Factors Affecting the Academic Performance of Learning Disabled Students in Science

Kathleen Marie Parsons

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Factors Affecting the Academic Performance of Learning Disabled Students in Science

by

Kathleen Marie Parsons

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A thesis submitted to the
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Factors Affecting the Academic Performance of Learning Disabled Students in Science

by

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Dedication

This thesis is dedicated to my family and Riyadh who have encouraged and supported me this year and always. Thank you for everything you do. I love you all.
Abstract

This study investigated the factors that influence the academic performance of learning disabled students in an urban, science classroom. The research focused on a group of six learning disabled sixth grade students. Student self-perceptions, levels of motivation, and locus of control served as the primary concentrations of the research study. Data was collected using an Academic Performance Questionnaire, weekly performance reflections, Studying Reflections, weekly observations, and student interviews. Findings indicate that LD students maintain a high overall self-concept despite inconsistent perceptions of their performance from week to week. LD students display less motivation than their unclassified peers, as evidenced by a lack of participation and engagement in class instruction. A final difference emerged between LD students and their peers in the area of locus of control, where LD students were more likely to blame failure on external factors that are beyond their control.
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Chapter 1

Introduction

Introduction

Factors which influence the academic performance of learning disabled (LD) students have attracted much attention from teachers, researchers, and psychologists. In recent times, many studies have focused on identifying the impact of intrinsic aspects on students' scholastic achievement. Few would oppose the notion that inherent features, including self-concept, motivation, and locus of control, have a substantial bearing on student success.

Current research indicates that LD children may vary from their unclassified peers in each of these areas. Further studies that investigate how LD students differ from their classmates may provide additional information to help educators better understand the academic struggles of these children. Such research may also suggest ways that educators may promote achievement in LD students.

Research Question

What factors impact the academic performance of learning disabled students in an urban science classroom?
This research will investigate the self-concept, motivation, and locus of control of LD children. The researcher will investigate the relationship that exists between each of these factors and students' scholastic performance. Relationships will be examined through the use of an Academic Performance Questionnaire (See Appendix A), student reflections, field observations, and interviews.

Limitations

Research has shown that a host of intrinsic and extrinsic aspects can affect the scholastic achievement of a child. However, this research will focus only on the intrinsic factors of self-concept, motivation, and locus of control. In addition, the research will investigate a small group of subjects in one sixth grade inclusion classroom located in an urban environment. Given the limited sampling, these results may not apply to other grade levels or other school settings.

Definition of Terms

Domains of Self-Concept: The individual aspects - academic and non-academic - of a person's self-concept which are combined to create a general self-concept, or overall view of oneself.
Inclusion: The practice of educating children with disabilities alongside their non-disabled peers in a general education classroom.

Learning Disability: a disorder found in children of normal intelligence who have difficulties in learning specific skills. In general, a learning disability describes a discrepancy between a child’s intelligence and academic achievement.

Locus of Control: A theoretical construct designed to assess a person’s perceived control over his or her own behavior; classified as internal if the person feels in control of events, external if others are perceived to have that control.

Metacognitive Strategies: Approaching cognitive tasks with an awareness of one’s own thought processes. For example: planning how to proceed with a given learning task, monitoring comprehension, and evaluating progress toward completion.

Self-Concept: The view one has of him or herself and his or her abilities.
Chapter 2

Review of Literature

Introduction

While each school district may have a unique method of identifying learning disabled students, it is widely accepted that these students exhibit unexpected underachievement. As such, these children (1) have no hearing or vision problems which would limit their academic performance, (2) demonstrate average intellectual functioning, but struggle excessively with grasping concepts, and (3) have the potential to acquire academic skills, yet their performance does not match expectations (UCLA/Wallis Foundation Website for Learning Disabilities and Educational Problems, 2004).

It is well established that learning disabled students grapple with academic responsibilities which put them at risk for emergent self-concept problems and loss of motivation. While studies once focused on self-concept holistically, researchers have begun to view this concept as a multidimensional construct (Gans, Kenny, & Ghany, 2003; Grolnick & Ryan, 1990; Smith & Nagle, 1995). This enhancement has led to a more detailed analysis of
the differences between LD students and their normally-achieving classmates.

Research also shows that the extent to which LD students attribute their academic successes and failures to internal and external factors will impact their motivation in scholastic endeavors (Grolnick & Ryan, 1990; Pintrich, Anderman, & Klobucar, 1994; Rogers & Saklofske, 1985; Wiest, Wong, & Kreil, 1998). Self-concept, motivation, and locus of control go "hand in hand"—each affects the others, and collectively they affect academic achievement.

Self-Concept

As defined by Shavelson, Hubner, & Stanton (1976), self-concept is believed to be the view an individual has of one's self. This view is formulated by the experiences one has had and how these experiences are construed by the individual. Later studies began to look at the differences between global self-concept or overall self-concept and specific self-concept. The difference here lies in the level of specificity, where global self-concept is the general perception one has of himself and his abilities, whereas specific self-concept conveys "an
individual’s self-appraisal in specific areas of functioning” (Piers, 1994, p. 43).

Numerous studies have been conducted which examine the issue of self-concept and what factors influence its construction in learning disabled students. Early investigations, such as the 1979 study conducted by Serafica and Harway, demonstrated that LD students possessed a lower self-concept than their non-classified peers. Duplicate results were found in four similar research studies that were performed during the same decade and are summarized in Grolnick & Ryan’s 1990 review.

However, a large body of more recent research has contradicted earlier studies and led to the following conclusion: while LD students perceive their scholastic competence to be inadequate, these children maintain a positive overall self-esteem, one which does not differ from their average-achieving classmates. For example, when investigating the self-perceptions of 148 third through sixth grade students, Grolnick and Ryan (1990) found that children with LD viewed themselves as less academically competent than did their non-LD peers. Despite this, there were no differences between LD and
non-LD students with regard to their perceptions of general aptitude (Grolnick & Ryan, 1990). These results were mirrored in later research performed by Smith and Nagle (1995) when they discovered that learning disabled third and fourth graders felt less confident with their intelligence and academic skills; however, global self-esteem did not vary from the comparison group. Gans, Kenny, and Ghany (2003) compared the self-concepts of middle school children with and without learning disabilities. Once again, results indicated that LD students rated their intellectual abilities lower than their unclassified peers, but both groups of children rated themselves equally with regard to overall self-concept.

Unlike most researchers, Rogers and Saklofske (1985) concluded that LD students possess not only tainted academic self-concepts, but in addition their general self-concepts reflect low confidence in themselves. On the contrary, some research exists which refutes the theory that LD students view their academic or general abilities any lower than their unclassified peers (Meltzer, et al. 1998). Data from a Student Self-Report System indicated that LD adolescents regard their
academic performance as average to above average (Meltzer et al., 1998). Additionally researchers have concluded that LD students feel confident in their choice of academic strategies (Meltzer et al., 1998). However, all of the findings mentioned in this paragraph are in the minority and are not widely supported.

**Domains**

Earlier studies differ from those conducted more recently in that later research includes the investigation of specific domains of self-concept. In more recent times, researchers have studied self-concept as the compilation of numerous domains (Gans, Kenny, & Ghany, 2003; Grolnick & Ryan, 1990; Smith & Nagle, 1995). Thus, it is generally regarded as a multifaceted concept which incorporates academic and non-academic aspects. In turn, the combination of all sub-domains determines an individual's general self-concept (Marsh, 1990). Therefore, students do not evaluate their self-worth based upon their own perceptions of one area, but rather they formulate different views across numerous domains.

The research suggests that "students with LD may derive their general self-perceptions from areas other than school" (Grolnick & Ryan, 1990, p. 182). While LD
students may consider their cognitive abilities to be weak, they may feel strongly about their athletic ability, friendship skills, physical appearance, or popularity. Thus, in spite of perceived incompetence in the academic realm, LD students can retain a positive self-image. This conclusion was later supported by Smith and Nagle's (1995) research which indicated that LD students valued non-academic domains, and thus maintained a high global self-worth.

Valuing and Devaluing Domains

To further support this theory, studies have provided evidence that students may selectively value and devalue different domains (Renick & Harter, 1989; Smith & Nagle, 1995). The importance one places on a particular domain is directly related to the impact that domain will have in determining the individual’s self-worth (Harter, 1983 as cited in Grolnick & Ryan, 1994). Smith and Nagle (1995) found that “academic indicators appeared to be related less to global self-worth than to measures of perceived appearance, behavior, and general ability” (p. 367). In multiple studies researchers have found a particularly high correlation between physical appearance and overall self-concept (Renick & Harter, 1988 as cited
in Smith & Nagle, 1995; Smith & Nagle, 1995). This relationship was especially prominent among those subjects with learning disabilities.

Thus, it can be concluded that LD students compensate for perceived scholastic incompetence by shifting their value scheme toward other aspects of their self-concept. By praising students’ performance in nonacademic domains, self-esteem is upheld. However, teachers should not go to the extent of devaluing scholastic success altogether. Attempting to raise students’ self-esteem by devaluing academics will ultimately undermine students’ motivation (Crocker & Major, 1989).

Comparison Groups

The self-concept of learning disabled students may also be affected by the individuals to whom they compare themselves. In accordance with the Social Comparison Theory, individuals assess their performance in reference to that of others in their environment (Festinger, 1954 as cited in Smith & Nagle, 1995). Research has shown that challenged individuals can retain a positive self-image, by comparing themselves to others in the same stigmatized group (Crocker & Major, 1989). This theory
may be applied to LD students. However, in this case, an overwhelming majority of the students do not compare themselves to others with similar learning difficulties. Rather, LD students evaluate their performance based upon that of the larger normally-achieving peer group (Renick & Harter, 1989; Smith & Nagle, 1995). While investigating social comparisons of LD students, Renick and Harter (1989) discovered that more than 80 percent of LD students in a resource setting reference their performance against that of the average student. These results were even more profound among LD students in a mainstreamed environment (Renick & Harter, 1989). In effect, LD students who compare their academic abilities to those classmates who are average or high-achievers, may demean their self-perceptions of scholastic aptitude.

**Motivation**

It has been found that perceived competence, locus of control, and autonomy impact the scholastic motivation of all students, and that motivation plays a profound role in a student's academic performance (Anderman & Maehr, 1994; Pintrich & De Groot, 1990; Ryan & Powelson, 1991). Pintrich & Schrauben (cited in Pintrich, Anderman, & Klobucar, 1994) suggested that students with
strong self-efficacy, or confidence in their own abilities, are more motivated to persevere longer, utilize more cognitive strategies, and perform better than other students. This trend holds true for LD students as well (Chapman, 1988).

However, research has produced mixed results with regard to the scholastic motivation of LD students. Earlier studies found that LD children displayed low levels of motivation in relation to their non-LD classmates. Specifically, LD students exhibited less curiosity, desire to be challenged, and autonomy when completing tasks (Lincoln & Chazen, 1979; Renick, 1985 both cited in Grolnick and Ryan, 1990). In contrast, Pintrich, Anderman, & Klobucar, (1994) concluded just the opposite. In their study, Pintrich and his colleagues examined motivational variables which had distinguished LD children from their normally-achieving peers in previous studies. The research illustrated that the motivational beliefs of LD students did not differ from those students without LD. This was supported by the levels of self-efficacy, intrinsic orientation, and anxiety which were mirrored between the two groups. Learning disabled students "reported feeling as able to
accomplish reading tasks, and that they were approaching reading tasks with as much of a focus on mastery and learning, as students without LD” (Pintrich, Anderman, & Klobucar, 1994, p. 367). This study did show a difference in the levels of awareness with metacognitive strategies, where LD students were less cognizant of appropriate reading strategies in comparison to the non-LD children. In other words, LD students displayed less strategic and conditional knowledge of the task at hand (Pintrich, Anderman, & Klobucar, 1994). Interestingly enough, in a separate study, LD adolescents exhibited confidence in their choice of metacognitive strategies in each of the following areas: math, reading, writing, spelling, and organization (Meltzer et al., 1998).

**Individual Differences**

It has been suggested that the relationship between motivation and cognition is so complex that different patterns can lead to the same academic outcome (Pintrich, 1989 as cited in Pintrich, Anderman, & Klobucar, 1994). In his investigation, Pintrich (1989) found that students who displayed low levels of motivation or self-efficacy, compensated through the use of cognitive strategies. Likewise, students who lacked strong cognitive skills
often demonstrated more motivation. Accordingly, the combination of motivation and cognition may generate patterns which are distinct to each individual and may "cut across the boundaries of priori groups of students with and without LD" (Pintrich, Anderman, & Klobucar, 1994, p. 362).

Five years later, Pintrich, Anderman, & Klobucar (1994) returned to examine this hypothesis further. Three groups of students were studied: Cluster One, comprised of primarily non-disabled students (80%); Cluster Two had an equal number of students with and without LD; and Cluster Three, in which all members were classified LD. The results revealed that Cluster One displayed high levels of metacognition and motivation. While Cluster Two showed moderate levels of metacognition and low motivation. On the contrary, high levels of motivation were exhibited by Cluster Three despite their low metacognitive levels (Pintrich, Anderman, & Klobucar, 1994). Pintrich and his colleagues (1994) explained these results by suggesting that:

Motivational and metacognitive variables may combine in unique ways within individuals to produce the same overall patterns of performance. For example, all the students with LD in this study are achieving at lower levels on standardized achievement tests than
would be expected from their IQ scores. However, the cluster results suggest that some of these students with LD are doing poorly...because they lack metacognitive knowledge about reading strategies. In contrast, other students with LD do not have as large a deficit in metacognitive knowledge, but they are much lower in intrinsic motivation. (p. 368)

This study built upon the existing evidence which proposed that not only do stigmatized groups vary from each other, but moreover, individuals within these groups differ amongst themselves.

**Locus of Control**

A significant determinant of a child’s scholastic motivation is the level to which he feels he controls his success. A large body of research exists which has examined the locus of control and how students perceive the impact of internal and external factors on their academic performance. Generally, students who ascribe success to internal features that are within their control, demonstrate more positive motivational beliefs (Pintrich, Anderman, & Klobucar, 1994). High achievement is coupled with students’ belief in internal locus of control, whereas low achievement is associated with children’s belief in external locus of control (Nunn & Nunn, 1993).
Many researchers have found differences in the perceived locus of control among students with and without learning disabilities. While studying the motivational orientation of elementary-age LD children, Grolnick and Ryan (1990) determined that LD students are more likely to attribute school performance to "powerful others" (i.e. teachers) than to internal factors within their control. These findings were even more pronounced among sixth-grade students. Similar results were produced in a study conducted by Pintrich, Anderman, & Klobucar (1994). From self-report questionnaires, a trend emerged which revealed the following: LD students do, to some extent, credit their (reading) success to ability; however they feel good luck, simplicity of task, and receipt of assistance also play a role (Pintrich, Anderman, & Klobucar, 1994). Unfortunately, LD students also attribute their failures to external factors, such as bad luck and not receiving assistance. Overall, LD students are more likely than the general education population to view academic successes and failures as dependent upon external factors that are beyond their control (Grolnick & Ryan, 1990; Pintrich, Anderman, & Klobucar, 1994; Rogers & Saklofske, 1985).
For years, studies have indicated that LD students generally possess a more external locus of control than their normally-achieving counterparts (Grolnick & Ryan, 1990; Pintrich, Anderman, & Klobucar, 1994; Rogers & Saklofske, 1985; Serafica & Harway, 1979). While this is an encouraging pattern relative to failures, it is of particular concern with regard to success. If students favor external explanations for their performance, they will take "significantly less responsibility for their academic success and failures" (Rogers & Saklofske, 1985, p. 275). This is problematic considering the research that indicates students who take responsibility for their scholastic performance are more likely to reach higher levels of achievement (Deci et al., 1992).

In contrast, some research exists which proposes that LD students attribute success to external factors and not their own ability (Terrill, 1990 as cited in Wiest et al., 1998). This research further asserts, that LD students hold themselves responsible for their academic failures. This combination can be detrimental to students, leading to learned helplessness (Fincham & Cain, 1986). Characterized by a perception of academic incompetence, students with this condition develop a
belief that failure is inevitable (Stipek, 1988). In spite of this, many researchers would disagree with these findings and the idea that LD students display the condition of learned helplessness (Pintrich, Anderman, & Klobucar, 1994).

**Conclusion**

Authorities in the field of education have long recognized the additional challenges learning disabled students face in the academic realm. Differences have been found between regular education and LD students in numerous areas, including, but not limited to self-concept, motivation, vigilance of cognitive strategies, and locus of control. In general, studies have concluded that LD children exhibit less confidence in their academic abilities and display a heightened belief that external factors control their scholastic performance (Gans, Kenny, Ghany, 2003; Grolnick & Ryan, 1990; Pintrich, Anderman, & Klobucar, 1994; Serafica & Harway, 1979). Results regarding the motivation of LD students and their awareness of appropriate strategies have been mixed.

Academic self-concept and academic locus of control were discovered to be substantial predictors of students'
in-school achievement (Rogers & Saklofske, 1985). Further, researchers have suggested that the relationship between academic self-concept and students’ achievement is direct: a positive academic self-concept forecasts success, whereas a negative academic self-concept forecasts failure. With regard to locus of control, students who lean towards external explanations for their performance will take less responsibility for their achievement or lack thereof.

The affective characteristics of LD students such as a weakened academic self-concept and embracing an external locus of control, that have a detrimental effect on motivation, may increase the chance of failure. As suggested by Rogers and Saklofske (1985) these relationships may be cyclic in nature. “Learning disabled children may become entangled in vicious cycles where academic failure and negative affective characteristics are mutually reinforcing” (p. 276).

The present research study seeks to identify what factors influence the academic performance of sixth-grade LD students in an urban, science classroom. The researcher will investigate the perceptions LD students have of their academic performance and what these
students believe they are capable of achieving in science. Through students’ reflections, the researcher will also examine whether LD students attribute their success or failure to intrinsic or extrinsic features.
Chapter 3
Methodology

Research Design

The present study was conducted in an urban elementary school located in upstate New York. This research sought to identify the factors that influence the academic performance of learning disabled students in an urban, science classroom. Self-concept, motivation, and locus of control each served as a primary focus of the research. The researcher investigated the beliefs LD students have of their own capability and the perceptions these children have of their academic performance. Through students’ reflections, the researcher explored whether students attribute their academic success and failure to internal or external issues. The study was conducted in one sixth-grade inclusion classroom containing 22 special and general education students.

Data was collected using an Academic Performance Questionnaire (Adapted from The 1988 version of the Educational Quality Assessment, Pennsylvania Testing and Assessment Program, Pennsylvania Department of Education, Harrisburg, PA) (See Appendix A). The questionnaire was completed by all students involved in this research.
study. Prior to its administration, the questionnaire was piloted to help establish readability and validity. Data was also collected on a weekly basis through a *Weekly Achievement Log* (See Appendix B), a reflection tool which allows students to assess their performance at the close of each school week. Additionally, subjects completed a *Studying Reflection* (See Appendix C) following each test given in science. This reflection allowed students to identify how they prepared for the assessment and what aspects of science class helped them most.

Classroom observations were conducted over a ten week period. Six learning disabled students and six randomly chosen regular education students were observed during science instruction. Field notes were recorded by the researcher and her mentor on an observation matrix (See Appendix D). These observations occurred once a week and the length was determined by the amount of direct instruction on each particular day. In general the length was 45 minutes.

Finally, the twelve students were formally interviewed (See Appendix E). Interviews took place after the distribution of second quarter grades. These
interviews allowed students to reflect upon their semester performance in science. Student responses were audio taped to ensure accuracy.

The use of multiple data collection tools allowed the researcher to triangulate data. The results of each of the following - Academic Performance Questionnaire, Weekly Achievement Log, Studying Reflection, classroom observations, and interviews - were viewed collectively to produce a more complete answer to the research question. More reliable and valid data was provided by the use of the five independent instruments as seen in the chart below.

**Triangulation of Data**

<table>
<thead>
<tr>
<th></th>
<th>Academic Performance Questionnaire</th>
<th>Weekly Achievement Log</th>
<th>Studying Reflection</th>
<th>Interviews</th>
<th>Weekly Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Concept</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Subjects

All subjects were members of the same sixth grade inclusion classroom. The class consisted of 22 students, six that were classified as learning disabled. These six labeled students were the focus of this research study. In addition, a random sample of six students, three top achievers and three average achievers, were chosen from the same class. This sample of students was used for comparison. The ethnic make up of the subject group was as follows: 58 percent African American, 25 percent Hispanic, 17 percent Caucasian. The study groups also displayed an equal gender distribution.

In this study, data was collected for ten weeks during the second half of the school year. The collected data was used to analyze the question: What factors impact the academic performance of learning disabled students in science?

Data Analysis

Data was carefully read multiple times to determine appropriate categories of data research. The data was then analyzed for recurrent themes and generalizations. Data supporting each generalization were compiled in tables, and data that conflicted were carefully analyzed.
for differences. Data from all sources were triangulated to ensure validity and reliability. This study was conducted in a natural classroom setting across one academic year. All performance data was collected within regular instruction and was not contrived. Given these circumstances, the validity of this study is high. Using a data matrix, the researcher summarized the findings and formed conclusions.

Limitations

This research study investigated a limited number of factors that in previous studies have been shown to influence the academic performance of learning disabled students. Additionally, the sample size was restricted to twelve students, all in the same urban classroom. Given the narrow sampling, these results can not be generalized to other schools.
Chapter 4

Results

Introduction

What factors impact the academic performance of LD students in an urban science classroom? The researcher examines three key areas - self-concept, motivation, and locus of control - to determine what differences existed between LD students and their unclassified peers. The comparison group was broken into two smaller groupings: low-achievers and high-achievers. Data were carefully examined and analyzed for generalizations.

Self-Concept

The first research question concerned differences in self-concept between the LD and unclassified groups. Data were analyzed from three separate sources to produce reliable results. Table 1 shows students’ responses to numerous questions on the Academic Performance Questionnaire that were pertinent to the issue of self-concept. This questionnaire was completed by all students in the researcher’s classroom at the commencement of the study.

Further data was provided through Weekly Achievement Logs, which indicated students’ perceptions of their own
performance on a weekly basis. This instrument allowed students to rate their own performance in separate areas by addressing the following questions: How hard did I try this week?; How attentive was I in class?; How much effort did I put forth?; and How much did I participate in class? Average scores were then calculated based upon how students rated their performance in the four areas.

During student interviews, the researcher collected further data relating to issues of self concept. Interviews were conducted after the distribution of second quarter grades. Audio tapes and field notes were utilized to ensure accurate recordings. The issue of self-concept was broached when participants responded to the question, “How do you feel about the grade you received in science last quarter?” Student responses are recorded in Table 2.

**Generalizations**

Based upon the data provided from the Academic Performance Questionnaire, Weekly Achievement Logs, and interviews, the following generalizations can be made:

- LD students viewed their performance inconsistently from one week to the next. Conversely, unclassified
students, particularly high-achievers, maintained a rather consistent view of their performance throughout the ten week research period. Results are shown in the series of graphs below.

- LD students are confident in their ability to share and explain their ideas and perform in class. (See Table 1)

- In comparison to their high-achieving peers, LD students are significantly less confident in their ability to properly prepare for a test. However, there is no difference between the LD group and the low achievers in this area. (See Table 1)

**TABLE 1: Academic Performance Questionnaire**

<table>
<thead>
<tr>
<th></th>
<th>Learning Disabled</th>
<th>Control Group Low-Achievers</th>
<th>Control Group High-Achievers</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to tell my ideas in science class, even when I think others will disagree.</td>
<td>3.00</td>
<td>3.00</td>
<td>3.67</td>
</tr>
<tr>
<td>I am able to do many things well in science class.</td>
<td>3.00</td>
<td>3.00</td>
<td>3.67</td>
</tr>
<tr>
<td>I am good at picking out the right things to study for science tests.</td>
<td>2.33</td>
<td>2.33</td>
<td>4.00</td>
</tr>
<tr>
<td>I am good at explaining my ideas in front of the class.</td>
<td>3.00</td>
<td>2.67</td>
<td>3.33</td>
</tr>
</tbody>
</table>

1 = Strongly Disagree, 2 = Mostly Disagree, 3 = Mostly Agree, 4 = Strongly Agree
**Weekly Achievement Logs: Control Group - High-Achievers**

![Graphs for Student 1 and Student 2]

**Weekly Achievement Logs: Control Group - Low-Achievers**

![Graphs for Student 3 and Student 4]
Weekly Achievement Logs: LD Students' Results
.25 = I hardly ever tried my hardest; I hardly ever paid attention; I put 25% effort into my work; I hardly ever participated in class.
.50 = I tried my hardest sometimes; I paid attention sometimes; I put 50% effort into my work; I participated in class sometimes.
.75 = I usually tried my hardest; I usually paid attention; I put 75% effort into my work; I usually participated in class.
1.00 = I always tried my hardest; I always paid attention; I put 100% effort into my work; I always participated in class.

**TABLE 2: Interview Responses**

“How do you feel about the grade you received in science last quarter?”

<table>
<thead>
<tr>
<th>Control Group</th>
<th>LD Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I feel good because I passed with an A and I tried my best.” (Student 1)</td>
<td>“It was not fair because I tried to do the best I can do and you gave me a D.” (Student 7)</td>
</tr>
<tr>
<td>“I feel that I did a good job because my grade was high.” (Student 2)</td>
<td>“Good because it was better than my first [quarter] grade.” (Student 8)</td>
</tr>
<tr>
<td>“I feel okay because I tried, but not my hardest. I did alright.” (Student 3)</td>
<td>“I feel pretty good about my grade last quarter because I passed.” (Student 9)</td>
</tr>
<tr>
<td>“I don’t know. I really don’t care.” (Student 4)</td>
<td>“I feel very bad because I was trying to [get] a good grade. I didn’t get what I wanted.” (Student 10)</td>
</tr>
<tr>
<td>“I feel good because I got a C+ and that is a passing grade.” (Student 5)</td>
<td>“I feel okay, but my grade was not that good.” (Student 11)</td>
</tr>
<tr>
<td>“Great because it’s a good grade.” (Student 6)</td>
<td>“I feel very mad because I know I can do better.” (Student 12)</td>
</tr>
</tbody>
</table>

**Motivation**

A second aspect of the research aimed to determine what differences existed in the motivation of LD students
versus their regular education peers. The researcher used three independent tools to investigate motivational differences. Observations were conducted once a week for a period of ten weeks. An observation matrix was used to evaluate the subjects' level of engagement during science instruction. These results are summarized in Table 3. A second source of data relating to student motivation was provided through students' interview responses to the following question: "Is there anything that you would like to improve upon this quarter?" Subjects' responses are recorded in Table 3.

Further data was collected on a weekly basis through students' replies to the question, "Overall are you happy with your performance in science this week?" This question, which was included on the Weekly Achievement Log, yielded some differences between the studied groups. High-achievers responded that they were happy with their performance 100% of the time, whereas LD students responded that they were pleased with their performance 88% of the time. However, the most striking difference was with the low-achievers, who responded that they were happy with their performance only 67% of the time (See Figure 1).
Generalizations:

- Despite significant inconsistency in how LD students rate their weekly performance in individual areas (See "Weekly Achievement Logs: Students’ Results" above), the vast majority (88%) of the time these students were pleased with their overall performance. While this may indicate a positive self-concept, it may also suggest a lack of motivation on LD students’ behalf – students rate themselves poorly in the individual areas of attentiveness, effort, and participation, but are still satisfied with their performance. (See Figure 1)

- LD students participate less in class. This includes: responding to questions, contributing to class discussions, listening to instruction, listening to their classmates’ contributions, and following along when reading. When these students do participate, it is done on an inconsistent basis. (See Table 4)

- LD students are less likely to be engaged in the instruction. (See Table 4)
Figure 1: Overall Satisfaction with Weekly Performance

![Satisfaction with Overall Performance](image)

TABLE 3: Interview Responses

"Is there anything that you would like to improve upon this quarter?"

<table>
<thead>
<tr>
<th>Control Group</th>
<th>LD Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;I want to [participate] more because I want to get another A and still be proud [of doing] my best.&quot; (Student 1)</td>
<td>&quot;Yes. I would like to stop [distracting] people to stay in my group.&quot; (Student 7)</td>
</tr>
<tr>
<td>&quot;Handing in all of my work on time. When I don’t hand it in I have to stay up for lunch.&quot; (Student 2)</td>
<td>&quot;No because I am doing good.&quot; (Student 8)</td>
</tr>
<tr>
<td>&quot;Listening and paying attention more in class. Not daydreaming.&quot; (Student 3)</td>
<td>&quot;Listen to the teacher during class because I don’t always.&quot; (Student 9)</td>
</tr>
<tr>
<td>&quot;Pay attention.&quot; (Student 4)</td>
<td>&quot;Listen and learn.&quot; (Student 10)</td>
</tr>
<tr>
<td>&quot;Yes. My participation. [Right now] I sit by a lot of people who talk a lot.&quot; (Student 5)</td>
<td>&quot;To be gooder and pay attention more. I don’t now.&quot; (Student 11)</td>
</tr>
<tr>
<td>&quot;No because I’m alright with my grade.&quot; (Student 6)</td>
<td>&quot;Yes there is something I [would] like to improve. It’s my grades.&quot; (Student 12)</td>
</tr>
</tbody>
</table>
TABLE 4: Observation Results

<table>
<thead>
<tr>
<th>Question</th>
<th>CG</th>
<th>LD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do the students listen to the contributions made by their classmates?</td>
<td>50% listen on a regular basis, 33% listen inconsistently, and 17% do no listen on a regular basis</td>
<td>0% listen on a regular basis, 83% listen inconsistently, 17% do not listen on a regular basis</td>
</tr>
<tr>
<td>Do the students listen to the teacher’s instruction?</td>
<td>66% listen on a regular basis, 17% listen inconsistently, and 17% do no listen on a regular basis</td>
<td>17% listen on a regular basis, 66% listen inconsistently, 17% do not listen on a regular basis</td>
</tr>
<tr>
<td>Do the students follow along with the reading?</td>
<td>66% follow along with the reading on a regular basis, 17% follow along inconsistently, and 17% do not follow along on a regular basis</td>
<td>17% follow along with the reading on a regular basis, 50% follow along inconsistently, 33% do not follow along on a regular basis</td>
</tr>
<tr>
<td>Do the students participate in discussions?</td>
<td>50% participate on a regular basis, 33% participate inconsistently, and 17% do not participate on a regular basis</td>
<td>0% participate on a regular basis, 83% participate inconsistently, 17% do not participate on a regular basis</td>
</tr>
<tr>
<td>Do the students volunteer to read?</td>
<td>50% volunteer on a regular basis, 17% volunteer inconsistently, and 33% do not volunteer on a regular basis</td>
<td>17% volunteer on a regular basis, 50% volunteer inconsistently, 33% do not volunteer on a regular basis</td>
</tr>
<tr>
<td>Do the students voluntarily respond to questions?</td>
<td>50% voluntarily respond to questions on a regular basis, 17% voluntarily respond inconsistently, and 33% do not voluntarily respond on a regular basis</td>
<td>17% voluntarily respond to questions on a regular basis, 33% voluntarily respond inconsistently, 50% do not voluntarily respond on a regular basis</td>
</tr>
<tr>
<td>Do the students ask questions in class?</td>
<td>17% ask questions on a regular basis, 17% ask questions inconsistently, and 66% do not ask questions on a regular basis</td>
<td>17% ask questions on a regular basis, 50% ask questions inconsistently, 33% do not ask questions on a regular basis</td>
</tr>
</tbody>
</table>
Locus of Control

A final factor, locus of control, was researched to determine the differences that exist between the studied groups. Locus of control refers to the extent to which a student feels she controls her academic success. Separate tools produced data relating to this topic of the research – Academic Performance Questionnaire, and Studying Reflection.

Generalizations:

- LD students display an external locus of control when explaining their failures. When they do poorly, LD students explain the failure as being “someone else’s fault” or they consider it the teacher’s fault for expecting better work than they can produce. However, LD students have an internal locus of control in reference to their successes. LD students attribute doing well not to “luck,” but rather to working hard and putting forth a good effort. (See Table 5 and Studying Reflection Figures)

- Differences emerge between LD students and their peers when they perceive their own performance
poorly. Unlike unclassified students who claim that they do poorly because they put forth too little effort, LD students blame their perceived failure on bad luck, the test being too difficult, and their classmates distracting them, all external factors.

(See Studying Reflection)

**TABLE 5: Academic Performance Questionnaire**

<table>
<thead>
<tr>
<th></th>
<th>Learning Disabled</th>
<th>Control Group Low-Achievers</th>
<th>Control Group High-Achievers</th>
</tr>
</thead>
<tbody>
<tr>
<td>When things go wrong in science, it is usually someone else's fault.</td>
<td>3.00</td>
<td>2.00</td>
<td>1.33</td>
</tr>
<tr>
<td>My science teacher expects better work from me than I am able to do.</td>
<td>3.67</td>
<td>2.33</td>
<td>1.33</td>
</tr>
<tr>
<td>When I do well in science, it is because I got lucky.</td>
<td>2.33</td>
<td>2.33</td>
<td>1.33</td>
</tr>
<tr>
<td>Getting a good grade in science depends on how hard I work.</td>
<td>3.00</td>
<td>2.33</td>
<td>3.67</td>
</tr>
<tr>
<td>If I don't do well on something in science, it is usually because I didn't try hard enough.</td>
<td>3.00</td>
<td>2.67</td>
<td>3.67</td>
</tr>
</tbody>
</table>

1 = Strongly Disagree, 2 = Mostly Disagree, 3 = Mostly Agree, 4 = Strongly Agree


Studying Reflections: Comparison Group

Studying Reflections: LD Group
Chapter 5

Recommendations

Self-Concept

The findings produced by this research study indicate that LD students maintain a high overall self-concept; however, they are not confident in their ability to properly prepare for unit culminating assessments. On the Academic Performance Questionnaire, the LD group responded that they “mostly disagree” with the following statement: “I am good at picking out the right things to study for science tests” (Table 1). This assertion was supported by LD student responses to the Studying Reflection, which demonstrated that LD students find reading the science book to be the most helpful method of preparation for an exam. Multiple research studies have shown that reading a text book is in fact one of the least useful methods for learning and reviewing content.

With these factors in mind, the research results suggest that LD students would greatly benefit from an organized studying format. To help ensure that LD students are picking out the appropriate material to study, teachers should supply LD students with studying materials such as study guides, outlines, and graphic
organizers. The use of such resources will help LD students to focus in on key points that are essential to the content matter.

Motivation and Locus of Control

Based upon classroom observations, which were conducted over a ten week period, LD students displayed an inconsistent level of engagement during science instruction. These students responded to fewer questions, contributed to fewer discussions, and listened less to the teacher and classmates, than did the regular education students. Regardless of this, 88 percent of the time, LD students responded that they were happy with their overall performance. This may indicate a lowered motivation.

These findings advocate that educators find alternate ways to involve and engage LD student in their own learning. Perhaps the answer lies in more instructional freedom where LD students propose their own questions, and in turn actively explore for answers. Providing LD students with the opportunity to investigate their own interests, educators could address two areas of concern that surfaced during this research study: inconsistent or lowered motivation and external locus of
control. If LD students are given choices and afforded the chance to explore topics of interest, they will not only be more engaged, but they may also take more responsibility for their learning - successes and failures.

Further Research

The results of this study would be stronger if subsequent research was conducted which included a larger study group in more than one school setting. This research was collected from one sixth grade inclusion classroom, in one urban elementary school. The subjects included twelve students - six classified as learning disabled, three unclassified low-achievers, and three unclassified high-achievers. In the future, research would benefit from a large group of subjects, in numerous classrooms, in a variety of school districts. Supplementary research studies may investigate the following:

• What accounts for the inconsistency in how LD students rate their performance and in the motivation they display?
• What accounts for the similarities that exist between LD students and their low-achieving peers in some areas?

• Are there differences in the level of parental involvement between LD students and their unclassified peers? How does this affect these students’ performance?
Appendix A

Academic Performance Questionnaire

The following items ask how you feel about science class. Circle the choice on your answer sheet that best tells how you feel about each statement.

SD means that you STRONGLY DISAGREE with the statement.
MD means that you MOSTLY DISAGREE with the statement.
MA means that you MOSTLY AGREE with the statement.
SA means that you STRONGLY AGREE with the statement.

1. I like to tell my ideas in science class even when I think others will disagree.
   SD   MD   MA   SA

2. I am able to do many things well in science class.
   SD   MD   MA   SA

3. When things go wrong in science, it is usually someone else’s fault.
   SD   MD   MA   SA

4. My science teacher expects better work from me than I am able to do.
   SD   MD   MA   SA

5. I am good at picking out the right things to study for science tests.
   SD   MD   MA   SA

6. I am good at explaining my ideas in front of the class.
   SD   MD   MA   SA

7. I am often frustrated with science.
   SD   MD   MA   SA

8. When I do well in science, it is because I got lucky.
   SD   MD   MA   SA

9. Getting a good grade in science depends on how hard I work.
   SD   MD   MA   SA

10. If I don’t do well on something in science, it is usually because I didn’t try hard enough.
    SD   MD   MA   SA
Appendix B

**Weekly Achievement Log**

1) Rate your performance in science this week:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I hardly ever tried my hardest.</td>
<td>I sometimes tried my hardest.</td>
<td>I usually tried my hardest.</td>
<td>I always tried my hardest.</td>
</tr>
<tr>
<td>2</td>
<td>I hardly ever paid attention.</td>
<td>I sometimes paid attention.</td>
<td>I usually paid attention.</td>
<td>I always paid attention.</td>
</tr>
<tr>
<td>3</td>
<td>I put a 25% effort into my work.</td>
<td>I put a 50% effort into my work.</td>
<td>I put a 75% effort into my work.</td>
<td>I put a 100% effort into my work.</td>
</tr>
<tr>
<td>4</td>
<td>I hardly ever participated in class.</td>
<td>I sometimes participated in class.</td>
<td>I usually participated in class.</td>
<td>I always participated in class.</td>
</tr>
</tbody>
</table>

2) One thing that was easy for me this week was:

________________________

Briefly explain why you think it was easy.

________________________

3) One thing that was hard for me this week was:

________________________

Briefly explain why you think it was hard.

________________________

4) Overall are you happy with your performance in science this week? ____________________________
Appendix C

Studying Reflection

1) How long did you study for this test? _____________________________

2) Check the three things that helped you most to prepare for this test.
   - Reading the science book.
   - Reviewing the notes I took.
   - Listening to the teacher in class.
   - Reviewing in science class.
   - Studying on my own outside of class.
   - Studying with my classmates at school.
   - Reviewing my old assignments for this chapter.
   - Other: _____________________________

3) Complete the following statement. (Circle all that apply!)

   I think I did _____________________________ on this test because:

   **(Well/Poorly)**

<table>
<thead>
<tr>
<th>“Well” Column</th>
<th>“Poorly” Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did a good job of listening in class.</td>
<td>I did a poor job of listening in class.</td>
</tr>
<tr>
<td>I did a good job of participating in class.</td>
<td>I did a poor job of participating in class.</td>
</tr>
<tr>
<td>I had good luck.</td>
<td>I had bad luck.</td>
</tr>
<tr>
<td>I did a good job of studying.</td>
<td>I did a poor job of studying.</td>
</tr>
<tr>
<td>I am a smart student.</td>
<td>I am not a very smart student.</td>
</tr>
<tr>
<td>The teacher taught the information well.</td>
<td>The teacher did not teach the information well.</td>
</tr>
<tr>
<td>The test was simple.</td>
<td>The test was too difficult.</td>
</tr>
<tr>
<td>I worked hard.</td>
<td>I did not work very hard.</td>
</tr>
<tr>
<td>My classmates did not distract me.</td>
<td>My classmates distracted me.</td>
</tr>
<tr>
<td>Other:</td>
<td>Other:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix D

#### Observation Matrix

<table>
<thead>
<tr>
<th>Student Number</th>
<th>Did the Student:</th>
<th>How many times did the student:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>listen to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>contributions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>made by classmates?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>listen to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>teacher?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>follow along</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with the reading?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>participate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>in discussions?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>volunteer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to read?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>voluntarily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>respond to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>questions?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ask a question?</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Interview Questions

1. How do you feel about the grade you received in science last quarter? Explain.

2. What did you do best last quarter?

3. Is there anything you would like to improve upon? If so, what do you want to improve?

4. How did your parents feel about your science grade?

5. If you were to give yourself a grade for participation in science last quarter, what would it be? Why?

6. If you were to give yourself a grade for effort in science last quarter, what would it be? Why?
References


Vita

The author, Kathleen Marie Parsons, was born in Akron, Ohio. She attended the State University of New York College at Geneseo from 1998 to 2002 and received a Bachelor of Science degree in Elementary Education. She began to work toward a Master of Science degree in Elementary Education at the State University of New York College at Brockport in the fall of 2003.