will be arranged during a conference when you and I meet with the teacher of her Transitions class. These lessons will take place in my home, and I will meet with your daughter at school and walk her back to school to ensure her safety during school hours.

My research of the literature suggests that the components of my tutoring approach are recommended for students with Fetal Alcohol Syndrome or Effect and for students with learning disabilities, so I have reason to expect that her reading, writing, and spelling will improve as a result of our sessions.

It is important that you realize that your daughter's participation is voluntary, and she may withdraw from the study at any time. Withdrawal will not affect her marks at school or her tutoring with me.

All information in the study is confidential, and we will protect your identity and that of your daughter by using names other than your own. Her school and teachers will not be identified.

You will have an opportunity to read my reports before they are circulated to my thesis committee, and make recommendations about accuracy or about wording that may affect perceptions of you or your daughter or your situations.

If you have any questions, please call me at 563-6149 or e mail me at [sjohnson@mag-net.com](mailto:sjohnson@mag-net.com). Should you or your daughter feel the need to talk to someone as a result of participation in this study, please contact Mrs. X, at 000000. If you have concerns about this research project, please contact my supervisor, Dr. J. Lapadat, at 960-6667.

Please indicate on the attached consent form whether you allow your daughter to participate in this study. A copy of this form will be provided for your records.

Thank you for your support.

Yours truly,

Carol L. Johnson, B.G.S.  
Graduate Student  
Department of Education  
University of Northern B.C.



**Appendix B (Continued)**  
**Sample of Parent's Consent Form**

**Sample Consent Form**

**Please check the appropriate items to record your permission for your daughter's participation in this study.**

**I have read and understood this letter of consent. I give permission for my daughter to participate in the study.**

**I have received a copy of the letter of consent and a copy of the completed consent form.**

**I do not wish my daughter to participate in the study.**

**Parent's Signature: \_\_\_\_\_ Date: \_\_\_\_\_**

**Appendix C**  
**Sample of Child's Assent Form**

**Sample of Assent Letter**

**Dear Student:**

I would like your help in a project about tutoring. This project may help to show a better way to teach students with Fetal Alcohol Effect and learning disabilities.

If you help with this project, you will come to my home for one hour, three times a week, for tutoring. This will be for the next semester, until the middle of June. We will work out the times with Mr. Y, so that you do not miss important parts of his class.

If you decide that you no longer want to take part in this project, you may stop at any time. This will not affect your marks at school.

You may call me at 563-6149 or e mail me at [sjohnson@mag-net.com](mailto:sjohnson@mag-net.com) if you have any questions. If you need to talk to someone else, Mrs. X, your counsellor, will be happy to meet with you.

Please sign the form at the bottom of this page.

Thanks for your help.

Yours truly,

Carol L. Johnson

I understand the contents of this letter, and agree to help with Mrs. Johnson's project.

I do not want to help with Mrs. Johnson's project.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Researcher: \_\_\_\_\_ Date: \_\_\_\_\_

**Appendix D**  
**Sample of School Principal's Consent**

**Carol L. Johnson, B.G.S.**  
**Therapeutic Tutor and Tutor Trainer**  
**2375 Laurier Cr., Prince George, B.C. V2M 2A9**  
**Phone (250) 563-6149 FAX (250) 562-0142**

February 11, 1998

XXX

Principal, XXX Secondary School

1234 Pine St.

Prince George, B.C.

Dear XXX:

As a Master's of Education Degree candidate at the University of Northern B.C. I am interested in investigating educational interventions with students with Fetal Alcohol Syndrome or Effect. I have tutored students with learning disabilities for over ten years, and have provided workshops and tutor training since 1992.

For my thesis I would like to do a case study of my tutoring with a student who has Fetal Alcohol Effect as well as learning disabilities, and my proposal has been accepted by my thesis committee. The proposal is currently before the Ethics Committee of the University, and I expect to have the approval of that committee by early next week.

The student I hope to work with is XXXXX who is in Grade 8 and is participating in XXX's Transitions class for this semester. In discussion with XXX, her mother, Counselor XXX, and Teacher XXX, we have tentatively suggested that I tutor XXXXX in written language for three one-hour sessions per week for the current semester. My lessons with her would be considered in her IEP, and Teacher XXX and I would be in frequent communication to ensure that we work together as much as possible for XXXX's learning. I live two blocks from your school, and I have proposed that I meet XXXX at school and walk her to and from my home for lessons, to ensure her safety during school hours. Counselor XXX and Teacher XXX have suggested that Block A on Monday, Wednesday, and Friday would be an appropriate time for our lessons.

A copy of the proposal before the UNBC Ethics Committee is attached for your information.

For ethical reasons I am required to have your signed permission to proceed with this study with a student from your school. Please sign the attached form to indicate whether you will permit my work with XXXX as outlined in my proposal. If you require any further information please contact me at the above numbers, or by e mail at [sjohnson@mag-net.com](mailto:sjohnson@mag-net.com). My thesis supervisor, Dr. Judith Lapadat, is available at 960-6667 should you have questions for her. Within your school, XXX XXX can vouch for my character, should you need such a reference.

Yours truly,

Carol L. Johnson, B.G.S.

**Appendix D (Continued)**  
**Sample of Principal's Consent**

**Consent Form**

\_\_\_\_\_ I have read and understood this letter of proposal for Carol Johnson's case study with XXX XXX.

\_\_\_\_\_ I do / do not give my permission for XXX XXX to participate in this study.

**Principal's Signature:** \_\_\_\_\_  
XXX, Principal

**Date:** \_\_\_\_\_

**Appendix E**  
**Sample of Criterion-Referenced Tests**

**CRITERION REFERENCED TEST Grades 1 & 2, 3 & 4**

**Grades 1 - 2**

sit            hot  
 box           mix  
 van           vest  
 eat            treat  
 belong        begin  
 said\*        door\*  
 low           tow  
 soft           lift  
 how           cow  
 bring        stung  
 stunt        blend  
 quit          quit  
 yell          fell  
way        stay  
 has\*        from\*  
 baby        candy  
 hide        fern  
 blank        yank  
 smart        farm  
 fall          tall

**Grades 3 - 4**

began        until  
 dash        wish  
 printer      western  
 chips        chase  
 thick        brick  
 batch        hatch  
 gone\*       many\*  
 soap        toast  
 trail        snail  
 grew        flew  
 walk        talk  
 does\*       goes\*  
 zipper      thinner  
 straw        flaw  
 able        noble  
 wander      wasp  
 half\*        busy\*  
 June        quote  
 high        right  
 part        March

Underlined words are homonyms, so you need to use them in a sentence to show their meanings.

\* Non-phonetic or red letter words.

Dictate list that you think student will be successful with, and continue with next level until he has made 5 mistakes in the column. Use the first column for a pre-test and the second for a post-test. Analyse for patterns of errors.

Appendix E (Continued)  
Sample of Criterion-Referenced Tests

CRITERION-REFERENCED PRE-TEST FOR OLDER STUDENTS (5-10)

tromp	twist	grasp	cleft
peck	brisk	mock	bulk
smelled	slashed	bonded	chilled
pinch	stitch	which	stretch
strong	length	trunk	spank
any	what	does	give
vampire	deplete	revive	dispute
stray	quaint	enjoy	broil
sneak	fleet	scream	queen
flight	tried	thigh	fried
trout	frown	ground	crowd
fault	shawl	laundry	thaw
stern	burst	squirt	perch
brook	groom	stood	swoop
brief	believe	receive	deceive
spread	mesh	ready	swept
foolish	starred	trimming	topping
friction	version	invention	permission
lonely	changing	hopeful	facing
nervous	elastic	creative	formal
enough	Wednesday	lose	women
surround	commit	acquaint	arrange
wrench	knob	thistle	sign
trying	supplier	emptying	relied

Appendix F  
 Example of Student's Work on Criterion-Referenced Tests

sit box van eat belong said

bring low soft how blank smart

fall stunt quit yell way has

baby hide

began dash winter chips thick

catch gone ~~sope~~ soap trail news

walk does zipper straw able wander

half June ~~the~~ ~~the~~ high part

~~the~~ slump I pluck smelled pinch

chunk any ~~the~~ vampire sneek ~~stray~~ stray

flight ~~flight~~ ~~trout~~ trout ~~the~~ claw stem

groom brief ~~the~~ the brief mesh

foolish grabbing friction ~~lenty~~ ~~lenty~~

~~lenty~~ ~~lenty~~ lonely nurvis ~~the~~ enough

surround reek frying

surround  
 Surround

Appendix G  
Student's First and Second Compositions

KIM'S FIRST COMPOSITION

Billy and his dad John went fishing. John told Billy no to let go of the fishing rod. So Billy said to his dad I won't. ~~So~~ ~~the~~ Billy said to his dad I think I got a fish. So his dad said let me help you. So they brought the fish on land and they cleaned the fish out and they had that fish for dinner.

KIM'S SECOND COMPOSITION.

Billy at the age of 5 was fishing with his dad John at Murphy's lake. It was a sunny day nice calm lake. Billy was standing. Billy and his dad was standing on the grass. Billy's dad John said to his son don't

let go of fishing rod, Billy said

he won't. Billy said to his dad I think I got a fish. So his dad

helped Billy catch his first fish. Billy and John John

was so proud of his son for catching

his first fish. Billy said

to his dad I caught my very



Appendix G (continued)  
Student's First and Second Compositions

PAGE 2 KIM'S SECOND COMPOSITION  
own fish I so happy dad's his  
dad said to Billy do you  
want the fish for dinner?  
Billy said sure. John said  
to Billy we both have to  
clean the fish together. Billy  
said sure. So they cleaned the  
fish out and they put it over  
the campfire and they cooked  
it. Billy said to his dad this  
is the best fish I ever had!  
John said to Billy

I took a pitcher of you when  
you were cleaning the fish.  
Dad said Billy.

