The impact of educational programs and support structures on success in the classroom for college students with learning disabilities

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The Impact of Educational Programs and Support Structures on Success in the Classroom for College Students with Learning Disabilities

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Dedication

I dedicate this research to my family, friends, and classmates who encouraged me and supported me through these last two years of graduate school. I also want to dedicate this research to all the college students who doubt their abilities as a student because of their disabilities. Know that you are intelligent and remarkable. Go change the world!
Acknowledgements

I would like to acknowledge and thank my wonderful thesis chair and advisor, Dr. Jane Thall. Without her guidance, encouragement, and support I would not be where I am today. Thank you, thank you, thank you! I would also like to thank Dr. Melissa Aleman and Dr. Diane Foucar-Szocki for sitting on my thesis committee and for offering their advice and expertise.
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Abstract

This research explores and examines 1) the effectiveness of university sponsored educational strategies (formal and informal) for students with learning disabilities and 2) how individuals react to and manage their learning disability. This study is a mixed-methods design and uses surveys and interviews to collect data. Participants are college students registered with the Office of Disability Services (ODS) for academic assistance at a four-year liberal Southeastern mid-sized university. Results showed that when students’ utilized university sponsored educational strategies, such as assistive technology, note-taking skills, and other accommodations their self-efficacy and confidence increased in relation to personal classroom achievements. Recommendations for future research are to use a larger population sample and to include a broader range of students with disabilities to get a larger response rate for generalizability purposes.

Keywords: college students, learning disabilities, formal and informal learning strategies, educational programs, university disability services, academic assistance, assistive technology, peer mentoring, Learning and Study Strategies Inventory scale (LASSI), perceived self-efficacy, higher education
Introduction

Enrollment and graduation rates have risen for students with learning disabilities in postsecondary schools over the past decade, causing this population to double, even triple at some institutions (Hadley, 2007; Allsopp, Minskoff & Bolt, 2005; Cosden & McNamara, 1997; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Sparks & Lovett, 2009; Hughes & Smith, 1990; Mull, Sitlington & Alper, 2001; Orr & Hammig, 2009; Barnard-Brak, Lechtenberger & Lan, 2010; Nalavany, Carawan, & Rennick, 2010). Legislation has been reviewed and passed to further protect and provide support for individuals struggling with a disability. This legislation includes the Americans with Disabilities Act (ADA) (United States Department of Justice, 1990), the Individuals with Disabilities Act (IDEA) (Section 508 of the Rehabilitation Act, 2004), and The Assistive Technology Act also know as Tech-Act (29 U.S.C. Sec 2202(2), U.S. Congress). These laws are in place to represent disabled people and to ensure, at minimum, there is a system or process in place for children, teens, and adults at schools and in the workplace to make life and work more manageable (Barnard-Brak et al, 2010; Martinez-Marrero & Estrada-Hernandez, 2008).

Despite support from the legal system, college students with learning disabilities struggle when adjusting to the college atmosphere, including bearing the label “learning disabled” that they try to avoid. “Institutions of higher education are not only catalysts for social change, but also serve as engines of economical development” (Strauss & Sales, 2010, p. 80). With the support of institutions and the services they provide to the disabled many positive changes can occur. In order to discuss the nature, history, and impact of
learning disabilities, fitting definitions of the variables being operationalized in this study must first be established.

For the purpose of this study, learning disabilities will be defined by a widely accepted definition as created by the National Joint Committee on Learning Disabilities and is as follows:

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 abilities. 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 handicapping conditions (for example sensory impairment, mental retardation, social and emotional disturbance) or with environmental influences (such as cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the result of those conditions or influences (National Joint Committee on Learning Disabilities, 1990).

Learning disabilities, as defined above, are prevalent on college campuses, but unfortunately, many students are embarrassed that they have to seek assistance (Sparks & Lovett, 2009; Cosden & McNamara, 1997). Individuals with learning disabilities have trouble with note taking, reading quizzes, and sometimes interpreting spoken language and writing. People suffering with learning disabilities need individualized tutoring that
involve multisensory education programs, as well as a tremendous amount of emotional support. Part of the individualized attention to a student with learning disabilities means providing a student with effective learning strategies to help with aforementioned school related tasks: note-taking, reading quizzes, and writing.

**Purpose and Rationale**

Extensive literature exists on the design and the development of learning strategies for those with learning disabilities and the continuing need for course-specific learning assessments (Allsopp, Minskoff & Bolt, 2005; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Hadley, 2007; Sparks & Lovett, 2009; Bayerl, Bryce & French, 2009; Orr & Hammig, 2009). Most of this research is evaluated through comparing and contrasting between those with learning disabilities and those without, including comparing characteristics such as grade point average (GPA) and test taking. However, there seems to be less research on the retention of enrolled students utilizing academic assistance (Mull, Sitlington & Alper, 2001; Allsopp et al, 2005; Kirby et al, 2008; Sparks et al, 2009).

One study showed that students with learning disabilities have not been utilizing the accommodations offered because “they are frustrated with the expediency of service delivery or perhaps become overwhelmed with the procedures involved in initiating such” (Marshak, Van Wieren, Raeke Ferrell, Swiss & Dugan, 2010, p. 160). The same study argues that universities need to measure and evaluate the programs being used most frequently to improve services to students (Marshak et al, 2010). Other reasons for this gap include the misunderstanding and lack of cooperation from faculty and staff at institutions regarding students with disabilities and fear of disclosure [by the student]
because of the stigma that comes attached with ‘learning disabled’ (Barnard-Brak, Lechtenberger & Lan, 2010, p. 412). In turn, this affects the reactions made by faculty and staff about the preparedness students with disabilities received prior to enrolling in college (Barnard-Brak et al, 2010).

Similarly, some researchers provide implications for future research on this topic to evaluate reasons behind the lack of focus on educational programs suited for individual needs of students with learning disabilities in postsecondary schools. For example, one study suggests that “[research] needs to focus on evaluation of the effectiveness of specific support services and accommodations for students with disabilities at the post-secondary level” (Mull, Sitlington & Alper, 2001, p. 107). While at the same time individualized assessment and help from faculty, staff, and disability services has a proven success record in academic work for those students with learning disabilities, including an increase in positive self-image and more confidence when completing course work (Parker-Katz & Hughes, 2008; Hadley, 2007; Allsopp, Minskoff & Bolt, 2005; Mull et al, 2001). Therefore, the overall purpose of this study is to explore and understand the effects of educational programs (formal and informal), learning strategies, and support structures on success in the classroom for college students struggling with learning disabilities.

**Variables, Research Question, and Hypothesis**

This research will attempt to explore and examine 1) the effectiveness of university sponsored educational strategies (formal and informal) for students with learning disabilities and 2) how individuals react to and manage their learning disability.
The higher the motivation and the higher the self-esteem, the more success a student will have in the classroom (Parker-Katz & Hughes, 2008; Hadley, 2007; Allsopp, Minskoff & Bolt, 2005; Mull, Sitlington & Alper, 2001; Cosden & McNamara, 1997). Based on these assumptions and discoveries the following question was derived:

**RQ 1:** In what ways do university sponsored educational strategies (formal and informal) provide methods to overcome difficulties related to personal academic struggles in school for students with learning disabilities?

From this question the hypothesis was created:

**Hypothesis:** If college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom.

Thesis statement: University sponsored educational strategies (formal and informal) will increase personal academic success for college students with learning disabilities.

**Assumptions, Limitations, and Scope**

In this study, it is assumed that all participants have registered for services and accommodations through the Office of Disability Services (ODS) at the university. It is also assumed that participants in this study struggle with one or more disabilities, including learning disabilities. The study is limited because it only includes college students at one institution, a four-year liberal Southeastern mid-sized university, and not students at surrounding four-year universities or two-year community colleges in the area. The scope of the study is college students with learning disabilities (freshmen –
graduate students) utilizing accommodations and learning strategies (past and/or present) provided through the Office of Disability Services (ODS) at the university.

Significance of Study

Mull, Sitlington & Alper (2007) compiled a synthesis of literature surrounding the topic of postsecondary education for students with learning disabilities. Out of 26 articles reviewed Mull et al (2007) found that the articles recommended services for the learning disabled, but “few addressed the need to evaluate the effectiveness of those services” and “twenty-nine percent of the articles reviewed did not discuss program evaluation” (p. 106). The current study investigates, analyzes, and evaluates the learning strategies and accommodations offered by the Office of Disability Services (ODS) at the institution of study and their effectiveness based on frequency of use and ability to personally succeed in the classroom. Upon completion of the study and after conclusions have been drawn, the researcher shared the findings with the Office of Disability Studies (ODS) in hopes to contribute to its success with current and future students utilizing their services.

This study examines the opportunities that are presented to students in a college setting regarding learning disabilities. Before a review of the literature, key terms and definitions being operationalized in this study must first be established.

Table 1.

Definitions of Key Terms

*Denotes: Terms defined and used by the institution’s Office of Disability Services (ODS) in the current study.

<table>
<thead>
<tr>
<th>Key Term</th>
<th>Definition</th>
<th>Source</th>
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<tr>
<td>*Accommodations</td>
<td>Includes but is not limited to the use of auxiliary aids</td>
<td><a href="http://www.jmu.edu/ods">www.jmu.edu/ods</a></td>
</tr>
<tr>
<td><strong>Assistive Technology Act (ATA)</strong></td>
<td>“Defined in Technology-Related Assistance for Individuals With Disabilities Act of 1988 (ATA, 2000), as any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that increases, maintains, or improves functional capabilities of individuals with disabilities.”</td>
<td>29 U.S.C. Sec 2202(2), U.S. Congress</td>
</tr>
<tr>
<td>Assistive technology</td>
<td>Any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that increases, maintains, or improves functional capabilities of individuals with disabilities</td>
<td>As stated in the <em>Technology-Related Assistance for Individuals With Disabilities Act</em> of 1988 (ATA, 2000) (29 U.S.C. Sec 2202(2)).</td>
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<td>Attention Deficit Hyperactivity Disorder (ADHD)</td>
<td>“ADHD is characterized by an inability to sustain attention, impulsivity and hyperactivity.” It was considered a childhood disorder, but can also be diagnosed in teens and adults.”</td>
<td>Weyandt &amp; DuPaul, 2006, p. 9</td>
</tr>
<tr>
<td><em>Auxiliary Aids</em></td>
<td>Includes but is not limited to large print and taped material, interpreters and other aids for persons with impaired cognitive, sensory, motor or speaking skills.</td>
<td><a href="http://www.jmu.edu/ods">www.jmu.edu/ods</a></td>
</tr>
<tr>
<td>Disability Theory</td>
<td>Disability Theory consists of three core principles that illustrate how disabilities come to be described by researchers, scholars and understood by communities, 1) socially constructed by society, 2) exists as part of normal human variation and 3) require voice to deconstruct it. This theory is considered a product of social interaction and therefore,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Denhart, 2008</td>
</tr>
<tr>
<td><strong>Disability Studies Theory</strong></td>
<td>“An interdisciplinary area of study that situates disability at the center of the humanities, sciences, social sciences, and applied field of study”</td>
<td>Gabel, 2010, p. 63</td>
</tr>
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</table>
| **Dyslexia** | Also known as developmental reading disorder, DRD) The following describes the components of dyslexia being operationalized in this study:  
- Information processing problem that occurs in the areas of the brain that help interpret language  
- Issues when trying to convert symbols into information  
- Commonly runs in families – genetic  
- Difficulty in learning to recognize written words | U.S. National Library of Medicine, 2011 |
| **Formal Learning Strategies** | 1. Mentoring programs  
2. Assistive technology |  |
| **Individualized Education Plan (IEP)** | A legal written document that outlines the special education plan of a child with a disability, such as goals for the school year, services needed to help the | Autism Society online, www.autismsociety.org/site/, 2011 |
| Individual with Disabilities Education Act (IDEA) | A law ensuring services to children with disabilities throughout the nation. IDEA governs how states and public agencies provide early intervention, special education and related services to more than 6.5 million eligible infants, toddlers, children and youth with disabilities. | Section 508 of the Rehabilitation Act, 2004. |
| Informal Learning Strategies | 1) Emotional Support  
2) Social Inclusion and Exclusion | |
| Learning and Study Strategies Inventory (LASSI) | Often used for student learning support services in the areas of diagnostic testing, academic coaching, and instructional assistance. Results are used to determine what areas students are performing poorly to intervene as necessary. LASSI contains 10 subscales to provide | Bayerl, Bryce & French, 2009; Weinstein & Palmer, 2002 |
| **Learning Disabilities (LD)** (also used interchangeably with *learning challenges*) | 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 abilities. 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 handicapping conditions. | National Joint Committee on Learning Disabilities, 1990 |
(for example sensory impairment, mental retardation, social and emotional disturbance) or with environmental influences (such as cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the result of those conditions or influences.

*Mental Disabilities

1. Developmental disabilities

2. An organic or mental condition that has substantial adverse effects on an individual’s cognitive or volitional functions, such as central nervous system disorders; significant discrepancies among mental functions of an individual, including any mental or psychological disorder, such as head injury; emotional or mental illness; and specific learning disabilities.

Mentoring

Mentoring can be defined as a form of an intervention that is used to enhance skills and reduce barriers for individuals in a variety of settings.

*Office of Disability Services (ODS)

Mission: Disability Services assists the University in creating an


www.jmu.edu/ods
| **accessible community** where students with disabilities have an equal opportunity to fully participate in their educational experience at JMU. |

| **Person with a disability** | Means any person who has a physical or mental condition, which substantially limits one or more major life activity or has a record of such a condition. |

| **Rehabilitation Act of 1973: Section 508** | (On electronic equipment accessibility) “to insure that handicapped individuals may use electronic office equipment with or without special peripherals.”

“Congress has mandated that guidelines for electronic equipment accessibility be established and adopted and that agencies are to comply with these guidelines in respect to electronic equipment.” |

| **Social Cognitive Theory** | Social Cognitive Theory consists of cognitive, motivational and affective processes. Within each of these processes emerge interactive human agents in which “make causal contribution to their own motivation and action within a system of triad...” |

|  | Brown, 1992, p. 36 |

|  | Bandura, 1989, p. 1175 |
Learning strategies are “methods and techniques used by students to improve learning. Any thoughts or behaviors that facilitate the enhancement of knowledge retrieval and integration are considered to be learning strategies.” The overall goal of learning strategies is to increase and improve outcomes and performances.

*University sponsored* implies strategies are provided by/through the university, most likely through the Office of Disability Services.

1) Formal (see *formal learning strategies* for a definition of the term)

2) Informal (see *informal learning strategies* for a definition of the term)

Now that key terms and definitions have been established the remainder of the paper explores relevant literature, data collection methodology and analysis, and conclusions and recommendations. First, the literature review examines the learning theory, Social Cognitive Theory, with a focus on perceived self-efficacy and its prevalence in students with learning disabilities (Zimmerman & Schunk, 2001; Bandura, 1986, 1989). Second, the theoretical framework, Disability Theory (Priestley, 2008;
Denhart, 2008) and Disability Studies Theory (Gabel, 2010) are introduced and discussed in relation to its influence on this study’s variable of identifying and managing a learning disability. Third, the literature review discusses and elaborates on university sponsored educational strategies (formal and informal). The literature focuses on other higher education institutions’ demand for and use of learning strategies for students struggling with learning disabilities. These strategies include assistive technology, mentoring, and emotional support. Fourth, the literature review briefly discusses prevalent disabilities on college campuses and then narrows the focus to a discussion around the literature of learning disabilities in college students.

After the literature review is complete, the paper addresses and discusses methodologies used in the current study. First, there is a discussion of the instruments being used, including quantitative and qualitative methods (surveys and interviews). Participants are college students registered with the Office of Disability Services for academic assistance at a four-year liberal Southeastern mid-sized university. The survey being used draws from the Learning and Study Strategies Inventory (LASSI) (Weinstein & Palmer, 2002), which is a tool used to identify strengths and areas for improvement in two broad categories – cognitive and effort-related strategies (Bayerl, Bryce & French, 2009; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008).


Literature Review

Introduction

Corley and Taymans (1993) argue that most learning disabilities lack documentation. Cases of learning disabilities are presented in the form of self reports and instructor assessments, but are rarely formally documented. This lack of documentation affects others’ understanding of learning disabilities in adults, as well as how to accommodate those individuals. Unfortunately, “adults with learning disabilities are likely to experience problems that significantly affect their academic achievement and their lives,” (Corley et al, 1993, p. 46). Additionally, “office of disability services and disability studies programs are often distant or unconnected” (Cory, White & Stuckey, 2010, p. 29). Not only is it important and necessary to have educational programs in place to assist adult learners and students with learning challenges, but it is equally necessary to determine the effectiveness of the learning strategy programs offered.

Higher education professionals have studied learning disabilities as a theoretical construct and as a written legal construct, but overlook the social aspect and issue of inclusion among all students on college campuses. “A significant positive correlation was found between positive self-esteem and social comparison on the achievement dimension” for young adults struggling with intellectual disabilities, including learning challenges (Dagnan & Sandhu, 1999, p. 372). Social comparison can be defined as a process in which individuals evaluate themselves based on how they view others. Both of these concepts, self-esteem and social comparison, relate to the three theories used to frame the current study – Social Cognitive Theory (Bandura, 1986, 1989), Disability Theory (Denhart, 2008; Priestley, 1998), and Disability Studies Theory (Gabel, 2010).
Next, the literature review continues with the learning theory being utilized in the current study, Bandura’s (1986, 1989) Social Cognitive Theory.

**Learning Theory**

**Social cognitive theory.** Bandura’s (1986, 1989) Social Cognitive Theory consists of cognitive, motivational, and affective processes used by individuals in learning. Within each of these processes interactive human agents emerge to “make causal contribution to their own motivation and action within a system of triadic reciprocal causation” (p. 1175). In more laymen terms, people are active in influencing their actions and motivations, while at the same time people are affected and influenced by the reciprocal actions of others. Other components to Bandura’s (1986, 1989) Social Cognitive Theory include reciprocal interactions, modeling, self-instruction, self-regulation and perceived self-efficacy. The following pages discuss Bandura’s Social...
Cognitive Theory and how the components of the theory frame the current study.

*Reciprocal interactions.* Reciprocal interactions include people, behavior, and the environment all interacting and influencing one another. This is what Bandura (1986) called “triadic reciprocity” (Schunk, 2008, p. 79). The following diagram shows this relationship:

![Figure 2. Bandura’s Triadic Reciprocity (Schunk, 2002, p. 79)](image)

Triadic reciprocity describes an important construct of Bandura’s theory (1986), perceived self-efficacy. Perceived self-efficacy can be defined as “beliefs about one’s capabilities to learn or perform behaviors at designated levels” and can affect performance when completing tasks (Zimmerman & Schunk, 2001, p. 126; Zimmerman, Bandura & Martinez-Pons, 1992; Bandura & Cervone, 1983; Bandura, 1982). This idea also encompasses personal motivation and persistence. Having low self-efficacy affects performance on tasks (Bandura, 1982; Bandura et al, 1983). If an individual is working towards a goal or checking items off a list, he/she tends to have a more enhanced and positive self-efficacy (Schunk, 2002; Bandura, 1991).
People learn through two ways: enactively, learning by doing, or vicariously, learning by observing others perform (Schunk 2002). Learning enactively means learning through trial and error, learning from mistakes, and consequences. People are motivated by desirable outcomes, as well as consequences. “People’s cognitions, rather than consequences, affect learning” (Schunk, 2002, p. 81). Learning vicariously can occur without consciousness of doing. Through this learning, people absorb and process information through observation and listening. This occurs physically, symbolically, electronically, or in print (Schunk, 2002; Bandura, 1986, 1991). Vicarious learning allows people to observe and watch consequences without directly experiencing them. While enactive learning allows people to receive feedback and engage in practice.

Social Cognitive Theory defines new content and experiences of learning as separate from previously learned or experienced behaviors and actions (Bandura, 1986). “Although much learning occurs by doing, we learn a great deal by observing” (Schunk, 2002, p. 81). Students are taught to memorize and learn concepts, in order to demonstrate or to perform later. The influence from self, environment, and behaviors does not imply any direction for how, when, or why the three factors influence one another. Most of the time person, environment, and behavior affect and influence each other (Bandura, 1986; Schunk, 2002).

**Modeling processes.** Modeling encompasses more than just imitation, but also cognitive, behavioral, and affective processes that emerge from models (Bandura, 1986). Imitation processes have been used to describe and explain modeling in that people imitate what they observe. There are four main concepts that make up imitation, 1) it is an instinct, 2) it is limited by development, 3) it is conditioned, and 4) it is instrumental
behavior (Bandura, 1986). Imitation is considered instinct because of the “internal drive” people have (Schunk, 2002, p. 83). Imitation is considered limited by development because of schemes. Schemes, also called cognitive structures, allow organized actions. Schemes develop as a person matures, which influences the imitation process. “Development, therefore, must precede imitation” (Schunk, 2002, p. 83).

Models are important because of the function they serve (Bandura, 1986). Bandura (1986) states the three main functions of models are response facilitation, inhibition/disinhibition, and observational learning.

Table 2.

*Functions of Modeling (Schunk, 2002, p. 85)*

<table>
<thead>
<tr>
<th>Function</th>
<th>Underlying Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response facilitation</td>
<td>Social prompts create motivational inducements for observers to model the actions (“going along with the crowd”).</td>
</tr>
<tr>
<td>Inhibition and disinhibition</td>
<td>Modeled behaviors create expectations in observers that they will experience similar consequences should they perform the actions.</td>
</tr>
<tr>
<td>Observational learning</td>
<td>Processes include attention, retention, production, and motivation.</td>
</tr>
</tbody>
</table>

Response facilitation serves as a motivation model. If a person observes another person performing a task that in turn receives positive feedback, the observer is more inclined to mimic that performance (Bandura, 1986; Schunk, 2002). Inhibition and disinhibition refers to behaviors that are observed and modeled after misbehavior and the subsequent consequences. If a student misbehaves and is not punished for that misbehavior, then the
behavior or action can be seen as acceptable and others will continue to partake in that behavior (2002). Observational learning is comprised of four components: attention, retention, production, and motivation (1986).

Observers attend to actions that are perceived as important and highly functional. Actions that are perceived effective and important and that receive positive outcomes gain attention (Schunk, 2002). Retention is increased through rehearsal and through the mental storing of images and practiced actions. Through rehearsal, an individual can organize and code important information and store it for later retrieval (Schunk, 2002). Production involves retrieving the stored information and translating it to perform a behavior. However, sometimes the translation of the memory into action is difficult and not always accurate (2002). Motivation, the fourth and last process of observational learning, means people “are more likely to attend to, retain, and produce those modeled actions that they feel are important” (2002, p. 87). Therefore, people perform actions they believe will have the best outcomes and avoid performing actions that would result in negative outcomes or consequences (2002).

Modeling processes combined with explanation help reinforce behavior (Bandura, 1986; Wood, Rosenberg & Carran, 1993; Schunk, 2002). Cognitive modeling involves built in statements such as, “I can do this” or “I’m doing well,” which can help motivate students having trouble accomplishing an assignment and who “doubt their capabilities to perform well” (Schunk, 2002, p. 88). This is especially important for those that have a low perceived self-efficacy (Bandura, 1986; Wood et al, 1993; Schunk, 2002). Self-instruction statements include “(a) the definition of the problem, (b) focused attention and response guidance, (c) self-reinforcement, (d) self-evaluative coping, and (e) error-
correction skills” (Wood et al, 1993, p. 250). Self-instruction has been found to be effective for people struggling with learning disabilities because “self-instructions decreased errors” and therefore, reduces frustration and “teaches students to work strategically” (Schunk, 2002, p. 90; Wood, et al, 1993; Meichenbaum & Goodman, 1971). Other concepts that fall under cognitive skill learning are rule learning and motor skill learning. Rule learning takes imitation a step further and encompasses language and rules for learning that language (2002). Motor skills learning involves “constructing a mental model” of observations before performing a skill or action (Schunk, 2002, p. 91; Bandura, 1986).


Self-observation or self-monitoring involves monitoring personal performances and “setting realistic goals” to evaluate progress (Bandura, 1991, p. 250). Environmental influences affect the process of self-monitoring, which can in turn affect self-directed change (1991). Self-judgment involves “comparing present performance level with one’s goal” (Schunk, 2002, p. 118). Personal standards play a major role in the self-judgment
and performance of a person. Self-judgment is also influenced by others’ reactions that hold significant meaning to one’s self and sociological perspectives (1991). Social comparison often evolves during the self-judgment phase because people compare themselves to others and base that comparison on personal success or achievement, which in turn affects perception of self (Schunk, 2002; Bandura, 1991).

Similarly, “self-judgments reflect in part the importance of goal attainment” (Schunk, 2002, p. 120). Self-reaction involves working toward an attainable goal. “The self-regulatory control is achieved by creating incentives for one’s own actions” (Bandura, 1991, p. 256). Individuals set up incentives to be rewarded for progress toward the attainable goal. The level of progress and effort is different for each person (1991; 2002). Anticipating a positive outcome can sustain motivation and negative consequences can increase motivation. If one perceives the task can be accomplished, then negative consequences have little effect on motivation (1991; 2002). However, tangible items can affect self-efficacy because “self-efficacy is validated as students work on a task and note their progress” (2002, p. 121).

Self-regulatory processes go through a cyclical pattern (Bandura, 1991; Schunk, 2002). Included in this cyclical pattern are performance or volitional control, self-reflection, and forethought. During these phases, different self-regulatory processes occur, which means “learners enter learning situations with varying goals and self-efficacy for attaining them” (Schunk, 2002, p. 122). Learners are taking part in self-evaluation strategies during the self-reflection phase (1991; 2002). Self-evaluation requires the learner to compare current performance to his/her goal, evaluate, and then decide if changes need to be made (2002). Also occurring during this process are self-

**Self-efficacy and people with learning disabilities.** “Perceived self-efficacy influences the level of goal challenges people set for themselves, the amount of effort they mobilize, and their persistence in the face of difficulties” (Zimmerman, Bandura & Martinez-Pons, 1992, p. 664). Self-efficacy is about what one believes he/she is capable of doing (Bandura, 1982, 1986, 1991; Zimmerman et al, 1992). This position of “human agency” influences effort and motivation. People choose what to partake in, how much effort to exert, and how long they will exert effort (Bandura & Cervone, 1983). As mentioned previously, self-efficacy is a component of Bandura’s (1986) triadic reciprocity. Thus, self-efficacy is a combination of perceptions of self, other people, and behavior (Bandura, 1982, 1986).

Perceived self-efficacy directly affects students struggling with learning challenges (Zimmerman & Schunk, 2001). Results from a study on perceived self-efficacy and self-motivation “indicate that student self-beliefs of efficacy to strategically regulate learning play an important role in academic self-motivation” (Dweck, 2000; Zimmerman, Bandura & Martinez-Pons, 1992, p. 674). The level of performance is dependent upon perceived self-efficacy and one’s ability to accomplish a task (Dweck, 2000; Zimmerman et al, 1992; Bandura, 1983). Students with learning disabilities tend to have low perceived self-efficacy because of troubles they have in school regarding low grades and low achievement levels (Zimmerman et al, 2001; Cosden & McNamara, 1997; Hughes & Smith, 1990).
Other aspects that contribute to the low perceived self-efficacy levels of students with learning disabilities (LD) include the ways in which others, peers and teachers, view the expected performance of students with learning disabilities (LD) (Zimmerman & Schunk, 2001). Non-learning disabled students perceive students with LD to be low achievers. Similarly, teachers tend to have lower academic standards for the students with learning challenges. In turn, students with LD develop lower standards and lower expectations of themselves (Zimmerman et al, 2001). Therefore, it is important to offer learning strategies to help those students struggling with a learning disability to increase their perceived self-efficacy. Next, the literature review introduces and discusses the theoretical frameworks, Disability Theory (Denhart, 2008; Priestley, 1998) and Disability Studies Theory (Gabel, 2010), which focus on concepts and constructs contributing to the development and viewpoints of disabilities.

**Theoretical Framework**

Disability Theory (Denhart, 2008; Priestley, 1998) shares the social model constructs of disability with the Disability Studies Theory (Gabel, 2010). The following graphic shows this relationship:

![Diagram](image)

*Figure 3. Disability Theory and Disability Studies Theory Conceptual Framework (as adapted by Scott, K, 2012)*
**Disability theory.** Disability Theory (Denhart, 2008; Priestley, 1998) consists of three core principles that illustrate how disabilities come to be described by researchers and scholars and understood by communities. These principles are:

1. Socially constructed by society
2. Exists as part of normal human variation, and
3. Require voice to deconstruct the learning disability.

This theory is considered a product of social interaction and therefore, cannot be understood or explained from outside of the context (Denhart, 2008). Theorists also describe Disability Theory as having two inter-related constructs, biological and physical and identity and social roles (Priestley, 1998; Gabel, 2010). The two inter-related constructs are part of four paradigms that shape Disability Theory (Priestley, 1998).

The two dimensions, social and physical, “produce four basic theoretical positions” (Priestley, 1998, p. 76). Priestley (1998) states the first two positions (positions 1 and 2) are “properties of individuals” (p. 76). The second two positions (positions 3 and 4) are “properties of collectives” (p. 76). The former suggests there is no existence past personal perceptions and interpretations, while the latter suggests there is existence beyond personal interpretations (1998). Positions 1 and 2 are concerned with the individual as an “agent,” while positions 3 and 4 are concerned with the “structure” of groups of people (1998, p. 78). Paradigms that frame the aforementioned positions are rooted in sociological viewpoints, such as realism, nominalism, materialism, and idealism (1998).
The nominalist-realist position and materialist-idealist position apply to the two main controversies of Disability Theory (Priestley, 1998; Denhart, 2008), individual models (includes biological and symbolic interactionism) and social models (includes social creationism and social constructionism) (Priestley, 1998, p. 79). The following chart illustrates the four approaches:

**Table 3.**

*Table II. Four Approaches to Disability Theory (Priestley, 1998, p. 78)*

<table>
<thead>
<tr>
<th></th>
<th><strong>Materialist</strong></th>
<th><strong>Idealist</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual</strong></td>
<td>Position 1</td>
<td>Position 2</td>
</tr>
<tr>
<td></td>
<td>Individual materialist models</td>
<td>Individual idealist models</td>
</tr>
<tr>
<td></td>
<td>Disability is the physical product of biology acting upon the functioning of</td>
<td>Disability is the product of voluntaristic individuals (disabled and non-</td>
</tr>
<tr>
<td></td>
<td>material individuals (bodies)</td>
<td>disabled and non-disabled) engaged in the creation of identities and the</td>
</tr>
<tr>
<td></td>
<td>The units of analysis are impaired bodies</td>
<td>negotiation of roles</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Position 3</td>
<td>Position 4</td>
</tr>
<tr>
<td></td>
<td>Social creationist models</td>
<td>Social constructionist models</td>
</tr>
<tr>
<td></td>
<td>Disability is the material product of socio-economic relations developing within</td>
<td>Disability is the idealist product of societal development within a specific</td>
</tr>
<tr>
<td></td>
<td>a specific historical context</td>
<td>cultural context</td>
</tr>
<tr>
<td></td>
<td>The units of analysis are disabling barriers and material relations of power</td>
<td>The units of analysis are cultural values and representations</td>
</tr>
</tbody>
</table>
The individual-materialist (position 1) suggests that disability occurs because of biological defections or medical mishaps. The individual-idealist (position 2) supports the individual piece, but focuses on the “cognitive interaction” and “affective experience” (Priestley, 1998, p. 80). Position 2 represents the attitudes and viewpoints toward the disabled in society (1998). The social-materialist (position 3) represents a piece of the social model that frames disability, disabling barriers and physical impairments of bodies (1998). Lastly, the social-idealist (position 4) represents the other piece of the social model, the viewpoint that disability is a social construct developed in a social setting (1998). The social construct of disability segues nicely into the discussion on Disability Studies Theory (Gabel, 2010).

**Disability studies theory.** Another view of Disability Theory (Denhart, 2008; Priestley, 1998) is through the lens of Disability Studies, which can be described as “an interdisciplinary area of study that situates disability at the center of the humanities, sciences, social sciences, and applied field of study” (Gabel, 2010, p. 63). Both Disability Theory (Denhart et al, 2008; Priestley, 1998) and Disability Studies Theory (Gabel, 2010) share an agreement that disability is in part, a socially developed construct. In framing this study, Disability Studies Theory (2010) provides insight into why or how individuals identify with and manage their disability.

The proposition that disability is socially constructed stems from the social model of disability, which can be described as “differentiating between impairment or functional limitations by an individual and disability or the marginalization of people with impairments as a group” (Gabel, 2010, p. 63). This social model places a strong emphasis
on the services provided by institutions and whether or not they properly accommodate and adequately measure the full range of needs for people with disabilities (Gabel, 2010). Thus, becoming a useful framework “for strategic action in policy because it clearly focuses attention on the institutional structures that disable people” through barriers of inclusion (2010, p. 64). Relevant to the current study is the emphasis on the role and level of involvement of the university’s Office of Disability Services (ODS).

To bridge the gap that exists between disability services and disability studies, the social model must be implemented to reduce barriers of exclusion (Gabel, 2010; Cory, White & Stuckey, 2010; Strauss & Sales, 2010; Marshak, Wieren, Ferrell, Swiss & Dugan, 2010; Priestley, 1998). Institutional structures that represent material items include resources and support of students. Examples of material resources include student loans, scholarship options, access plans, books, and tutoring (Gabel, 2010). The cultural structures of an institution influence the behaviors, policies, and practice of faculty, staff, and students. These cultural structures are represented through mission statements, materials used to market an institution, and profiles of students enrolled and admitted to universities (2010).

The social model used to frame Disability Theory (Priestley, 1998; Denhart, 2008) and Disability Studies Theory also operates as a form of activism (Gabel, 2010; Cory, White & Stuckey, 2010; Strauss & Sales, 2010; Marshak, Wieren, Ferrell, Swiss & Dugan, 2010). Gabel (2010) produced a model for policy activism that illustrates the importance of understanding and adaptability of policies and procedures based on the problems that arise and the need of students with disabilities. Policy activism strengthens relationships among students (disabled and non-disabled), faculty, staff, and disability
services’ employees (Cory et al, 2010). It is also extremely important to engage “students who are served through offices of disability services involved in the process of creating the services” (Cory et al, 2010, p. 35). The purpose of policy activism is to enhance the experiences and quality of education at the postsecondary level for students with disabilities (Gabel, 2010; Cory et al, 2010; Strauss et al, 2010; Marshak et al, 2010).

**Conceptual Framework of Variables**

The conceptual framework used in this study can be found as Figure 4. This illustration depicts what the hypothesis predicts. The combination of college students with learning disabilities utilizing university sponsored formal and informal learning strategies will result in personal academic success.

*Figure 4.* Conceptual Framework of Variables (as adapted by Scott, K., 2012)
University Sponsored Educational Strategies (Formal and Informal)

“As students with learning disabilities move into the postsecondary environment and are expected to develop new skills, academic accommodations might have a direct bearing on their successful integration” (Hadley, 2007, p. 12). It is important for both students and faculty at universities and colleges to understand the need for comprehensive programs for students with learning disabilities. Motivation and educational programs and strategies that enhance skills and increase engagement will improve academic performance. Also important is the student’s perceived self-worth and self-efficacy. “Engagement behaviors are largely motivated by the student’s personal belief system” (Rachal, Daigle & Rachal, 2007). Rachal et al (2007) define learning strategies as “methods and techniques used by students to improve learning,” which include both “cognitive and behavioral techniques” (p. 192). While there should be 1) will, 2) skill, and 3) self-regulation (Rachal et al, 2007) of the students engaging in learning strategies at the postsecondary level, there should also be fully functioning programs available. Educational programs should be staffed by learning disability professionals and should contain individualized strategies based on the profile for each student seeking assistance (Hadley, 2007).

Another vital concept of educational learning strategies is retention and re-use of those strategies that worked. College students want independence and being at college provides them this opportunity.
According to students, a learning center where students with learning disabilities could have all their accommodations and services delivered is the ideal model to meet their academic needs (Hadley, 2007, p. 12).

It is important to provide students a place to strive and feel confident. The need for accommodations is there, just not always understood. The following section will elaborate more on the importance of formal learning strategies and include examples from previous research.

**Formal learning strategies.** An important factor when employing learning strategies is to first establish fundamentals for the student to build a solid knowledge base before jumping right in. Fundamentals could be how to monitor comprehension and keys to organization, which include strategies such as creating personal links between previous knowledge and new knowledge, paraphrasing content, and meaning making of the new material being learned (Rachal, Daigle, Rachal, 2007). The learner must also be aware and comfortable with personal learning challenges in order to make improvements. There are three parts that contribute to student learning strategies, “will, skill and self-regulation of the learner” (Rachal et al 2007, p. 192). Therefore, the student must be engaged in his/her learning. The remainder of this section will continue to discuss formal learning strategies, assistive technology and mentoring, and their role in success in the classroom for college students with learning disabilities.

**Assistive technology.** Over the past decade, assistive technologies have risen in popularity and convenience in schools and the work force (Lee & Templeton, 2008; Brown, 1992). Assistive technology (AT) devices “increase their [individuals with
Finding the appropriate device or service for a person with disabilities requires both implementation and follow-up evaluations, to ensure the device or service is the right fit for the individual (2008). The state mandates the use of AT devices for people with disabilities, but does not provide structured guidelines to follow. This then requires professionals in the field to create their own guidelines (2008). Although this presents a challenge, AT devices and services ensures students of all ages with varying degrees of disabilities “equal access to technology for them to experience meaningful participation,” which is the “key goal of AT service” (2008, p. 214).

To develop effective programs for students with disabilities there needs to be a better understanding “of needs and characteristics of LD college students” in order to “make decisions about adoption of service delivery models (i.e. remediation of basic skills and accommodations)” (Hughes & Smith, 1990, p. 66). An effective and widely used accommodation is assistive technology (AT) (Lee & Templeton, 2008). Assistive technology has been used to improve the learning environment and learning outcomes for students with disabilities. AT devices are not just for students with severe or physically handicapping disabilities, but are also helpful to students with learning disabilities (Lee et al, 2008). Students with learning disabilities have used AT devices to help with “memory, organization, problem solving, reading, writing, and math” (2008, p. 214).

Rather than adding mechanical devices to computers to accommodate physically and intellectually challenged persons, there are software programs and packages readily available at low cost. For example, a modification created for those individuals that have impaired vision includes a pacing tool that speeds up or slows down depending on the
length of the document (Brown, 1992). Another software consideration is called a screen-
reading system that functions in both review and application mode, which allows for
reading and editing. This screen-reading system should provide assistance in the
following ways, “online, spoken help screens, documentation in tape recorded form,
Braille, print formats and a user support hotline” (Brown, 1992, p. 39). Not only has
assistive technology been utilized in the work force, but also in schools for students
struggling with physical and learning disabilities (Sparks & Lovett, 2009; Lee &
Templeton, 2008).

“The increase in students with LD [learning disabilities] attending postsecondary
programs can be attributed in part to the range of services…such as assistive
technologies” (Sparks & Lovett, 2009, p. 494). These assistive technologies include taped
books and program modifications. A more formal definition of assistive technologies can
be defined as

Any item, piece of equipment, or product system, whether acquired commercially
off the shelf, modified or customized, that increases, maintains, or improves
functional capabilities of individuals with disabilities as stated in the
Technology-Related Assistance for Individuals With Disabilities Act of 1988

More specifically, this device or strategy provides assistance to those struggling with
learning disabilities. Assistive technology programs focus on the strengths of the learners
with the intent to assist in reading, writing, note taking, and test taking for postsecondary
schooling or the work force (Martinez-Marrero & Estrada-Hernandez, 2008). Moreover,
assistive technology programs can help students accomplish tasks at the college level in an efficient and effective manner (Martinez-Marrero et al, 2008).

The reoccurring theme of assistive technology also led to new and effective programs that enhance the learning for those with learning challenges. These programs include computer-developed programs such as Microsoft Word and a software package called Read & Write Gold (Lange, McPhillips, Mulhern, & Wylie, 2006). In order to cross-reference tools there needs to be a layout provided to students with a disability to establish consistency. For example, Edyburn (2006) provided the idea of “aligning” the challenge, the assistive technology resources to use, and the other strategies and tools available through illustration in a chart. Through this example, students do not solely rely on assistive technology for answers, but are provided additional strategies to reach the end goal – instilling more confidence in individual and independent work (Edyburn, 2006). Building a solid foundation for students with learning disabilities can lead to an increase in confidence needed to succeed in the classroom at a higher level.

**Mentoring.** Students with learning disabilities rely on many strategies and approaches to assist them in their learning. One of the strategies is mentoring. “Mentoring has a positive impact on a student with a learning disability” (Brown, Takahashi & Roberts, 2010; Cosden & McNamara, 1997). A study by Glomb, Buckley, Minskoff and Rogers (2006) documented a college woman, who struggled with Attention Deficit Hyperactivity Disorder (ADHD), who started a program for students who learn just like she does. *The Learning Leaders Mentoring Program* provides a service that matches a college-age mentor with a learning disability to a younger student (elementary, middle, or high school) who has a similar learning challenge. Other variables considered
in the matching process were personal experiences, hobbies, and interests. The mentor then helped that student grow and develop habits and strategies to be successful in the classroom and in other settings (Glomb et al, 2006).

Researchers Foster Heckman, Brown, and Roberts (2007) argue in favor of the positive impact a mentoring program can have on a student with a disability. The Mentoring Partnership Project’s goal is to promote inclusion, retention, and accessibility, while at the same time increasing awareness to faculty and instructors of issues students with disabilities at the postsecondary level face. Results of this study showed that “mentoring for students with disabilities seems to work equally well in formal and informal settings” (2007, p. 5). Formal and informal settings encompass the different types of mentoring available to students. A similar study focused on the benefits of mentoring relationships and defines types of mentoring as illustrated in the chart below (Brown, Takahashi, & Roberts, 2010, p 99):

Table 4.

Types of Mentoring (Brown, Takahashi & Roberts, 2010, p. 99)

<table>
<thead>
<tr>
<th>One-on-One</th>
<th>Group</th>
<th>Community-based</th>
<th>Electronic</th>
<th>Peer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face meetings, telephone, conversations, letters, email, chat rooms, social networking, text messaging, or other activity providing direct contact.</td>
<td>A Mentor works with more than one mentee at the same time.</td>
<td>Located in a community-based situation, such as a volunteer setting like a Senior Citizen’s Recreational Center.</td>
<td>Bulletin boards, listservs, discussion groups.</td>
<td>Two people of equal status, and similar situations, who share many common characteristics and experiences, for example, individuals with disabilities in a work or educational setting.</td>
</tr>
</tbody>
</table>
Brown et al (2010) state these mentoring relationships can be found in school and work settings and are also “relevant to postsecondary education” (p. 99). Mentors must also be aware and conscious of different cultural backgrounds, including the wide range of learning disability spectrums. Being knowledgeable and sensitive to different cultural backgrounds helps when building a strong mentor-mentee relationship (2010).

One study analyzed by Brown, Takahashi and Roberts (2010) showed a “significant improvement in attitude, motivation, use of time management principles, a decrease in anxiety about school performance…” (p. 107) for students struggling with ADHD and other learning disabilities who participated in a peer-based mentoring program. Similarly, in a longitudinal study conducted by researcher Bat-Hayim (1997) students with learning disabilities who struggled mostly with critical thinking and writing participated in a formal mentoring program, which allowed them to build relationships and apply techniques. “Some of these peer mentoring relationships continued for entire university careers” (Brown et al, 2010, p. 107).

A compilation of four case studies about the effects of mentoring and mentoring relationships provided insight on its success as a strategy for college-aged students struggling with a learning disability. Results supported the positive outcome of the mentoring process. Students become better students with improvement in grades and test scores and gain more self-worth and confidence in their abilities (Stumbo, Martin, Nordstrom, Rolfe, Burgstahler, Whitney, Langley-Turnbaugh, Lovewell, Moeller, Larry, & Misquez, 2011, p. 34). Other reasons for the use of mentoring as a learning strategy for students with learning disabilities reside in relationship building. Mentees have someone who relates to them and can understand the problems they are facing. The atmosphere of
college and the transition from high school can often bring on extra stress and building that relationship with a mentor who has gone through a similar experience also instills confidence in the mentee (Stumbo et al, 2011).

**Informal learning strategies.**

**Emotional support.** Campuses across the country have adapted to challenges and provided support in many different ways. In 2001, student leaders at Syracuse University partnered with the already existing *Disability Studies Program* to create their own support and research network. This program is grounded in the belief of active and full participation of all students, including those struggling with a disability (Cory, White, & Stuckey, 2010). Students and faculty took this idea a step further and created a committee called, *The Beyond Compliance Coordinating Committee.* The creation of this committee has become a strong representation of the disability community.

Since its inception, this group has hosted campus-wide programs including scholarly guest speakers, movie-a-thons, performances and more. The driving force behind these ideas was simple, promoting action and encouraging motivation. A few other notable attributes of this movement were the support from the entire University to promote “positive social change on campus and beyond” (Cory, White, & Stuckey, 2010, p. 29). Over the past couple of years, Syracuse University has become an integral part in the developing research on disability studies and an activist for implementing accommodations on college campuses for students with disabilities.

Questions arise when learning how to close the gap between disability services and disability studies at higher education institutions such as “what is the meaning we
make of disability, and how may this inform our practice?” (Strauss & Sales, 2010, p. 81). One way to answer this question is through collaboration. In 2007, The University of Arizona (UA) created a resource center for students and faculty with disabilities. The primary goal behind this resource center was to

Create the premier interdisciplinary center in the world for uniting theory and practice in disability-related research, teaching, practice, and service that contributes to social change (Strauss et al, 2010, p. 82).

As seen by the goal of UA’s Center of Disability, collaboration and need for social change was the backbone for this movement. The overwhelming responsiveness this Center has received over the past year has been tremendous and empowering. Some examples include receiving directed funding for research and program development, collaboration opportunities with other organizations and institutions, and the redesigning of curriculum for the Disability Studies program delivered by instructors in the College of Education at UA (Strauss et al, 2010). The presence of such empowerment has created more awareness and influenced faculty, staff, and students to re-visit their delivery and interactions with students with disabilities (Strauss et al, 2010).

Investment from faculty, staff, parents, students and the surrounding community is an important aspect to engaging and sustaining students with disabilities in participating in class and attending events on-campus (Cory, White, & Stuckey, 2010). “Engagement behaviors are largely motivated by the student’s personal belief system…when faced with a learning task, students will behave according to these beliefs that shape their identity as a student” (Rachal, Daigle & Rachal, 2007). Students with
learning disabilities often lack the confidence in their own abilities to achieve high marks in academics. Therefore, support from those around them is necessary. However, barriers such as negative stereotypes and the stigma attached to the phrase “learning disabilities” can hinder students’ willingness to reach out to others for help in school.

Low self-confidence in students with disabilities at the college level is a common occurrence. Higbee (2003) compiled various studies that utilize Universal Design (UD) and Universal Instructional Design (UID) to promote inclusiveness. Accommodations created for students with disabilities often require them to be distant, absent, and excluded from the main group. The students might be getting the extra help they need on assignments and tests, but at the expense of also feeling excluded and “different” (Higbee, 2003). One study suggests proposing a “new label for the construct: preferably developmental learning delay,” which could “help to engender a cognitive shift away from the defunct conceptualization of LD [learning disability] that is linked to intelligence” (Dombrowski, Kamphaus & Reynolds, 2004, p. 371). Social inclusion and exclusion is a common characteristic and challenge people with disabilities regularly face (Cory, White, & Stuckey, 2010; Diez, 2009; Sparks & Lovett, 2009; Rachal, Daigle & Rachal, 2007; Dombrowski et al 2004; Higbee, 2003).

**Social inclusion and exclusion.** Exclusion and inclusion are polar opposites that exist on a continuum of social acceptance by other students (Diez, 2009). When there are barriers created to exclude individuals there are also practices of inclusion occurring. Both of these practices, “exclusion” and “inclusion” can be harmful socially and educationally to individuals with or without learning disabilities (Diez, 2009). Diez (2009) found a relationship between low attendance and low performance grades for
students with a learning disability. Diez (2009) discovered that students with learning disabilities were considered “vulnerable to exclusive processes” and “at a disadvantage when it comes to employment and financial self-sufficiency” (p. 164). Despite the fear some students with learning disabilities might have when it comes to self-disclosing their struggles to the university, faculty and staff have expressed interest and commitment to assisting students with learning disabilities, including spending extra time working with them (Sparks & Lovett, 2009).

Lack of full disclosure on the part of the students with learning disabilities continues to be a documented problem (Barnard-Brak, Lechtenberger & Lan, 2010; Marshak, Van Wieren, Raeke Ferrell, Swiss & Dugan, 2010). A recent study on using accommodation strategies with students with learning disabilities reported that only nine percent of the student population submitted information pertaining to a learning disability and of that nine percent only one to three percent decided to seek out assistance (Barnard-Brak et al, 2010, p. 412). Despite the low number of students willing to risk disclosure of a learning disability, there are individuals and universities looking to reverse the stigma that comes with having a learning disability (Barnard-Brak et al, 2010).

The practice of inclusion by faculty and staff at universities can make a tremendous impact on the perceptions of the students with learning disabilities (Mull, Sitlington & Alper, 2001; Orr & Hammig, 2009; Guzman & Balcazar, 2010; Strauss & Sales, 2010; Gabel, 2010; Cory, White & Stuckey, 2010). Since this is so important, postsecondary institutions must also focus on the proper training and provide resources to faculty and staff who interact with and work alongside students with learning disabilities (Mull et al, 2001). Inclusive instructional practices included the use of universal design
principles (UDL), which can be implemented properly by faculty and staff if clear goals are set and guidelines have been established (Orr et al, 2009; Lee & Templeton, 2008). To reduce the risk of exclusion, faculty and staff should have a basic working knowledge of the procedures and accommodations the Office of Disability Services (ODS) offers their students. For example, knowing and understanding why a student might need extended time on a test. “ODS has sometimes needed to communicate to specific faculty members” that “reasonable accommodations” are vital and necessary and not a luxury (Marshak, Wieren, Ferrell, Swiss and Dugan, 2010, p. 158).

Marshak, Wieren, Ferrell, Swiss and Dugan (2010) found five major themes that contribute to barriers students with learning disabilities face in terms of the relationship and interactions with faculty, staff, peers, and professors. These five themes were identity issues, desire to avoid negative social reaction, insufficient knowledge, perceived quality and usefulness of services, and negative experiences with professors (p. 154).

The themes encompassed the basic feelings of students with learning disabilities that experience inclusion and exclusion practices at the postsecondary level (Marshak, et al, 2010). Included in the themes were a desire to separate the college identity from the previous identity, which carried with it disabled, and a desire for independence (2010). Students wanted to shed the stigma of ‘learning disabled’ (2010). When it comes to inclusivity and understanding from professors Marshak et al (2010) found that despite the fact professors and other faculty receive a letter from Office of Disability Services (ODS) regarding any accommodations a student may need, “some faculty do not follow
through” (p. 158). Because of this reaction “some students did not insist on the accommodations in light of faculty dismissal of issues” (p. 158).

Disabilities

Introduction. The Association on Higher Education And Disabilities (AHEAD) role “is to improve the quality of services provided to students with disabilities” (Guzman & Balcazar, 2010, p. 48). As with any office or area of a university, Disability Services’ on college campuses has undergone changes and challenges (Guzman et al, 2010). One of these challenges included the limitations Section 504 of the Rehabilitation Act of 1973 had on some institutions because the programs offered were too specific and could not cater to larger groups of disabilities (2010, p. 49). This supports the importance of Individualized Education Plans (IEP) and the implementation of more universally accommodating strategies (Lee & Templeton, 2008; Guzman et al, 2010). The Universal Design for Learning (UDL) is one of those universally accepted accommodations used by people with or without disabilities (Lee et al, 2008). UDL is composed of seven principles: “equitable use, flexibility, simple and intuitive, perceptible information, tolerance for error, low physical effort, and size and space for approach and use” (Lee et al, 2008, p. 214). These principles are applied in education to ensure equal access, while at the same time providing challenges to students (2008).

Office of disability services.

Overview. Mull, Sitlington and Alper (2001) conducted a review and analysis on 26 articles regarding postsecondary education for students with learning disabilities. Mull et al (2001) analyzed the components and characteristics of services for Disability
Services. They were assessment services, program accommodations, support services, and instructional adjustments. Categories included in assessment services most often were documentation of a learning disability, a personal interview, achievement and ability level assessments, and use of curriculum-based instruction (2001). “The majority of recommendations emphasized the need to document a LD [learning disability] and the student’s present level of performance” (2001, p. 103). Program accommodations included flexibility in scheduling, priority in registration, and provided longer time to complete the program (2001).

Support services summarized the need for instructional learning strategies, some more specific than others (i.e. assistive technology). Other strategies included study skills, time management, note taking strategies, and memory strategies (Mull, Sitlington & Alper, 2001). Also mentioned in this category were suggestions for “transition planning for students graduating from a postsecondary institution into adult life” (Mull et al, 2001, p. 103). Instructional adjustments included accommodations such as “tests read aloud, taped tests, large-print tests, or tests taken outside of the classroom environment” (2001, p. 103). Students with learning disabilities process information at a different pace and therefore, accommodations such as assistive technology services, tape-recorded lectures, recorded books, and note-taking modifications are necessary (2001). To develop effective programs for students with disabilities there needs to be a better understanding “of needs and characteristics of LD college students” in order to “make decisions about adoption of service delivery models (i.e. remediation of basic skills and accommodations)” (Hughes & Smith, 1990, p. 66)
Current study. The current study included the use of a survey distributed to college students registered with the Office of Disability Services (ODS) at a four-year liberal Southeastern mid-sized university. The primary focus for this study was on learning disabilities; however, students registered with Office of Disability Services (ODS) also face sensory and physical disabilities. Therefore, the researcher could not limit, restrict, or assume categories of disabilities a student taking the survey may or may not have. Additionally, Office of Disability Services (ODS) sponsored and supported this research.

The mission for the Office of Disability Services (ODS) for the university (where this research was conducted) is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience (www.jmu.edu/ods/Brochure.shtml). Once admitted to the university, the student must submit proper paperwork and recent comprehensive and professional documentation. The office then contacts the student to set up an appointment to meet one-on-one to schedule necessary and desired accommodations and to complete the registration process (www.jmu.edu/ods/Onceadmitted.shtml).

In order to be eligible for accommodations, a student must have the correct documentation and be inhibited by one or more challenges that limit or effect life activities (www.jmu.edu/ods/Eligible.shtml). The application to gain access to services and accommodations provided by Office of Disability Services (ODS) asks questions such as, major, minor, academic year, where he/she learned of the services, the disability (or disabilities) he/she has and what accommodations he/she is seeking. The disabilities listed on the application are brain injury, ADD/ADHD, blind/visual impairment,
deaf/hard of hearing, developmental disability, health impairment, language impairment, learning disability, orthopedic impairment, psychiatric disability, speech impairment, and other (which include chronic illness, psychological, autism spectrum, etc.)

(http://www.jmu.edu/ods/wm_library/disability_services_app_8_6_10_(2).pdf). The following matrices identify the disabilities for which Office of Disability Services (ODS) provides services. The first matrix focuses on sensory disabilities and the second matrix focuses on physical disabilities. Both sections include types of accommodations Office of Disability Services (ODS) provides and support from other literature surrounding this topic.

*Sensory disabilities.*

**Table 5.**

*Sensory Disabilities (ODS)*

<table>
<thead>
<tr>
<th>Sensory Disabilities</th>
<th>Accommodations Offered</th>
</tr>
</thead>
</table>
| Deaf/Hearing Impairment                       | -Auxiliary aids  
                                          | -AT devices (such as text-to-speech)                        |
| Vision Impairment/Blindness                   | -Braille  
                                          | -Screen-reading system                                      |
|                                              | -Alternative text (alt-text)                                |
| Psychological (Depression, Bipolar, Anxiety Disorder) | -Individually tailored in consultation with student’s physician |
| Speech (Stuttering, no voice box, etc.)       | -Individually tailored in consultation with student’s physician |
| Autism Spectrum (Autism, Asperger’s)         | -Individually tailored in consultation with student’s physician |

Students with vision and hearing impairments have trouble communicating with others, so AT devices such as text-to-speech are used to enhance reading and writing
Screen-reading systems and auditorily read aloud review of papers with spelling and grammar are two other services used by the visually impaired (Brown, 1992). Other AT devices includes closed captioning, animated sign language, language dictionary, and a beneficial communication technology such as instant messaging (Lee et al, 2008).

Mostly utilized by students with ADHD, dyslexia, and low vision and/or blindness is an accommodation called alternative-text (alt-text). Alt-text offers course materials and textbooks in alternative formats, such as mp3, large print, e-text, and more (www.jmu.edu/alt-text/). For students with more severe vision impairments, higher education professionals should focus on “environmental cues, including colors and contrasts” (Lee & Templeton, 2008, p. 215). Other device features include “text-to-speech output (i.e. talking calculators and books on tape), tactile basis (i.e. Braille), or magnification (magnifying glasses)” (Lee et al, 2008, p. 215). Another feature of assistive technology for the blind is called a screen-reading system, which “becomes the “eyes” of the blind computer user” (Brown, 1992). What is being shown on the screen is sent to the speech synthesizer, which translates the code into English. The speech outputs can be found for varying levels of blindness (Brown, 1992).

The Office of Disability Services (ODS) offers a program called Learning Strategies Instruction (LSI), which works with students individually to enhance weaknesses and determine strengths based on course load demands and personal study and work habits. Topics offered are reading, test taking and test anxiety, studying, stress management, note-taking, memory, time management, and personalized learning assessments (http://www.jmu.edu/ods/LSI.shtml). Typically students that use this service
need help with organization, time management, extended time on tests, and a way to manage stress, which can include psychological (depression, anxiety disorder, bipolar) (http://www.jmu.edu/ods/LSI.shtml). To be noted: LSI is not just for students with disabilities, it is also offered to non-disabled students at the university.

*Physical disabilities.*

**Table 6.**

*Physical Disabilities (ODS)*

<table>
<thead>
<tr>
<th>Physical Disabilities</th>
<th>Accommodations Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility Impairment</td>
<td>-Keyboard positioning, keyboard access, etc.</td>
</tr>
<tr>
<td>Orthopedic Impairment (Cerebral Palsy, Muscular Dystrophy, etc.)</td>
<td>-Keyboard positioning, keyboard access, etc.</td>
</tr>
<tr>
<td>Chronic Illness (like Crohn’s disease, cancer, etc.)</td>
<td>-Individually tailored in consultation with student’s physician</td>
</tr>
<tr>
<td>Spinal Cord Disability</td>
<td>-Individually tailored in consultation with student’s physician</td>
</tr>
<tr>
<td>Traumatic Brain Injury</td>
<td>-Individually tailored in consultation with student’s physician</td>
</tr>
</tbody>
</table>

Office of Disability Services (ODS) at the university of study also offers students with physical disabilities an alternative text (alt-text) accommodation. As previously mentioned, alt-text provides students with disabilities an opportunity to receive course materials and textbooks in alternate forms. These include, large print, e-text, mp3, PDF, and Braille.

Students that suffer from orthopedic impairment utilize assistive technology in the following ways: keyboard positioning, keyboard access, and specialized adaptations to
control keyboard functions in order to accommodate the range of mobility (Brown, 1992). Positioning the keyboard so that it does not cause the student with the impairment to have to hyper-extend reduces the risk of “spasticity” of the muscles (Brown, 1992, p. 41). Additionally, programs on the computer that provide keyboard functions such as “automatic key repeat,” “multiple key,” providing a “latch” and “un-latch” function (such as Ctrl, Alt, and Shift keys grouping), (1992, p. 41) make using a computer for students with low mobility easier.

The last portion of the literature review discusses the second variable of the current study, identifying and managing a learning disability. This section re-introduces the definition of learning disabilities being operationalized in the current study, processes that contribute to diagnosis of a learning disability, and components that influence and affect managing a learning disability.

Learning disabilities. In the mid 1970’s educators viewed learning disabilities “as a developmental delay that would be outgrown as an individual matured” (Corley & Taymans, 1993, p. 45). The National Adult Literacy and Learning Disabilities Center (National ALLD Center) sets benchmarks and encourages awareness of learning disabilities in adults. The National ALLD Center “represented the first effort to bring together professionals in the field of adult literacy and learning disabilities on a professional advisory board” (Corley et al, 1993, p. 45). With these efforts learning disabilities started to become recognized as a lifelong condition and one that could occur at any age.
**Definition.** ‘Learning Disabilities’ is an umbrella term that encompasses disorders that include difficulties in the basic skills of processing information, written, and verbal (Corley & Taymans, 1993). A widely accepted definition created by the National Joint Committee on Learning Disabilities is as follows:

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 abilities. 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 handicapping conditions (for example sensory impairment, mental retardation, social and emotional disturbance) or with environmental influences (such as cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the result of those conditions or influences (National Joint Committee on Learning Disabilities, 1990).

College students struggling with a learning disability face barriers not faced by students without learning disabilities. Although the enrollment of students with learning disabilities at the college level is on the rise, there are still obstacles (Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Mull, Sitlington & Alper, 2001; Cosden & McNamara, 1997; Hughes & Smith, 1990). Managing a learning disability includes different aspects such as seeking out assistance and strategies to help with academics, and
feeling socially accepted by family, teachers, staff, faculty, and other students (Fuchs & Fuchs, 2001; Dagnan & Sandhu, 1999; Cosden et al, 1997).

Learning strategies and assessments. Research on disability services’ efforts and learning strategies offered to students with learning disabilities has shown to be effective and beneficial (Guzman & Balcazar, 2010; Allsopp, Minskoff & Bolt, 2005). An approach to strategies used to help students with learning disabilities is different testing tools. For example, the Learning Needs Questionnaire (LNQ), which involves a self-reporting procedure in an interview format. The LNQ evaluates learning in different categories, i.e. organization skills, test-taking skills, note taking skills, etc. (Allsopp et al, 2005). Another example is the Learning and Study Strategies Inventory (LASSI), which is a tool used to identify strengths and areas for improvement in two broad categories – cognitive and effort-related strategies (Brown, Takahashi & Roberts, 2010; Bayerl, Bryce & French, 2009; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Weinstein & Palmer, 2002). Both testing protocols can determine needs for students on an individual basis.

The LASSI is being used in the current study to provide some guidance and credibility to the survey instrument. The original version of LASSI contains 80 questions and 10 subsections of scales. These 10 scales are: attitude (ATT), motivation (MOT), time management (TMT), anxiety (ANX), concentration (CON), information processing (INP), selecting main ideas (SMI), study aids (STA), self-testing (SFT), and test strategies (TST) (Bayerl, Bryce & French, 2009; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Weinstein & Palmer, 2002). For this study, LASSI is being used to indicate where college students with a learning disability lie on the 10 scales to determine
the strengths and weaknesses in the three overarching categories, skill, will, and self-regulation (Weinstein & Palmer, 2002).

Managing a learning disability. Other aspects to managing a learning disability involve investigating and analyzing the effectiveness of the processes put in place to accommodate students with learning disabilities. The knowledge and preparation of faculty and staff who provide program recommendations, appropriate accommodations or assistance, and maintain a relationship with students with learning disabilities is critical and not always readily available at the post-secondary level (Hadley, 2007; Mull, Sitlington & Alper, 2001). On the other end, students entering college need to be aware of and prepared to decide which accommodations they want to utilize based on what they know about their learning disability (Mull et al, 2001).

Fear of being vulnerable and carrying around the label of ‘learning disabled’ is one reason why students with learning disabilities often fail to report their disability to the university they attend or teachers of their classes, as well as other students and staff (Cosden & McNamara, 1997). Cosden et al (1997) stated “students with LD [learning disabilities] appear to be more vulnerable to academic stress and failure than college students without LD” (p. 2). This perception of self is affected by social influences and environmental surroundings (1997) and “social comparison is likely” and common (Dagnan & Sandhu, 1999, p. 373). Adjusting to a college environment is included in the social influences and environmental surroundings, which can put extra stress on students with learning disabilities (Dagnan et al, 1999; Cosden et al, 1997). Teachers lower expectations for their students with learning disabilities, but this only prevents success. Instructors, faculty, and staff must be willing to accommodate those students with
learning disabilities on an individual basis. Expecting higher achievement can increase performance for a student with a learning disability (Fuchs & Fuchs, 2001).

**Office of disability services and learning disabilities.** The Office of Disability Services (ODS) at the institution of study offers a variety of accommodations used primarily by students struggling with issues that come with a learning disability. As described in the definition of learning disabilities being operationalized in the current study, students with a learning disability struggle with note-taking, essay writing, reading, speaking, and/or mathematical abilities (National Joint Committee on Learning Disabilities, 1990). The Office of Disability Services (ODS) offers accommodations such as note-taking skills or a designated note taker, alternative text options (i.e. mp3, large print), extended time on tests, preferential seating (i.e. sitting in the front of class), and mentoring. Upon registering for assistance at the university, the student sits down with someone in the Office of Disability Services (ODS) to determine accommodations needed. The student is always welcome to request more services as he/she desires (http://www.jmu.edu/ods/Accommodations.shtml).

**Summary of Literature Review**

The current study investigated and examined the effectiveness of university sponsored educational strategies (formal and informal) used by students with learning disabilities. There has been a rise in enrollment and an increase in the population of students with learning disabilities at the postsecondary level (Hadley, 2007; Allsopp, Minskoff & Bolt, 2005; Cosden & McNamara, 1997; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Sparks & Lovett; 2009; Hughes & Smith, 1990; Mull, Sitlington &
Alper, 2001; Orr & Hammig, 2009; Barnard-Brak, Lechtenberger, & Lan, 2010; Nalavany, Carawan, & Rennick, 2010). Learning strategies used by college students with learning disabilities proved to be effective in increasing self-efficacy and improved grades for those struggling with a learning disability at many institutions (Hadley, 2007; Allsopp et al, 2005; Cosden et al, 1997; Sparks et al, 2009; Hughes et al, 1990). These learning strategies included assistive technology, mentoring, testing and accommodations through Disability Services’ offices, educated staff and faculty, and support structures such as family and peers (2007; 2005; 1997; 2009; 1990).

In order to determine the effectiveness of learning strategies utilized by students with learning disabilities at the university of study, the researcher conducted a mixed-methods approach of surveys and interviews. The following chapters go into depth about the methodology employed to discover the use of university sponsored educational learning strategies by students with learning disabilities.
Methodology

Introduction

This study measured the effectiveness of university sponsored educational strategies (formal and informal) for students struggling with learning disabilities. The two variables are:

1. The effectiveness of university sponsored educational strategies (formal and informal) for students with learning disabilities and
2. How individuals react to and manage their learning disability.

This section describes the research design, identifies and explains the sample, discusses the data collection instruments, describes the data analysis, discusses internal and external threats and justifies intentions behind the research method chosen. First, this section addresses the research design and explanation about the procedures chosen for gathering data in this study.

Description of Research Design

The research design chosen for this research is a mixed-methods design. More specifically, this study used an explanatory design, which can be described as “…the researcher first carries out a quantitative method and then uses a qualitative method to follow up and refine the quantitative findings” (Fraenkel & Wallen, 2009, p. 561). This design was chosen to combine procedures in order to get the most in-depth and detailed responses about students with learning disabilities and the learning strategies they use. One study showed great success with the use of basic survey questions and then gathering
narratives of students’ experiences with their learning disability (Mortimore & Crozier, 2006). The qualitative part of the study focused on an exploratory design, which was selected “in order to focus on gaining a holistic understanding and meaning” of what students with learning disabilities are experiencing (Marshak, Van Wieren, Raeke Ferrell, Swiss & Dugan, 2010, p. 152).

After a review of literature on this topic and an examination of methods the research question and the hypothesis derived are as follows:

**RQ 1:** In what ways do university sponsored educational strategies (formal and informal) provide methods to overcome difficulties related to personal academic struggles in school for students with learning disabilities?

From this question the hypothesis was created:

**HQ 1:** If college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom.

**Description of Population and Sample**

The population for the study was freshmen to graduate level students, ages 18-24 enrolled at a four-year liberal Southeastern mid-sized university and were reached in two different ways. Eight participants were registered with the Office of Disability Services (ODS) for academic assistance. These eight participants were reached through a contact in Office of Disability Services (ODS) who emailed the consent and link to students registered for an accommodation called alternative text. These students are registered,
which means the student has provided Office of Disability Services (ODS) with the appropriate documentation of a learning disability to receive academic accommodations. The components that are included in the documentation of a learning disability are as follows:

1. Provide a current profile of functioning and needs (also to include an individualized education plan (IEP))
2. Demonstrate comprehensive assessment (this includes testing in aptitude, academic achievement and information processing)
3. Be documented by appropriately credentialed specialists
4. State clearly the functional impact of disability, and
5. Any other documentation relevant to a student’s learning environment (http://www.jmu.edu/ods/LDGuide.shtml#_II._Documentation).

The first attempt at collecting data via survey format only received eight completed responses, so the researcher went back to the Institutional Review Board (IRB) and requested a change to the original protocol. This request entailed adding an incentive, two $20 gift cards for students to be more inclined to take the survey. Upon approval in late January 2012, the researcher re-sent the cover letter, consent form, and survey link to the Disability Specialist in the Office of Disability Services (ODS) to re-send to the approximately 190 students registered for the alternative text accommodation. After a couple of weeks, there were only eight completed surveys, so the researcher went back to the IRB to try a different method in reaching students. Upon approval by the IRB for another change, the researcher submitted a bulk email to reach all students at the university. The survey was re-launched the second week of February 2012 and responses
were collected until Friday, February 24, 2012. The survey went out to about 18,000 students and collected an additional 32 completed responses, making the sample size 40 responses total for the survey portion of the study. The letter of consent and permission can be found as Appendix A. The complete IRB form for this study can be found as Appendix B.

Since the study is utilizing a mixed-methods design, the quantitative portion can be described as using purposive sampling (Lindlof & Taylor, 2009, p. 95). At the end of the survey, the participant is re-directed to another site where he/she can put his/her name and email if interested in participating in a 20-minute interview with the researcher. If the participant decided to participate in an interview, the researcher contacted him/her within the week to set up an interview. Before the start of an interview, students read and signed the letter of consent. Upon the completion of an interview, the researcher transcribed the interview and began the coding process in search of themes within 24-48 hours of an interview. This was to ensure an accurate depiction of the story being told (Lindlof & Taylor, 2002, p. 214). There were three people interviewed for the current study.

**Description of Participants**

Due to the nature of the present study, the anonymous survey included a cover letter with the researcher’s contact information, name and phone number, as well as statements about consent and an online link to the *Qualtrics* survey. The cover letter, consent form, and survey link were sent in two ways:
1. Through the Disability Specialist in the Office of Disability Services (ODS), who in turn sent along to the students registered with Office of Disability Services (ODS) for academic assistance and

2. Through the university’s bulk email system sent to all undergraduate and graduate students.

Upon clicking on the link the student consented to participate in the study.

Approximately 190 students received the survey through Office of Disability Services (ODS) and approximately 18,000 students received the survey through the university’s bulk email system.

**Anonymity and Confidentiality of Data**

All data collected from the surveys was anonymous. Students taking the survey were not asked to provide their name or email. At the end of the survey, participants were re-directed to a separate site and survey to fill out their name and email to be entered in the raffle for the gift cards. This was also the survey where participants could (voluntarily) sign-up to participate in a one-on-one interview with the researcher. Thus, the researcher had no way of knowing whether the students who responded both to the survey and the request for an interview acknowledged having a learning disability.

The data collected from both the survey and the interviews was intentionally safe guarded as follows: the survey data was housed in Qualtrics, a survey database system that requires a password to access, in which the researcher only knew, and all raw interview data was kept under lock and key in Memorial Hall. Each participant interviewed was given a letter and a number and referred to by that letter and number
combination from that point forward to ensure participants remained anonymous (i.e. A1, A2, A3). All original recordings of the interviews were deleted after each session was transcribed.

**Description of Data Collection Instruments**

The instruments used for data collection were a survey and individual interviews. The survey was created using the program, *Qualtrics*, an online software specifically designed for creating surveys, (http://www.qualtrics.com/) and appears as Appendix C in this paper. The survey contained 11 questions that addressed participants’ learning disability, questions related to learning strategies previously and currently being used through the Office of Disability Services (ODS), and the effectiveness of those learning strategies. The interview protocol was semi-structured and asked questions about personal experiences with the Office of Disability Services’ (ODS) accommodations, interactions with other students and instructors, and suggestions or recommendations for Office of Disability Services (ODS) to further help students with learning disabilities in the future.

**Survey protocol.** Some of the questions on the survey were pulled from the Learning and Study Strategies Inventory (LASSI), a self-report assessment of learning strategies and skill, which has been employed by many institutions and is used by the institution of this study in some capacity in the Office of Disability Services (ODS) (Bayerl, Bryce & French, 2009; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008, Weinstein & Palmer, 2002).
This test is often used as a diagnostic tool to assess the areas of cognitive and effort-related strategies to create a profile of strengths and weaknesses of a student (Weinstein & Palmer, 2002). The original version of LASSI contains 80 questions and 10 subsections of scales. These 10 scales are:

- Attitude (ATT)
- Motivation (MOT)
- Time management (TMT)
- Anxiety (ANX)
- Concentration (CON)
- Information processing (INP)
- Selecting main ideas (SMI)
- Study aids (STA)
- Self-testing (SFT)
- Test strategies (TST)

(Bayerl, Bryce & French, 2009; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Weinstein et al., 2002). For this study, LASSI is being used to indicate where college students with a learning disability lie on the 10 scales. Due to the time constraints and small sample size of the current study, statements from each subsection are limited. The statements are arranged on a 4-point Likert scale, (1) being strongly disagree and (4) being strongly agree. The neutral option is not being used in order to eliminate uncertainty in responses.

A subset of questions taken from the LASSI was used in the study. The statements were grouped in the following way because of their relationship to one another:

1. Information processing, selecting main ideas, and test taking strategies make up the skill component of strategic learning,
2. Anxiety, attitude, and motivation make up the will to learn component of strategic learning, and
3. Concentration, self-testing, study aids, and time management, make up the self-regulation piece of strategic learning

Other questions on the survey pertained to emotional support and types of programs or learning strategies used through the Office of Disability Services (ODS (Bayerl, Bryce & French, 2009; Kirby, Silvestri, Allingham, Parrila & LaFave, 2008; Weinstein & Palmer, 2002).

To ensure validity and reliability, all the questions on the survey required an answer. Participants could not proceed until they answered the current question. The survey was released upon approval of the Institutional Review Board (IRB) at the university of the study, January 2012, and remained open until February 24, 2012. The survey was open for this duration of time because the researcher was not getting enough responses. To combat this issue, the researcher had to go back to the IRB to request a change to the original protocol. These changes entailed providing an incentive (gift cards) and using a different method to reach students (bulk emailing system). Another check for validity and reliability was the researcher piloted the survey questions to classmates for clarity and suggestions before launching the survey. The survey protocol can be found as Appendix C.

**Interview protocol.** Semi-structured interviews were conducted to gain personal insight into the usage of university sponsored educational strategies (formal and informal) and their effectiveness on individual students using them (Lindlof & Taylor,
The researcher interviewed three students. Participants were two male sophomores with dyslexia and one female senior with dyslexia and ADHD. Each interview was audio recorded and began after participants were informed of the research study’s design and goals. All participants provided informed consent by signing a consent form prior to the interview. This form outlined the purpose and objectives of the study and provided a statement about voluntary choice to withdraw at any time during the study should they feel uncomfortable or no longer wish to continue. By using the in-process writing strategy, transcriptions of interviews happened 24-48 hours after an interview took place (Lindlof et al., 2002, p. 214). Brief notes were taken during each interview. This was to ensure the most accurate re-telling of stories and to keep information as fresh in the researcher’s mind as possible. The interview protocol can be found as Appendix D.

In order to ensure (as much as possible) validity and reliability during interviews all required documentation was presented to each participant (i.e. IRB guidelines, confidentiality clause, brief overview of the study, and questions that would be asked), as well as the sessions being audio recorded for the most accurate depiction. Another check for validity and reliability was the researcher piloted the interview questions to classmates for clarity and suggestions before conducting interviews. Due to the sensitive nature of the research topic and the need for self-disclosure during interview sessions, the researcher made an arrangement with the Office of Disability Services (ODS) to have a professional on call for assistance or consultation should a student being interviewed become emotional or need psychological support.

**Description and Justification of the Statistical Techniques**
The details of procedures and instruments chosen for this research design have been explained throughout this methods section. To summarize these ideas, this study utilized a mixed-methods approach. The researcher analyzed the survey responses using descriptive statistics, frequency charts, and the Learning and Study Strategies Inventory (LASSI) (Weinstein & Palmer, 2002). The researcher used open and axial coding methods to analyze interviews. Both ways of gathering data provided insight into the effectiveness of university sponsored educational learning strategies (formal and informal).

To measure the level of personal academic success as hypothesized, the researcher used the results from survey responses and interviews to interpret the many ways and forms students manage their disability and what works best for them. Specifically, the researcher used the LASSI scale to assess will, skill, and self-regulation and strategies for learning of the participants. Additionally, the researcher created four items that pertained specifically to respondents overall experience with the Office of Disability Services (ODS). The four items dealt with effective strategies for overcoming learning challenges, self-identified learning disabilities, and specific assistive technology and/or learning strategy aids they may have used. In terms of emotional support and mentoring, the researcher developed one scale item to measure family support, faculty support, and peer support.

Additionally, a set of qualitative semi-structured interview questions were developed to ascertain participants challenges with learning disabilities, successful learning strategies and support, and mentoring from family, teachers, and peers. Both the LASSI scaled items, the six additional researcher developed items, and the qualitative
semi-structures interview questions directly relate to the hypothesis, which is if college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom.

The duration of data collection varied between the two methods being used, but overall took about three months from the launch of the survey to the last interview transcription. Interviews were scheduled dependent upon the availability of participants. The duration of these interviews was 20—25 minutes and each was recorded for transcription. These interviews remained confidential. The semi-structured interview questions protocol can be found as Appendix D.

The following section discusses the methodology processes in more depth. The researcher used frequency tables to display survey results and the Learning and Study Strategies Inventory (LASSI) (Weinstein & Palmer, 2002) to evaluate survey responses on the three scales, will, skill, and self-regulation in relation to personal learning strategy usage. The interviews were analyzed through open and axial coding (Denzin & Lincoln, 2000). The next chapter reveals the results and analyzes the responses.
Data Analysis

Introduction

This mixed-methods study measured the effectiveness of university sponsored educational strategies (formal and informal) on students struggling with learning disabilities. The two variables were:

1. The effectiveness of university sponsored educational strategies (formal and informal) for students with learning disabilities and
2. How individuals react to and manage their learning disability.

This section presents and analyzes findings discovered through a survey and interviews.

The research question and hypothesis of this study were:

**RQ 1:** In what ways do university sponsored educational strategies (formal and informal) provide methods to overcome difficulties related to personal academic struggles in school for students with learning disabilities?

**HQ 1:** If college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom.

Description of Data Analysis

**Quantitative methods.** The process used for analyzing the survey responses was through Qualtrics and SPSS. In SPSS, descriptive statistics were reviewed and analyzed and frequency charts were created. The descriptive statistics showed the mean, median, and mode for each question and grouping of statements. The frequency charts displayed
how often the participant responded with strongly disagree (1), disagree (2), agree (3), or strongly agree (4) on each statement and the percentage of responses within questions. Another way the quantitative results were analyzed was by using the Learning and Study Strategies Inventory (LASSI) (Weinstein & Palmer, 2002).

The scales of LASSI primarily analyze three components: skill, will, and self-regulation (Weinstein & Palmer, 2002, p. 4). The skill component includes information processing, selecting main ideas, and test strategies, the will component includes anxiety, attitude, and motivation, and the self-regulation component includes concentration, self-testing, study aids, and time management (Weinstein & Palmer, 2002, p. 5). The following matrix shows the components and descriptions of each scale.

Table 7.

Definitions of LASSI Scales

<table>
<thead>
<tr>
<th>Skill Component</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Processing Scale (INP)</td>
<td>“Assesses how well students’ can use imagery, verbal elaboration, organization strategies, and reasoning skills as learning strategies to help learn new information and skills and to build bridges between what they already know and what they are trying to learn and remember” (Weinstein &amp; Palmer, p. 5).</td>
</tr>
<tr>
<td>Selecting Main Ideas Scale (SMI)</td>
<td>“Assesses students’ skill at identifying important information for further study from less important information and supporting details” (Weinstein &amp; Palmer, p. 5).</td>
</tr>
<tr>
<td>Test Strategies Scale (TST)</td>
<td>“Assesses students’ use of both test preparation and test taking strategies” (Weinstein &amp; Palmer, p. 5).</td>
</tr>
<tr>
<td>Will Component</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Anxiety Scale (ANX)</td>
<td>“Assesses the degree to which students worry about school and their academic performance” (Weinstein &amp; Palmer, p. 5).</td>
</tr>
<tr>
<td>Attitude Scale (ATT)</td>
<td>“Assesses students’ attitudes and interests in college and achieving academic success” (Weinstein &amp; Palmer, p. 5).</td>
</tr>
<tr>
<td>Motivation Scale (MOT)</td>
<td>“Assesses students’ diligence, self-discipline, and willingness to exert the effort necessary to successfully complete academic requirements” (Weinstein &amp; Palmer, p. 5).</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Self-Regulation Component</strong></td>
<td></td>
</tr>
<tr>
<td>Concentration Scale (CON)</td>
<td>“Assesses students’ ability to direct and maintain their attention on academic tasks” (Weinstein &amp; Palmer, p. 6).</td>
</tr>
<tr>
<td>Self-Testing Scale (SFT)</td>
<td>“Assesses students’ use of reviewing and comprehension monitoring techniques to determine their level of understanding of the information or task to be learned” (Weinstein &amp; Palmer, p. 6).</td>
</tr>
<tr>
<td>Study Aids Scale (STA)</td>
<td>“Assesses students’ use of support techniques, materials or resources to help them learn and remember new information” (Weinstein &amp; Palmer, p. 6).</td>
</tr>
<tr>
<td>Time Management Scale (TMT)</td>
<td>“Assesses students’ use of time management principles for academic tasks” (Weinstein &amp; Palmer, p. 6).</td>
</tr>
</tbody>
</table>

The LASSI was used to establish credibility when analyzing the results. There were two questions that corresponded with eleven statements pertaining to the LASSI. These responses were then compared and contrasted to learning strategies offered by the Office of Disability Services (ODS) and used by students registered with Office of Disability Services (ODS). The LASSI also offered insight into other approaches to use for learning.
difficulties by college students with a learning disability.

Lastly, question five on the survey asked the participants to state the single learning strategy that has helped them the most in managing their learning disability and why. After organizing the responses into a chart and recording the frequency of responses, the researcher used open and axial coding methods to find common themes within the strategies provided. These themes were then compared and contrasted to the themes that emerged from the interview responses.

**Qualitative methods.** The process for analyzing the qualitative data was collected through interviews. There were three students interviewed and each interview lasted approximately 15 to 20 minutes. Each interview was audio recorded and later transcribed. Upon completion of interviews and transcription, the researcher analyzed the interview responses through open and axial coding, searching for themes and categorizing that information into a codebook.

The current study employed a two-level coding process (open and then axial), and recording notes during interviews (Lindlof & Taylor, 2002; Denzin et al, 2000). “Coding forces the researcher to make judgments about the meaning of contiguous blocks of text” (Denzin et al, 2000, p. 780 & p. 782). The coding process for the current study started with finding themes. As stated by Patton (2002), the first step in content analysis is “developing some manageable classification or coding scheme” (p. 463). In order to discover those classifications and schemes, the researcher searched for themes.

Themes recurring in previous literature reviewed for the current study were used as a framework. The researcher searched the transcriptions or texts in search of
“processes, actions, assumptions, and consequences” (Denzin & Lincoln, 2000, p. 780).

Through this process, codes were discovered. “Codes act as tags to mark off text in a corpus for later retrieval or indexing” (Denzin et al, 2000, p. 782) and can be described as “short hand devices to label, separate, compile, and organize data” (Lindlof & Taylor, 2002, p. 216). Codes were then organized into a codebook. The codebook was then refined further as the researcher identified, classified, and narrowed down codes and established major themes.

**Results: Survey Questions**

**Description of sample.** There were a total of 40 survey participants. The description of the sample included year at the university (Figure 5), age range (Figure 6), disability (Figure 7), and overall interactions with the Office of Disability Services (ODS) (Table 8).

*Figure 5. Year at the University of Participants*
There were four freshmen, thirteen sophomores, twelve juniors, eight seniors, one fifth year, and two graduate students. The majority of participants were sophomores and juniors at the university.

![Age at the University](image)

**Figure 6.** Ages of Participants

Out of the 40 participants twenty-four people were between the ages of 18-20, twelve people were between the ages of 21-23, and four of the people were between the ages of 24-26. The majority of participants were between the ages of 18-20.
The survey asked participants to select the disability they identify with. They were able to select more than one. The majority of participants identified with Attention Deficit Hyperactivity Disorder (ADHD) (22 people), and the next largest group was dyslexia (12 people). Disabilities listed and offered by the Office of Disability Services (ODS) that were not selected were: Autism Spectrum, Speech, Spinal Cord Disability, and Traumatic Brain Injury. These are not displayed in the pie chart.

Another question that contributes to the description of the sample for this study is the overall experiences and interactions participants’ have/had with the Office of
Disability Services (ODS). The following chart depicts the frequency tables of the three statements that asked participants to respond using a 4-point Likert scale (1= strongly disagree, 2= disagree, 3= agree, and 4= strongly agree) based on their interactions with Office of Disability Services (ODS).

Participants (37.5%) agreed that the Office of Disability Services (ODS) has provided them with strategies to overcome learning challenges. Participants (45%) disagreed Office of Disability Services (ODS) showed them how to process information provided in class. Participants (35%) strongly agreed they still utilize Office of Disability Services (ODS) for assistance for learning challenges. The following chart shows these results (Table 8).

Table 8.

Office of Disability Services Usage

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (out of 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODS provided me with strategies to overcome my learning challenges</td>
<td>SD = 4</td>
</tr>
<tr>
<td></td>
<td>D = 10</td>
</tr>
<tr>
<td></td>
<td>A = 15</td>
</tr>
<tr>
<td></td>
<td>SA = 14</td>
</tr>
<tr>
<td>ODS showed me how to process information provided in class</td>
<td>SD = 4</td>
</tr>
<tr>
<td></td>
<td>D = 18</td>
</tr>
<tr>
<td></td>
<td>A = 15</td>
</tr>
<tr>
<td></td>
<td>SA = 14</td>
</tr>
<tr>
<td>I still utilize ODS for assistance for my learning challenges</td>
<td>SD = 7</td>
</tr>
<tr>
<td></td>
<td>D = 8</td>
</tr>
<tr>
<td></td>
<td>A = 11</td>
</tr>
<tr>
<td></td>
<td>SA = 14</td>
</tr>
</tbody>
</table>
Overall, 15 out of the 40 participants agreed the Office of Disability Services (ODS) has provided students with strategies to overcome their learning challenges. The frequency tables also show that 14 out of 40 participants strongly agreed they still utilize Office of Disability Services (ODS) for assistance for their learning challenges. However, a little under half (45%) of the participants (18 out of 40) disagreed Office of Disability Services (ODS) showed them how to process information provided in class. Statement two also had 15 participants respond with agree, which means 37.5% of participants (15 out of 40) that utilize or have utilized learning strategies provided by the Office of Disability Services (ODS) in classes agree the office has contributed to this process.

In summary, the description of the sample surveyed were primarily sophomores (13) and juniors (12) students between the ages of 18-20 (24) who identify with having ADHD (22), agree that the Office of Disability Services (ODS) has provided them with learning strategies to overcome personal learning challenges and continue to utilize assistance, but do not agree that the Office of Disability Services (ODS) has provided them with strategies to process information provided in class. This sample description represents and illustrates a small sample of students that use the Office of Disability Services (ODS) for academic assistance at the university for the current study.

**Learning and study strategies inventory (LASSI) responses.** As explained previously, some of the questions on the survey were pulled from the Learning and Study Strategies Inventory (LASSI). This test is used as a self-report assessment of learning strategies and skill (Weinstein & Palmer, 2002). While the survey instrument did not include all of the LASSI items, the LASSI statements that were used in the survey helped to determine usage of learning strategies in an effort to make connections with other
accommodations and strategies offered by the Office of Disability Services (ODS). These statements were presented on a 4-point Likert scale (1=strongly disagree, 2= disagree, 3= agree, and 4= strongly agree). All components of the LASSI were used: will, skill, and self-regulation, as well as the eight scales: Information Processing (INP), Selecting Main Ideas (SMI), Test Strategies (TST), Anxiety (ANX), Attitude (ATT), Motivation (MOT), Concentration (CON), Self-Testing (SFT), Study Aids (STA), and Time Management (TMT). The following matrix shows what questions aligned with each component of the LASSI scales (Table 9):

**Table 9.**

*Alignment of LASSI Scales and Survey Questions*

**Key:** (Blue) = Will Components, (Green) = Skill Components, and (Purple) = Self-Regulation Components

<table>
<thead>
<tr>
<th>Scale</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Processing (INP)</td>
<td>I try to summarize or paraphrase class reading assignments</td>
</tr>
<tr>
<td>Selecting Main Ideas (SMI)</td>
<td>I can identify key points in a lecture</td>
</tr>
<tr>
<td>Test Strategies (TST)</td>
<td>I know how to study for tests in different types of courses</td>
</tr>
<tr>
<td>Anxiety (ANX)</td>
<td>I get easily discouraged by low grades</td>
</tr>
<tr>
<td>Attitude (ATT)</td>
<td>I have set educational goals for myself</td>
</tr>
<tr>
<td>Motivation (MOT)</td>
<td>I easily give up in difficult classes</td>
</tr>
<tr>
<td>Concentration (CON)</td>
<td>I am easily distracted while in class</td>
</tr>
<tr>
<td>Self-Testing (SFT)</td>
<td>I stop periodically when reading to review the content</td>
</tr>
<tr>
<td>Study Aids (STA)</td>
<td>I create or use organizational aids</td>
</tr>
<tr>
<td>Time Management (TMT)</td>
<td>I anticipate scheduling problems</td>
</tr>
</tbody>
</table>
The will components include strategies of information processing (INP), selecting main ideas (SMI), and test strategies (TST). For the statement concerning information processing (INP) participants (52.5%) agreed they tried to summarize or paraphrase class reading assignments. For the statement concerning selecting main ideas (SMI) participants (70%) agreed they identify key points in a lecture and participants (50%) agreed they review their answers to essay questions. Lastly, for the statement concerning test strategies (TST), participants (67.5%) agreed they know how to study for tests in different types of courses.

The skill components include strategies of anxiety (ANX), attitude (ATT), and motivation (MOT). For the statement concerning managing anxiety participants (45%) agreed they are easily discouraged by low grades. For the statement concerning attitude participants (42.5%) agreed they set educational goals for themselves. Lastly, for the statement concerning motivation participants (57.5%) disagreed they easily give up in difficult classes.

The self-regulation component include strategies for concentration (CON), self-testing (SFT), study aids (STA), and time management (TMT). For the statement concerning concentration participants (32.5%) disagreed they are easily distracted while in class, while at the same time, participants also (32.5%) strongly agreed they are easily distracted while in class. For the statement concerning self-testing participants (52.5%) agreed they stop periodically when reading to review content. For the statement concerning study aids participants (45%) agreed they create or use organizational aids. Lastly, for the statement concerning time management (TMT) participants (52.5%) agreed they anticipate scheduling problems.
In summary, participants agreed and demonstrated a grasp of the strategies in the will component (information processing, selecting main ideas, and test strategies). Skills in the will component include identifying key points in lectures and summarizing readings. The range of the results for this component was 50% - 70%. As seen in the table below, participants have a strong understanding of how to process information, identify main ideas, and testing strategies (Table 10).

Table 10.

Summary of Will Components

<table>
<thead>
<tr>
<th>Will Components</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Processing (INP)</td>
<td>(Agree) 21</td>
<td>52.5</td>
<td>85.0</td>
</tr>
<tr>
<td>Selecting Main Ideas (SMI)</td>
<td>(Agree) 28</td>
<td>70.0</td>
<td>87.5</td>
</tr>
<tr>
<td>Selecting Main Ideas (SMI)</td>
<td>(Agree) 20</td>
<td>50.0</td>
<td>87.5</td>
</tr>
<tr>
<td>Test Strategies (TST)</td>
<td>(Agree) 27</td>
<td>67.5</td>
<td>97.5</td>
</tr>
</tbody>
</table>

For the skill component (anxiety, attitude, and motivation), a little less than half (45%) of the participants agreed they are discouraged by low grades, and agreed (42%) they set educational goals for themselves. Similarly, a little over half (57.5%) of the participants disagreed they give up easily in difficult classes. The range of results for this component was 42.5% - 57.5%. As seen in the table below, participants have a strong understanding of remaining motivated, closely followed by managing anxiety (Table 11).
Table 11.

Summary of Skill Components

<table>
<thead>
<tr>
<th>Skill Components</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety (ANX)</td>
<td>(Agree) 18</td>
<td>45.0</td>
<td>70.0</td>
</tr>
<tr>
<td>Attitude (ATT)</td>
<td>(Agree) 17</td>
<td>42.5</td>
<td>62.5</td>
</tr>
<tr>
<td>Motivation (MOT)</td>
<td>(Disagree) 23</td>
<td>57.5</td>
<td>80.0</td>
</tr>
</tbody>
</table>

Lastly, for the self-regulation component (concentration, self-testing, study aids, and time management), a little over half (52.5%) of the participants agreed they stop periodically to review material and anticipate scheduling problems. Only 45% of participants agreed they create or use organizational aids, and about 30% of participants agreed they were easily distracted in class, while another 30% disagreed they were easily distracted in class. As seen in the table below, participants were split down the middle on the concentration scale (32.5% disagreed and 32.5% strongly agreed). The participants have a strong understanding of self-testing and time management strategies (Table 12).

Table 12.

Summary of Self-Regulation Components

<table>
<thead>
<tr>
<th>Self-Regulation Components</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration (CON)</td>
<td>(Disagree) 13</td>
<td>32.5</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>(Strongly Agree) 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Testing (SFT)</td>
<td>(Agree) 21</td>
<td>52.5</td>
<td>85.0</td>
</tr>
<tr>
<td>Study Aids (STA)</td>
<td>(Agree) 18</td>
<td>45.0</td>
<td>65.0</td>
</tr>
</tbody>
</table>
Personal learning strategies responses. Participants were asked to state what single learning strategy has helped them the most when combating their learning challenges. The frequency chart illustrates the 40 survey responses. The question on the survey was: what single learning strategy has helped you most in managing your learning disability? Why? (Table 13)
Table 13.

*Survey Response for Single Best Learning Strategy*

<table>
<thead>
<tr>
<th>Learning Strategy</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating with professors</td>
<td>5</td>
</tr>
<tr>
<td>Taking notes, note taking skills</td>
<td>4</td>
</tr>
<tr>
<td>Organization</td>
<td>4</td>
</tr>
<tr>
<td>Test management and test taking skills; testing accommodations</td>
<td>3</td>
</tr>
<tr>
<td>Time Management</td>
<td>2</td>
</tr>
<tr>
<td>Keeping a planner</td>
<td>2</td>
</tr>
<tr>
<td>Recording lectures</td>
<td>2</td>
</tr>
<tr>
<td>Assistive technology, alternative text</td>
<td>2</td>
</tr>
<tr>
<td>“Chunking” work</td>
<td>2</td>
</tr>
<tr>
<td>Relating what I’m learning to real world experiences</td>
<td>2</td>
</tr>
<tr>
<td>Medicine</td>
<td>1</td>
</tr>
<tr>
<td>Blocking out surrounding noise</td>
<td>1</td>
</tr>
<tr>
<td>How to understand what I read</td>
<td>1</td>
</tr>
<tr>
<td>Figuring out my learning style</td>
<td>1</td>
</tr>
<tr>
<td>Patience</td>
<td>1</td>
</tr>
<tr>
<td>Memorization</td>
<td>1</td>
</tr>
<tr>
<td>Making things (concepts) visual</td>
<td>1</td>
</tr>
<tr>
<td>Focus</td>
<td>1</td>
</tr>
<tr>
<td>Studying in quiet areas</td>
<td>1</td>
</tr>
<tr>
<td>Access Plan</td>
<td>1</td>
</tr>
<tr>
<td>Taking breaks</td>
<td>1</td>
</tr>
<tr>
<td>Family member assists</td>
<td>1</td>
</tr>
<tr>
<td>Sitting in the front of the class</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>
The most commonly used strategy was communicating with professors (5). One participant provided an example as follows:

*R36: “Communicating with my professors about my learning needs – they are willing to help and be accommodating if they know what I need and how to provide it.”*

The next popular personal learning strategy was note-taking skills (4). One participant provided an example as follows:

*R9: “The way I take notes; it helps me process and understand what portions of information I have absorbed or not.”*

Tied for second most popular personal strategy used by students taking the survey was organization (4). One participant provided an example as follows:

*R8: “...and my focus was working on being more organized and keeping a planner.”*

The responses provided on the personal learning strategies question were added to the themes and codes discovered through the coding of interviews, which is explained later in this section.

It should be noted that five out of the 40 responses were negative in nature. Responses of this nature were not wanting to use the Office of Disability Services (ODS) because of previous experiences (i.e. they [ODS] were not helpful when the individual needed assistance), one individual had not yet figured out learning strategies to combat his/her learning challenges, two individuals could not think of learning strategies he/she
used, and one participant responded with “N/A.” These responses were listed as “Other” in the researcher’s codebook (Appendix E). The next question analyzed on the survey was a set of statements asking about assistive technology as a learning strategy.

**Assistive technology responses.** Question nine on the survey asked participants about their experiences with assistive technology as a learning strategy/aid. Participants were prompted to respond on a 4-point Likert scale (1= strongly disagree, 2= disagree, 3= agree, and 4= strongly agree) to seven statements regarding assistive technologies. Three of the statements pertained to general usage of assistive technology. A little under half of the participants agreed (45%) they have utilized some form of assistive technology to assist them academically. Participants (32.5%) disagreed that assistive technology has helped improve (personal) academic success and another 30% of participants (32.5%) agreed that assistive technology has helped improve (personal) academic success. Participants agreed (35%) they have more confidence in their academic abilities because of the help they have received through assistive technology programs. However, in contrast, participants disagreed (32.5%) that assistive technology programs have instilled in them more confidence in their academic abilities. The following chart displays these responses (Table 14).
Table 14.

Assistive Technology Usage

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (out of 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have utilized some form of assistive technology to assist me academically</td>
<td>SD = 13</td>
</tr>
<tr>
<td></td>
<td>D = 5</td>
</tr>
<tr>
<td></td>
<td>A = 18</td>
</tr>
<tr>
<td></td>
<td>SA = 4</td>
</tr>
<tr>
<td>Using assistive technology improved my academic success</td>
<td>SD = 10</td>
</tr>
<tr>
<td></td>
<td>D = 13</td>
</tr>
<tr>
<td></td>
<td>A = 13</td>
</tr>
<tr>
<td></td>
<td>SA = 4</td>
</tr>
<tr>
<td>I have more confidence in my academic abilities because of the help I receive through assistive technology programs</td>
<td>SD = 9</td>
</tr>
<tr>
<td></td>
<td>D = 13</td>
</tr>
<tr>
<td></td>
<td>A = 14</td>
</tr>
<tr>
<td></td>
<td>SA = 4</td>
</tr>
</tbody>
</table>

Four of the statements pertained to the alternative text program (alt-text) offered by the Office of Disability Services (ODS). The participants strongly disagreed (27.5%), disagreed (30%), and agreed (32.5%) that textbooks in accessible formats were helpful in class courses. Participants (35%) agreed that using course materials in accessible formats has helped them in their classes. Participants (37.5%) agreed that using tests and quizzes in accessible formats has improved their academic success. Participants (45%) agreed that accessible formats helped them overcome their learning challenges. The following graph displays these responses (Table 15).
Table 15.

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (out of 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible formats help me overcome my learning challenges</td>
<td>SD = 10</td>
</tr>
<tr>
<td></td>
<td>D = 12</td>
</tr>
<tr>
<td></td>
<td>A = 15</td>
</tr>
<tr>
<td></td>
<td>SA = 3</td>
</tr>
<tr>
<td>The textbooks in accessible formats have helped me in my courses</td>
<td>SD = 11</td>
</tr>
<tr>
<td></td>
<td>D = 12</td>
</tr>
<tr>
<td></td>
<td>A = 13</td>
</tr>
<tr>
<td></td>
<td>SA = 4</td>
</tr>
<tr>
<td>Using course materials in accessible formats has helped me in my classes</td>
<td>SD = 10</td>
</tr>
<tr>
<td></td>
<td>D = 11</td>
</tr>
<tr>
<td></td>
<td>A = 14</td>
</tr>
<tr>
<td></td>
<td>SA = 5</td>
</tr>
<tr>
<td>Using test and quizzes in accessible formats has improved my academic</td>
<td>SD = 10</td>
</tr>
<tr>
<td>success</td>
<td>D = 12</td>
</tr>
<tr>
<td></td>
<td>A = 15</td>
</tr>
<tr>
<td></td>
<td>SA = 3</td>
</tr>
</tbody>
</table>

*Alternative Text (alt-text) Usage*

**Support structures.** Question 10 on the survey pertained to support structures.

There were five statements participants were asked to respond to using the 4-point Likert scale (1= strongly disagree, 2= disagree, 3= agree, and 4= strongly agree) regarding the level of involvement and support of family, friends, instructors/teachers, and peers. Two of the five statements asked participants to evaluate their experiences (if any) with peer-to-peer mentoring.

Participants (57.5%) agreed their family emotionally supports their learning strategies for academic success. Participants (55%) agreed that their teachers understand
their learning challenges. Participants (57.5%) disagreed their teachers proactively offer learning strategies to tackle their learning challenges (Table 16).

**Table 16.**

*Emotional Support*

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (out of 40)</th>
</tr>
</thead>
</table>
| My family emotionally supports my learning strategies for academic success | D = 2  
A = 23  
SA = 15 |
| My teachers understand my learning challenges | SD = 4  
D = 12  
A = 22  
SA = 2 |
| My teachers proactively offer learning strategies to tackle my learning challenges | SD = 4  
D = 23  
A = 12  
SA = 1 |

Participants (50%) disagreed they have benefited from peer-to-peer mentoring relationships. Participants (47.5%) disagreed they have gained more confidence in personal academic abilities because of a peer-to-peer relationship. Please note: there was no option for N/A and therefore, the absence of a not applicable response could have skewed the results to this statement (Table 17).
Table 17.

*Peer-to-Peer Mentoring Relationships*

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (out of 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have benefited from peer-to-peer mentoring relationships</td>
<td>SD = 5</td>
</tr>
<tr>
<td></td>
<td>D = 20</td>
</tr>
<tr>
<td></td>
<td>A = 13</td>
</tr>
<tr>
<td></td>
<td>SA = 2</td>
</tr>
<tr>
<td>I have gained more confidence in my academic abilities because of my peer-to-peer relationships</td>
<td>SD = 6</td>
</tr>
<tr>
<td></td>
<td>D = 19</td>
</tr>
<tr>
<td></td>
<td>A = 14</td>
</tr>
<tr>
<td></td>
<td>SA = 1</td>
</tr>
</tbody>
</table>

**Results: Qualitative Interview Questions**

**Description of sample.** There were three interviews conducted. Interviewees were two male sophomores with dyslexia and one female senior with dyslexia and ADHD. One of the male participants conveyed confidence, but seemed a little nervous when talking with the researcher. The second male lacked self-confidence and got emotional at parts during the interview, but the researcher was able to comfort and provide support to the participant without using the services of an ODS professional. The female participant conveyed herself as very confident and comfortable talking about her disability with others and the researcher. Each interview was audio recorded and began after participants were informed of the research study’s design and goals. The researcher transcribed each interview and used the process of coding to analyze the responses (Lindlof & Taylor, 2002; Denzin & Lincoln, 2000). Themes and subsets of codes can be found as Appendix E.
**Themes.** There were five themes that emerged through the coding process and sixteen codes. The themes were 1) perceptions, stigma associated with disability, 2) managing learning disability, 3) processes of Office of Disability Services (ODS), 4) support structures, and 5) feedback for Office of Disability Services (ODS).

**Theme 1: Perceptions, stigma associated with disability.** There were three codes and four sub codes that made up the first theme. 1) Self-perception (sub codes: self-worth and confidence), 2) perceived self-perceptions (sub codes: comments about interactions with others [non-disabled], i.e. people with dyslexia are unintelligent), and 3) others perceptions of learning disabled (sub code: accommodations not necessary for LD students [a remark made by a professor to the student being interviewed]).

**Theme 2: Managing disability.** Managing disability encompassed both identification of and management of personal learning challenges. There were four codes and nine sub codes of managing disability. The first code was identifying the disability, which included sub codes, diagnosis, disclosure of disability to others, and voicing struggles with learning disability. The second code was coping with the learning disability, which included sub codes, previously used assistance and previously used strategies. The third code was personal learning strategies, which included strategies used outside Office of Disability Services (ODS) and previously used to help combat learning challenges. The fourth code was demographic information, which included sub codes, family history, major, hometown, and previous schools or schooling.

**Theme 3: Processes of the office of disability services (ODS).** Processes of Office of Disability Services (ODS) included procedures and accommodations. There
were two codes and four sub codes. The first code was registration procedure. The second code was accommodations, which included sub codes, type of (accommodation), use of or frequency of (accommodation), and effectiveness of (accommodation). The majority of the interviews discussed the interviewees’ experiences with accommodations through Office of Disability Services (ODS).

**Theme 4: Support structures.** Support structures included experiences shared about previous and current support from teachers and family for learning strategies to help combat struggles with a learning disability. There were four codes that depict the support students did or did not receive. The first code was support from teachers (previously and currently), the second code was support from family (i.e. parents and siblings), the third code was support from friends, and the fourth code was support from Office of Disability Services (ODS) staff and faculty.

**Theme 5: Feedback for office of disability services (ODS).** Feedback for Office of Disability Services (ODS) was the last question on the semi-structured interview protocol (Appendix D). There were three codes for feedback for Office of Disability Services (ODS). The first code was suggestions for improvement (for accommodations and services), criticism, and relationship or interactions with Office of Disability Services (ODS) staff (i.e. building rapport with students that utilize the services).

The following table illustrates a subset of codes, the theme, and the variable and/or theory they align with for the current study (Table 18):
<table>
<thead>
<tr>
<th>Codes</th>
<th>Transcript</th>
<th>Themes</th>
<th>Variable/Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>2) Perceived self-perceptions</td>
<td>A1: “As soon as you say anything about a disability they immediately think you’re <strong>not intelligent at all</strong>, that you’re <strong>not competent</strong> and can’t do it.” (p. 1)</td>
<td>Perceptions; stigma associated with disability</td>
<td>Disability Theory; Social Cognitive Theory</td>
</tr>
<tr>
<td>2a) Sub codes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Comments on interactions with others (i.e. not intelligent, not competent)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Identifying learning disability</td>
<td>A2: “When I first got here I didn’t tell anyone I was dyslexic until like the first couple weeks into school. And then like I would try not to tell anyone that didn’t need to. So I mean, I don’t know, it’s kind of something I don’t want to share if I don’t have to.” (p. 11)</td>
<td>Managing disability</td>
<td>Identifying and managing disability</td>
</tr>
<tr>
<td>1a) Sub codes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Disclosure of disability to others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Accommodations</td>
<td>A1: “Note taking, <strong>extra time on tests.</strong> Those have been helpful for me.” (p. 2)</td>
<td>Processes of Office of Disability Services (ODS)</td>
<td>University sponsored educational strategies (formal and informal)</td>
</tr>
<tr>
<td>2a) Sub codes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Type of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Use of/frequency of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Effectiveness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) From teachers</td>
<td>A1: “My teachers in high school were very supportive and my family is very supportive.” (p. 4-5)</td>
<td>Support Structures</td>
<td>University sponsored educational strategies (informal)</td>
</tr>
<tr>
<td>2) From family members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) From friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) From ODS staff/faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Suggestions for improvement</td>
<td>A3: “Letting people know what we do and how to contact us and who to contact.” (p. 26)</td>
<td>Feedback for Office of Disability Services (ODS)</td>
<td></td>
</tr>
<tr>
<td>2) Criticism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Interactions/relationship with ODS [personal viewpoint]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary of Survey and Interview Results

The results from the selected LASSI items indicate participants lack strength in the self-regulated (46%) component and the skill component (48%), but have a strong understanding and strength in the will component (60%). Strategies participants lacked mastery in included setting educational goals, practicing strategies for reading assignments and periodically stopping to review content, using organizational aids, and anticipating scheduling problems. The following graph displays this information (Figure 8).

![Average Totals for LASSI Components](image)

Figure 8. Average Totals for LASSI Components

The results from the assistive technology portion of the survey had below 50% frequency. Thus, all of the statements ranged from 20% to 45% on the 4-point Likert scale, ranging from 1) strongly disagree to 3) agree, showing no dominance in any of the options on the Likert scale. Even some statements had the exact same percentage for
agree and disagree. Overall, assistive technology has not been very helpful academically to students taking the survey. Approximately 60% (57.5%) of participants agreed they receive emotional support from family when it comes to their learning strategies in school. A little over 50% of participants (55%) agreed their teachers understand the learning challenges they face, but 57.5% of participants disagreed their teachers proactively offer learning strategies to tackle their learning challenges. Participants indicated personal learning strategies that are useful for them and the most common were communicating with professors and maintaining organization.

Based on the responses, mentoring (including peer-to-peer) was not frequently utilized as a learning strategy, 50% of participants disagreed they have benefited from a peer-to-peer mentoring relationship and 47.5% of participants disagreed they gained more confidence in their academic abilities because of a peer-to-peer relationship. It should also be noted that participants were not given the option of “N/A” for the mentoring questions and therefore, may not have used the Office of Disability Services (ODS) mentoring program or a mentoring program in general, which in turn could have influenced their responses to those statements.

The interview process resulted in five themes and sixteen codes. The five themes were 1) perception, social stigma attached to disability, 2) managing disability, 3) processes of the Office of Disability Services (ODS), 4) support structures, and 5) feedback for Office of Disability Services (ODS). Codes included, perceptions of self, perceived perceptions of others, coping strategies, procedures and accommodations through the Office of Disability Services (ODS), and suggestions for the Office of Disability Services (ODS). Themes, subset of codes, and transcript examples can be
found as Appendix E. The most commonly used and discussed accommodations provided through the Office of Disability Services (ODS) were note-taking and extended time on tests. One example of an issue with accommodations through Office of Disability Services (ODS) arose with the process to set up and get notes from a student note taker through the accommodation note-taking. The process includes first going through the Office of Disability Services (ODS), who sends a letter to the professor. The professor talks with the student note-taker and then gives the information about the student note-taker back to the Office of Disability Services (ODS). The Office of Disability Services (ODS) in turn reaches out to the student with the disability to notify them (story as told by interview A1).

The last chapter of this paper discusses the results of the study, interpretations of findings, recommendations and limitations, and the experience of the researcher. The interpretations of findings include how results from both methods, quantitative and qualitative, answered the research question. Lastly, the conclusion addressed and discussed whether the research question and hypothesis were answered or was proven true.
Conclusion

Overview

This mixed-methods study was conducted to gain insight into the usage and effectiveness of university sponsored educational strategies (formal and informal) for college students with learning disabilities. The effectiveness of the strategies was measured through surveys and interviews. Survey results were analyzed on frequency charts to determine how frequently strategies were used. Questions about strategies pertained to assistive technology, mentoring, support, and accommodations specific to the Office of Disability Services (ODS).

Other questions on the survey were measured using the Learning and Study Strategies Inventory (Weinstein & Palmer, 2002), which is a self-report assessment of learning strategies and skill. This was used to see the strengths and weaknesses of the participants in the categories of will, skill, and self-regulation and to make connections with accommodations currently being used by participants. Qualitative results were analyzed through open and axial coding and searching for themes (Lindlof & Taylor, 2002, Denzin, et al, 2000). Themes that emerged were in relation to perceptions of self and others, use of and effectiveness of learning strategies, managing a learning disability, and support structures.

The following were the research question and hypothesis of the study:

**RQ 1:** In what ways do university sponsored educational strategies (formal and informal) provide methods to overcome difficulties related to personal academic struggles in school for students with learning disabilities?
**HQ 1:** If college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom.

**Interpretations of Findings**

The results of the study answered the research question through both methods of data collection. The sample of the current study included 40 participants (who took the survey) and three students who participated in a one-on-one interview with the researcher (also took the survey). The most predominate learning disabilities of participants were ADHD (22 people) and dyslexia (12 people). The majority of participants were sophomores (13) and juniors (12) who were between the ages of 18-24 (24 people).

Overall, participants expressed that the Office of Disability Services (ODS) has helped them overcome learning challenges (65% agreed and strongly agreed) and because of this help they received through the Office of Disability Services (ODS), participants continue to utilize the office for assistance in combating their learning challenges (62.5% agreed and strongly agreed). Although, a small percentage agreed the Office of Disability Services (ODS) showed them how to process information during class (37.5%) slightly more participants disagreed the Office of Disability Services (ODS) showed them how to process information provided in class (45%). The five themes discovered through the coding process were as follows:

1. Perceptions, stigma attached to disability,
2. Managing disability,
3. Processes of Office of Disability Services (ODS),
4. Support structures, and
5. Feedback for Office of Disability Services (ODS)

Codes included self-perception, disclosure of disability to others, personal learning strategies used to combat learning challenges, support from family and teachers, and suggestions for improvement for the Office of Disability Services (ODS).

Each theme relates back to questions asked of the participants through the semi-structured interviews. Participants believe there is a stigma associated with having a disability and often do not confide in or disclose to others about their disability. Other questions asked during the interviews that contribute to the themes that emerged were in regards to services and accommodations used through the Office of Disability Services (ODS) and personal learning strategies. Additionally, the qualitative data suggests that participants have gained insight into the different learning strategies that will or have helped them be successful. These are both formal and informal strategies such as alternative text, note-taking, extended time on tests, seeking out support from family members, and organizing schoolwork. These strategies helped participants with organizing notes for class lectures and when studying for tests, while at the same time provided an alternative method to accomplish schoolwork. These results strongly support the hypothesis: if college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom. Examples of findings are elaborated on in the next few pages.

**Formal learning strategies.** The results from the selected LASSI (Weinstein & Palmer, 2002) responses showed that participants had a fairly strong grasp on the strategies that make-up the will component (average of 60%), which included
information processing, selecting main ideas, and test strategies. These types of strategies included statements such as “I try to summarize or paraphrase class reading assignments” and “identify key points in a lecture.” The will component statements could be strategies used in class settings. On the information processing statement, 21 out of the 40 participants responded with agree (52.5%). Participants can process information in classes, but may not have learned this strategy from the Office of Disability Services (ODS), but rather on their own or previously (before coming to college).

As for the other two components of the LASSI, skill and self-regulation, participants’ average of responses for these categories ranked lower than will (skill – 48% and self-regulation – 46%). The skill component included strategies such as setting educational goals. The self-regulation component included strategies such as creating study aids. The low percentage in the skill and self-regulation components can be supported by the learning theory that framed the current study, social cognitive theory.

Self-regulated learners can direct their own learning and set goals for themselves, for the most part (Bandura, 1991). Included in self-regulation are self-observation, self-judgments, and self-reactions (Bandura, 1986, 1991). Individuals with learning disabilities lack this self-directed learning and in turn suffer from a low perceived self-efficacy (Zimmerman & Schunk, 2001). Self-efficacy is about what one believes he/she is capable of doing (Bandura, 1982, 1986, 1991). Levels of motivation (part of skill component) and levels of performance (part of self-regulation component) affect levels of achievement and perceptions of self (Zimmerman et al, 2001). The results for the LASSI categories of skill and self-regulation are supported by this theory.
These results also fell under the characteristics and codes of theme 1 – perceptions, stigma attached with disability, which included codes such as self-perception, confidence levels, and interactions and reactions of others because of disability. Interviewee A1 shared his experience:

A1: [College teachers] “Some just don’t believe that people should have any extra treatment whatsoever” (p. 4).

Theme 2 – managing disability was also seen through the results of the survey responses. Participants shared the single learning strategy that worked best for them and the challenges they faced. The top three were communicating with professors, organization, note-taking skills or note-taking, followed closing by time and test management. Codes under this theme included personal learning strategies, previous strategies used, and disclosing learning disability to others.

The formal learning strategies participants used most frequently included forms of accommodations offered through the Office of Disability Services (ODS), such as note-taking and extended (extra) time on tests. Interviewee A1 used note-taking for every class:

A1: “Every class, but I find it most helpful for math and when there is a lot of number writing” (p. 3).

This finding strongly supports the hypothesis, as the formal learning strategies, note-taking and extended (extra) time on tests have helped the interviewee be more successful in each class, especially in math courses.
Assistive technology and assistive technology devices were not used as frequently as predicted. Questions on the survey in the assistive technology section included statements about the alternative text program (alt-text), which overall ranked below 50% for use of textbook and course materials in accessible formats. Only 18 out of 40 participants (45%) agreed they have used assistive technology to help them combat their learning challenges. Interviewee A2 shared his experience with assistive technology through the alt-text program, books on tape:

A2: “And the one time I really used tapes, um, didn’t work out so well because there were like four CD’s for the book...every CD had about a couple hundred tracks and the tracks weren’t in any recognizable order” (p. 14).

Interviewee A3 shared her experience as a student employee in alt-text, which could explain why nearly half of the participants who took the survey did not use assistive technology through the Office of Disability Services (ODS):

A3: “I know that last semester alt text (alternative text) had a ton of mp3 requests and we were understaffed and undertrained so as a result we weren’t able to get everything done by the timeline we set for our students. And now this semester we have very few requests because people, all those people that came flooding in hearing about our wonderful new program said ’oh it’s not working, I’m not going to bother’” (p. 26).

This finding refutes the hypothesis. Assistive technology devices were not used by the majority of participants and if they were used, the majority of participants did not agree these devices helped them be successful in the classroom. The alternative text
accommodation, which includes textbook and course materials in accessible formats, was found not helpful or effective for participants who have used them.

Researchers attributed assistive technology devices and computer programs, in part, as one of the reasons for increased enrollment of students with learning disabilities at the postsecondary level (Sparks & Lovett, 2009; Martinez-Marrero & Estrada-Hernandez, 2008; Lee & Templeton, 2008; Brown, 1992). This was not necessarily the case with the sample in the current study.

Another formal learning strategy not used by participants was mentoring. Brown, Takahashi and Roberts (2010) argued that mentoring (in all its forms) can help students with learning disabilities build good study habits and instill more confidence in their abilities. Participants in the current study had either no experience with a mentoring program and/or did not utilize the mentoring program offered through the Office of Disability Services (ODS) at the institution. Based on the responses and the comments made by interviewees, many of the participants were not aware of the mentoring program. Interviewee A1 expressed interest in partaking:

A1: “I would like to. I would like to mentor students coming into the ODS” (p. 5).

Interviewee A3 expressed concern about the lack of knowledge and/or use of the mentoring program offered through Office of Disability Services (ODS) because she believes it is a useful program based on her experiences of working as a student employee in the Office of Disability Services (ODS). She went on to explain what the program can offer its students:
A3: “Basically their job is to sit down student-to-student and say this has been my experience working with professors, working with ODS, um, you know, knowing how the system works these are the strategies you can use to get things done” (p. 25).

This finding about mentoring and the use of the Office of Disability Services (ODS) mentoring program refutes the hypothesis as being an effective strategy for students with learning disabilities.

A theme in support of assistive technology and mentoring was theme 3 – processes of Office of Disability Services (ODS), which included codes such as types of and effectiveness of an accommodation. In general, the sample of participants and interviewees relied heavily on note-taking and extended time on tests as primary formal learning strategies.

**Informal learning strategies.** The informal learning strategies discussed by the sample of the current study included personal learning strategies, which were “chunking” information/content, communicating with professors regularly, organization, and studying in groups, to name a few. Other informal learning strategies were support structures, such as emotional support from family and teachers. Interviewees A2 and A3 shared about their experience with support:

A2: “Most of my teachers understand. They give me extra time [on tests] and I can take it in a private setting” (p. 14).

A3: “My parents still check in on me and I’ll call them up and say ‘I’m so stressed out about this!’ And they’ll say ‘well you need to organize yourself!’” (p. 25).
Only one interviewee, A3, encountered a negative experience with a professor regarding the accommodations she needed. She shared her story with the researcher:

A3: “He told me that he would not give me extended time. He felt like it wasn’t fair. Like I was getting something over the other students that I didn’t need. And that I managed to work the system, so that I could cheat, in his head” (p. 23).

Since students with learning disabilities often lack the confidence in their own abilities to achieve high marks in academics, researchers stressed the importance of support and inclusivity from faculty, staff, parents, students, and the surrounding community. Researchers also agreed with the need to focus efforts on engaging and sustaining students with disabilities (Cory, White & Stuckey, 2010; Rachal, Daigle & Rachal, 2007).

This finding about emotional support and encounters/interactions with professors weakly supports the hypothesis. Most of the participants agreed their family, friends, peers, and teachers (with a few exceptions) supported their learning strategies to be successful in school. However, an interviewee had an experience with a professor who did not support her accommodations, which refutes the hypothesis that informal learning strategies, such as emotional support from teachers will in turn provide the student with a learning disability be more successful in the classroom.

Support fell under the theme of support structures (theme 4). Codes included in this theme were support from family, support from teachers, support from friends, and support from Office of Disability Services (ODS) staff/faculty. Overall, participants in
the sample of the current study have had good experiences with receiving support from family and teachers.

**Recommendations for Action**

The last theme discovered in the coding of interviews was feedback for the Office of Disability Services (ODS). The negative or “other” responses for question five in the survey protocol (Table 14) had comments such as “I have not yet found ways to combat my learning disability” or “the ODS is horrible.” More constructive feedback was offered through the interviews. The following statements are suggestions made by interviewee A1 and A3 to better improve the services the Office of Disability Services (ODS) provides:

A1 commented on mentoring being more utilized: “*It would be nice if there were upper classmen who mentored freshmen who came in*” (p. 9).

A3 commented on the overall appearance and organization of Office of Disability Services (ODS): “*Getting our websites up-to-date, getting them looking nice, having information readily available*” (p. 26).

Interviewee A1 also mentioned the lack of interaction and connections made between the staff and student workers in the Office of Disability Services (ODS) with students that use their services:

A1: “*Not much interaction. They know who I am.*”

“I wish there was…there should be more student-to-student interaction” (p. 9).

Overall, the feedback for Office of Disability Services (ODS) stemmed from personal experiences and a desire to have a more interactive relationship with Office of Disability
Services (ODS) staff. The interpretation of findings, including feedback offered by students will be shared with the Office of Disability Services (ODS) upon successful defense.

The findings from this research contribute to the larger body of literature on disability services at the post secondary level. More specifically to the university evaluated in the current study, the results from this research can offer insight into the changes that need to be made by the Office of Disability Services (ODS) and the institution to better accommodate students with disabilities. The university must take a stand to eliminate the stigma that is associated with having a disability. Professors, faculty, staff, and other students need to collaborate and support students who struggle with a disability, whether that disability is physical, emotional, psychological and so forth. In order to take a stand, leaders on campus need to be open about issues they face when it comes to completing everyday tasks or difficult homework assignments. If more people come together and share their stories of struggles and challenges, then it can slowly become more acceptable to be “different.”

Findings also demonstrated a need for more resources in the Office of Disability Services (ODS) in order to provide more effective and efficient accommodations to their students. The university needs to be made aware of this gap and be willing to invest more time, energy, and money into the services offered to the students. Students who use the Office of Disability Services (ODS) should not have to wait three to four weeks into a semester for notes from lectures that will be on upcoming exams, nor should the process to receive those notes be a tedious and stressful one. The university prides itself on being
inclusive to different walks of life, but the results of this study do not support this acceptability for the students in the school community that struggle with disabilities.

Based on the results of this study, the researcher compiled the following chart to display recommendations for the Office of Disability Services (ODS). The recommendations are listed by order of importance and priority, the first being top priority (Table 19).

Table 19.

Recommendations for ODS

<table>
<thead>
<tr>
<th>Recommendations for Action</th>
<th>Examples in Findings</th>
</tr>
</thead>
</table>
| Communications/PR strategy and plan to change students with disabilities perceptions of programs; more advertising of benefits | 1. In general, basics to understanding and learning in college level courses.  
*For example:*  
45% (18 out of 40) of the participants disagreed that the ODS has showed them how to process information in class. |
| 2. Assistive technology, specifically the benefits of mp3 and other alternative text options. | *For example:*  
30% (12 out of 40) of the participants disagreed accessible formats have helped them in classes (textbooks, course materials, and tests and quizzes).  
Interviewee A2 shared: “And the one time I really used tapes, um, didn’t work out so well because there were like four CD’s for the book…every CD had about a couple hundred tracks and the tracks weren’t in any recognizable order.” |
| 3. Mentoring program: benefits, process, who to contact, etc. | *For example:*  
50% (20 out of 40) of the participants have not benefited from peer-to-peer mentoring. |

*In a timely and effective fashion
Create and deliver a faculty presentation for faculty (in partnership with the Psychology Department at the university) to explain the dimensions of disabilities and why there is a need for accommodations.

Reach out to the College of Education students and graduate students, particularly those studying exceptional education. Consider contacting Training and Technical Assistance Center (TTAC) to assist in this process.

Work with JMU’s Center for Faculty Innovation (CFI) to host an open forum for faculty and students in the community to discuss this topic.

Comments made in the literature and from students participating in the current study from encounters they have had with faculty and other professors regarding their accommodations.

For example:
Interviewee A3: “He told me that he would not give me extended time. He felt like it wasn’t fair. Like I was getting something over the other students that I didn’t need.”

Approximately 58% (23 out of 40) of the participants disagreed that their teachers have proactively offered learning strategies to tackle learning challenges.

30% of participants (12 out of 40) disagreed teachers understand their learning challenges.

For example:
CFI’s Faculty Flashpoint Series (www.jmu.edu/cfi/programs/flashpoint/index.html)

Implement a PhD program here at JMU on Disability Studies

The enrollment of students with learning and physical disabilities is on the rise and there is a critical need for trained and knowledgeable staff and students.

Building a relationship with the students that use ODS services

Build rapport with students, utilize social media, and emailing to connect with students.

For example: A1: “Not much interaction. They know who I am.” “I wish there was…there should be more student-to-student interaction”

The results of this study not only provide evidence of the needs of a sample of college students who struggle with one or more disability, but also speak to the lack of growth at the post secondary level and society as a whole. It is astounding how much others (students, faculty, staff, parents, colleagues and so on) do not know nor have attempted to know about a population of students growing so rapidly. Do members of society fear the unknown? Yes. Do they fear change and dislike stepping out of their
comfort zone? Absolutely. Then how, as educated people in society, do we reverse the stigma? The lack of advancement and effort to learn, understand, educate, and develop people, disabled and non-disabled is rooted in basic civil liberties of people. For decades groups of people and minorities have struggled to “fit in.” People with disabilities are no different. Institutions of higher education have the power and the resources to make a change, so why are so few supporting the movement? The time for change is now.

**Recommendations for Future Study**

The researcher recommends conducting a longitudinal mixed-methods study, annually, to collect information about the students that utilize the Office of Disability Services (ODS). With this type of study, the Office of Disability Services (ODS) would be able to track trends in the population and determine strengths and weaknesses of their students. Another suggestion for future research on this topic is to expand the sample population studied. The researcher only used one institution, but recommends reaching out to local and surrounding four-year universities and two-year community colleges. This would provide a more diverse sample and offer insight into the operations, support, and best practices used at other institutions’ Disability Services offices. By having a larger sample size, more tests can be run and more conclusions can be drawn about the sample.

**Limitations**

The current study had some limitations. The sample of the population was purposive and specific. The researcher went through the institution’s Office of Disability Services (ODS) to get participants. This process of gathering responses did not work as efficiently the first time, so the researcher utilized the institution’s bulk emailing system
to get to a total of 40 participants. That being said, the researcher did not use other universities, four-year or two-year community colleges in the surrounding area, which in turn limited the diversity and size of her population sample.

The researcher decided to interview only students that utilized services through the Office of Disability Services (ODS). This limited the scope of the study. The researcher could have interviewed staff in the Office of Disability Services (ODS) or professors about their experiences working with students with learning disabilities. This would have provided a more holistic viewpoint about the interactions between students with learning disabilities and the key people they exchange information with about their disability and subsequent accommodations regularly.

**Researcher’s Experience**

The researcher herself does not struggle with a learning disability, but has always found the topic to be intriguing. The researcher started with an interest in how college students with dyslexia learn, including what types of strategies help them get through four years of college. After meeting with staff members in Office of Disability Services (ODS) and through extensive research on the accommodations offered to students with disabilities and barriers they face, the researcher expanded her population to include learning disabled. Overall, the researcher was able to experience first hand, through one-on-one interviews, the real and honest experiences of college students struggling from learning disabilities. This insight has enhanced her awareness and influenced her to be a contributor to disability activism.
Appendices

Appendix A: Office of Disability Services Site Letter of Permission

Site Coordinator Letter of Permission

October 18, 2011

Institutional Review Board
James Madison University
MSC 5728
JMAC-6, Suite 26
Harrisonburg, VA 22807

Dear Institutional Review Board,

I hereby agree to allow Kendra Scott, a graduate student from James Madison University to conduct her research with students registered with James Madison University’s Office of Disability Services. I understand that the purpose of the study is to investigate learning strategies and support structures on success in the classroom for college students struggling with learning disabilities.

By signing this letter of permission, I am agreeing to the following:

☐ JMU researcher has permission to utilize the students that are registered with the Office of Disability Services.

☒ JMU researcher has access to the data collected to perform the data analysis both for presentation to James Madison University’s Office of Disability Services and/or for publication purposes.

Sincerely,

[Signature]

Matthew Trybus, M.Ed., Disability Services Specialist
Wilson Hall, Room 107
Office of Disability Services
James Madison University
Hi Keith,

Attached you will find a Site Coordinator Letter of Permission from Matt Trybus on behalf of Kendra Scott. Please let me know if you have any questions. Thank you,

Cammy Huston
James Madison University
Office of Disability Services
Office Assistant
Wilson Hall, Room 107
Phone: (540) 568-6705
Fax: (540) 568-7099

-----Original Message-----
From: LRC-Lease6-OCIM2330 [mailto:LRC-Lease6-OCIM2330@jmu.edu]
Sent: Thursday, October 20, 2011 5:55 PM
To: Huston, Cameron E - hustonce
Subject: Scanned from MFP-05303480 10/20/2011 13:54

Scanned from MFP-05303480.
Date: 10/20/2011 13:54
Pages: 1
Resolution:200x200 DPI

Scans from Wilson Hall, Room 107
Appendix B: Institutional Review Board

<table>
<thead>
<tr>
<th>Full Board</th>
<th>James Madison University</th>
<th>Expedited</th>
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<tr>
<td>or</td>
<td>HUMAN RESEARCH REVIEW REQUEST</td>
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**Investigators:** This form is required for Full Board or Expedited review for all JMU research involving human subjects. If you are eligible for an exemption request, please use the alternate form at: [http://www.jmu.edu/sponsprog/irb/irbExemptRequest.doc](http://www.jmu.edu/sponsprog/irb/irbExemptRequest.doc)

**FOR IRB USE ONLY:**
- Protocol Number: IRB
- Received: 1st Review: 2nd Review: 3rd Review: 

**Reviewer:**
- [ ] Approved Date: 
- [ ] Disapproved Date: 
- [ ] Exempt Date: 

**External Funding:**
- [ ] YES  [x] NO  If YES, Sponsor(s): 

**Project Title:** The Impact of Educational Programs and Support Structures on Success in the Classroom for College Students with Learning Disabilities

**Project Dates:**
- From: 11/09/2011 To: 04/09/2012
- MM/DD/YY MM/DD/YY

**Minimum Number of Participants:** 25

**Maximum Number of Participants:** 100

**Responsible Researcher(s):** Kendra Scott

**Department:** Learning Technology and Leadership Education

**E-mail:** scottkw@jmu.edu

**Address and/or (MSC):** 1121 Meridian Circle, APT 202

**Telephone:** 571-276-7663

**Address:** Harrisonburg, VA 22802
Investigator: Please respond to the questions below. The IRB will utilize your responses to evaluate your protocol submission.

1. **YES** ☑ NO Does the James Madison University Institutional Review Board define the project as *research*?

   The James Madison University IRB defines "research" as a "systematic investigation designed to develop or contribute to generalizable knowledge."

   All research involving human participants conducted by James Madison University faculty, staff, and students is subject to IRB review.

   Some, but not all, studies that involve human participants are considered research and are subject to full or expedited IRB review, including those:

   - intended to satisfy the academic requirements for Independent Study, Bachelor’s Essay, Honors/Senior Thesis, or the Master’s Thesis;
   - intended or expected to result in publication, presentation outside the classroom, or public dissemination in some other form;
   - conducted outside the classroom and/or departmental research participant pool if they involve
     -- external funding
     -- minors (*i.e.*, persons under the age of 18),
     -- a targeted population of adults whose ability to freely give informed consent may be compromised (*i.e.*, persons who are socio-economically, educationally, or linguistically disadvantaged, cognitively impaired, elderly, terminally ill, or incarcerated),
     -- pregnant women and/or fetuses who may be put at risk of physical harm,
   - a topic of a sensitive or personal nature, the examination or reporting of which may place the research participant at more than minimal risk, or
   - any type of activity that places research participants at more than minimal risk.

   Other studies are eligible to *request* exemption from IRB review, including those

   - conducted solely within the confines of the classroom or within a departmental research participant pool if they
-- are a general requirement of a course,
-- have the sole purpose of developing the student's research skills, and
-- will be overseen by a faculty member;

• conducted outside the classroom and outside departmental research participant pools, provided they do not involve minors, do not target special adult populations, do not pose a risk of physical harm to pregnant women and fetuses, do not deal with a topic of sensitive or personal nature, or do not involve any type of activity that places the participants at more than minimal risk (see details above); and provided the investigator does not intend to publish the results or share them with others in a public forum (i.e. conference presentations, senior theses).
• that are part of a larger research project that has current James Madison University IRB approval; or
• that are part of a larger research project that has current approval of a registered IRB at another institution, provided that, if research participants are to be recruited at James Madison University, the University’s IRB has given permission for such on-campus recruitment.

2. ☒ YES ☐ NO  Are the human participants in your study living individuals?

3. ☒ YES ☐ NO  Will you obtain data through intervention or interaction with these individuals?

“Intervention” includes both physical procedures by which data are gathered (e.g., measurement of heart rate or venipuncture) and manipulations of the participant or the participant's environment that are performed for research purposes. “Interaction” includes communication or interpersonal contact between the investigator and participant (e.g., surveying or interviewing).

4. ☒ YES ☐ NO  Will you obtain identifiable private information about these individuals?

"Private information" includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, or information provided for specific purposes which the individual can reasonably expect will not be made public (e.g., a medical record or student record). "Identifiable" means that the identity of the participant may be ascertained by the investigator or associated with the information (e.g., by name, code number, pattern of answers, etc.).

5. ☐ YES ☒ NO  Does the study present more than minimal risk to the participants?

"Minimal risk" means that the risks of harm or discomfort anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during performance of routine physical or psychological examinations or tests. Note that the concept of risk goes beyond physical risk and includes psychological, emotional,
or behavioral risk as well as risks to employability, economic well being, social standing, and risks of civil and criminal liability.

CERTIFICATIONS:

For James Madison University to obtain a Federal Wide Assurance (FWA) with the Office of Human Research Protection (OHRP), U.S. Department of Health & Human Services, all research staff working with human participants must sign this form and receive training in ethical guidelines and regulations. "Research staff" is defined as persons who have direct and substantive involvement in proposing, performing, reviewing, or reporting research and includes students fulfilling these roles as well as their faculty advisors. The Office of Sponsored Programs maintains a roster of all researchers who have completed training within the past three years.

Test module at OSP website [http://www.jmu.edu/sponsprog/irb/irbtraining.html](http://www.jmu.edu/sponsprog/irb/irbtraining.html)

<table>
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<tr>
<th>Name of Researcher(s)</th>
<th>Signature of Researcher(s) and Faculty Advisor (if applicable)</th>
<th>Date</th>
<th>Training Completed</th>
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<tr>
<td>Kendra Scott</td>
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<tr>
<td>Jane Thall</td>
<td></td>
<td>9/30/08</td>
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<td></td>
<td>Signature of Faculty Advisor also required (if Student protocol)</td>
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For additional training interests visit the National Institutes of Health Web Tutorial at: [http://cme.nci.nih.gov/](http://cme.nci.nih.gov/)

By signing below, the Responsible Researcher(s), and the Faculty Advisor (if applicable), certifies that he/she is familiar with the ethical guidelines and regulations regarding the protection of human research participants from research risks. In addition, he/she agrees to abide by all sponsor and university policies and procedures in conducting the research. He/she further certifies that he/she has completed training regarding human participant research ethics within the last three years.

________________________________________________________________________________________
Principal Investigator Signature                                                                 Date
________________________________________________________________________________________
Principal Investigator Signature                                                                 Date
________________________________________________________________________________________
Principal Investigator Signature                                                                 Date
Submit an electronic version of your ENTIRE protocol to jmu_grants@jmu.edu.

Provide a SIGNED hard copy of the Research Review Request Form to:

Office of Sponsored Programs, MSC 5728, James Madison Administrative Complex, Bldg #6, Suite 26
For additional training interests visit the National Institutes of Health Web Tutorial at:
http://cme.nci.nih.gov/
**Purpose and Objectives:**

This research will explore and examine 1) the effectiveness of university sponsored educational strategies (formal and informal) for students with learning disabilities and 2) how individuals react to and manage their learning disability. The research question for this study is: In what ways do university sponsored educational strategies (formal and informal) provide methods to overcome difficulties related to personal academic struggles in school for students with learning disabilities? The hypothesis for this study is: If college students with learning disabilities utilize the university sponsored educational strategies (formal and informal), then they will be more successful in the classroom.

**Procedures/Research Design/Methodology/Timeframe:**

This study will take two semesters to complete. Research will begin pending IRB approval and end on April 09, 2012. The research design employs both quantitative and qualitative data collection methodologies. Quantitative data will be obtained through the use of an electronic online survey (consisting of Likert scaled questions) and short answer. I will use the JMU sponsored Qualtrics online survey database system to create and distribute my survey. The survey consists of 11 questions, which will take approximately 10 minutes to complete. Qualitative data collection consists of a semi-structured interview given to three to four students and each interview will take approximately 30 minutes. Each interview will be tape recorded with participant permission and transcribed to ensure accuracy. The cover letter and link to the online survey will be distributed through email in two ways. 1) The cover letter and link to the online survey will be emailed to the Disability Services Specialist at James Madison University, Matt Trybus, who will in turn, email students that have used or are using the Office of Disability Services for academic assistance at James Madison University. 2) The cover letter and link to the online survey will be distributed through the JMU Bulk Email system. This email will go out to students, undergraduate and graduate, enrolled at the university. Prior to accessing the online survey, each student participant will receive an email cover letter requesting voluntary consent to participate in the survey. In order to keep the survey completely anonymous, I will provide my contact information in the
emails to James Madison University students with the cover letter and link to the survey. Once the participant agrees to the cover letter, they can click to access the survey instrument. The consent form for the interview process will be given to the student participant before each interview takes place. Informed consent must be given prior to each interview. Once the interviewee agrees to the consent form we will move on to the interview. The survey will be completely anonymous and the interview will be strictly confidential. No questions will be asked that might reveal the participants identity (name or title).

I do not anticipate any more than minimal risk to the participants. Participants may derive some indirect benefits from the research as they will be able to explore, study, and reflect upon personal experiences and possible future experiences with learning strategies offered through the Office of Disability Services at James Madison University as a result of both the interview and survey processes. The benefit for the researcher is to fulfill the requirements of a Master’s Thesis, and to study the effectiveness of university sponsored educational strategies (formal and informal) on personal academic struggles for college students with learning disabilities.

The population being studied is college students registered with the Office of Disability Services enrolled at James Madison University for academic assistance. All participants are considered adults and will be at least 18 years of age, and their participation is voluntary. Participants can withdraw at any time without consequences of any kind. However, once their online survey responses have been submitted and anonymously recorded, they will not be able to withdraw from the study. For the interview process, the participants will be selected based on their response to question 11 of the survey, which asks if he/she would be willing to participate in a face-to-face interview with the researcher to further discuss their experiences with the Office of Disability Services and the help they have received. Upon completing the survey, the participants will be redirected to a SurveyMonkey survey where they can provide their name and email if they wish to participate in a face-to-face interview with the researcher. This way, participants will still remain anonymous during the survey process. The same SurveyMonkey survey also includes a question where participants can enter their name
and email address to be entered to win a $20 gift card. There are two $20 gift cards available.

Data Analysis:

All survey responses will be collected via Qualtrics, and the researcher will collect all interview responses. The identity of the subjects will remain anonymous by using the web survey and by not asking any information that will reveal their identity. I will analyze my data by using Qualtrics software and SPSS. The researcher will use Excel to code all qualitative data. Interviews will take place in the Office of Disabilities Services with staff members available, including Matt Trybus, should a student become too emotional to the point where assistance is needed. The interviewees’ responses will be kept in the strictest confidence. A numeric coding system will be employed (vice name or title) to mask the identity of each participant (i.e., John Smith = A1). At the conclusion of each interview session, all interview data collected will be immediately secured after the interview in a closet in a locked file cabinet in 3345A Memorial Hall. Access to the locked file cabinet is controlled by the senior administrative assistant (Sandra Gilchrist) to the COE/LTLE Department Chair, Dr. Diane Foucar-Szocki. Access to the file cabinet must be approved by the Department Chairperson, Dr. Foucar-Szocki. Only Dr. Foucar-Szocki, Dr. Thall, Ms. Gilchrist and myself will have access to the raw data. Currently, the other drawers in the file cabinet contain all of the AHRD Program student records to include graduate school applications, GRE and GPA scores and comprehensive examination materials.

All true name data collected to include survey materials, actual surveys, cover letters, consent forms, researcher notes, the tape recorded interview sessions, and transcriptions will be stored in the above mentioned locked file cabinet in 3345A Memorial Hall under the auspices of Dr. Diane Foucar-Szocki. Survey materials and actual surveys will be stored electronically in a password protected word document file and in the password protected Qualtrics database. Interview materials will be destroyed immediately following the successful defense of my Thesis (plus or minus three months from 30 April 2012).

Reporting Procedures:
Reporting results will be presented to my Thesis committee during a two hour defense in which I will confer my purpose, the methods used, the results, limitations, while also allowing for a question and answer portion of the presentation. No identifiable information will be collected from the participants and no identifiable responses will be presented in the final form of this study. The researcher retains the right to use and publish non-identifiable data. Final aggregated results will be available to participants upon request.

**Experience of the researcher (and advisor, if student):**

The researcher of this study conducted a qualitative research study in her senior year at James Madison University as part of the advanced qualitative methods course for partial credit toward completing a BA in Communication Studies in the fall 2009 semester. Also on this research was Lindsay Halverson (’10). The title of this research: *She Got it from her Mama: A Look into the Discourse of Anti-Aging Products Among College Women*. As a graduate student in the College of Education in the Adult Education/Human Resource Development program, I have completed coursework in Research Methods (Quantitative and Qualitative), Performance Analysis, Adult Learning, Educational Technology, and Foundations of Human Resource Development.

**Dr. Jane Thall’s Research Experience:**

Ed.D., The George Washington University, May 2005

M.S. Applied Behavioral Science, The Johns Hopkins University, May 1999

B.A., Spanish, May 1975

**JMU Courses Taught by Dr. Jane Thall:**

JMU, COE, AHRD 680 Reading and Research, Fall 2011

JMU, COE, AHRD 700 Thesis, Fall 2011

JMU, COE, AHRD 690 Special Studies in AHRD, Spring 2011, Fall 2011


JMU, COE, AHRD 640 Program Evaluation and Measurement in AHRD –
Dr. Jane Thall has also served on two doctoral dissertation committees as an examiner for Drs. Cheryl Church and Heidi Graham for the degree of Ed. D., The George Washington University, July 2007, and August 2010. Dr. Thall will help guide me through this research.
Identification of Investigators & Purpose of Study
You are being asked to participate in a research study conducted by Kendra Scott, a graduate student from James Madison University. The purpose of this study is to investigate learning strategies and support structures on success in the classroom for college students struggling with learning disabilities. This study will contribute to the researcher’s completion of a thesis to obtain a Master’s Degree. Please read this form carefully and ask any questions you may have before agreeing to take part in this study.

Research Procedures
This study consists of an online survey that will be administered to individual participants through Qualtrics (an online survey tool). You will be asked to provide answers to a series of questions related to your experiences with the Office of Disability Services and the educational programs (formal and informal learning strategies) offered. Should you decide to participate in this confidential research you may access the anonymous survey by following the web link located under the “Giving of Consent” section.

Time Required
Participation in this study will require approximately 10 minutes of your time.

Risks
The investigator does not perceive more than minimal risks from your involvement in this study.

Benefits
By participating in this study, students have the opportunity to enter to win one of two $20 gift cards. Findings from this research will contribute to benefit the Disability Services office to better assist students struggling with learning disabilities.

Confidentiality
The results of this research will be presented at James Madison University during a Thesis defense with three James Madison University professors present. While individual responses are anonymously obtained and recorded online through the Qualtrics software (a secure online survey tool), data is kept in the strictest confidence. Responding participant’s email addresses will be tracked using Qualtrics for follow-up notices, but names and email addresses are not associated with individual survey responses. The researchers will know if a participant has submitted a survey, but will not be able to identify individual responses therefore maintaining anonymity for the survey. The results of this project will be coded in such a way that the respondent’s identity will not be attached to the final form of this study. Aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location only accessible to the researcher. The researcher retains the right to use and publish non-identifiable data. At the end of the study, all records will be shredded. Final aggregate results will be made available to participants upon request.
Participation & Withdrawal
Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind. However, once your responses have been submitted and anonymously recorded you will not be able to withdraw from the study.

Questions about the Study
If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Kendra Scott  Dr. Jane Thall
Adult Education/Human Resources  Learning Technology and Leadership
Education
James Madison University  James Madison University
scottkw@jmu.edu  thalljb@jmu.edu

Questions about Your Rights as a Research Subject
Dr. David Cockley
Chair, Institutional Review Board
James Madison University
(540) 568-2834
cocklede@jmu.edu

Giving of Consent
I have been given the opportunity to ask questions about this study. I have read this consent and I understand what is being requested of me as a participant in this study. I certify that I am at least 18 years of age. By clicking on the link below, and completing and submitting this anonymous survey, I am consenting to participate in this research.

http://jmu.qualtrics.com/SE/?SID=SV_6VUHDSwTiE2dpUU

Kendra Scott  1/13/12
Name of Researcher (Printed)  Date
Interview Consent Form (Used in Confidential Research)

Identification of Investigators & Purpose of Study
You are being asked to participate in a research study conducted by Kendra Scott, a graduate student from James Madison University. The purpose of this study is to investigate learning strategies and support structures on success in the classroom for college students with learning disabilities. This study will contribute to the researcher’s completion of a thesis to obtain a Master’s Degree. Please read this form carefully and ask any questions you may have before agreeing to take part in this study.

Research Procedures
This study consists of a semi-structured interview that will be administered to individual participants through face-to-face conversations. You will be asked to provide answers to a series of questions related to your experiences with the Office of Disability Services and the educational programs (formal and informal learning strategies) offered.

Time Required
Participation in this study will require approximately 30 minutes of your time.

Risks
The investigator does not perceive more than minimal risks from your involvement in this study.

Benefits
By participating in this study there no direct benefits for you, as the participant. Findings from this research will benefit the Office of Disability Services to better assist students struggling with learning disabilities.

Confidentiality
The results of this research will be presented at James Madison University during a Thesis defense with three James Madison University professors present. Individual responses will be obtained confidentially and recorded by the researcher using a voice recorder. Data will be represented as averages or generalizations about the responses as a whole. The data collected during the interview will be kept in a password-protected computer and then destroyed after (June 30th, 2012). All true name data will be masked to ensure confidentiality. No identifiable demographic information will be collected from the participant and no identifiable responses will be presented in the final form of this study. All data will be stored in a secure location only accessible to the researcher. The researcher retains the right to use and publish non-identifiable data. At the end of the study, all voice recorded data will be destroyed at the conclusion of the thesis period (June 30th, 2012). Final aggregate results will be made available to participants upon request.

Participation & Withdrawal
Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.
Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Kendra Scott                      Dr. Jane Thall
Adult Education/Human Resources   Learning Technology and Leadership Education
James Madison University          James Madison University
scottkw@jmu.edu                   Telephone: (540) 568-5531
thalljb@jmu.edu

Questions about Your Rights as a Research Subject
Dr. David Cockley
Chair, Institutional Review Board
James Madison University
(540) 568-2834
cocklede@jmu.edu

Giving of Consent
I have read this consent form and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have been given satisfactory answers to my questions. I certify that I am at least 18 years of age.

☐ I give consent to be audio taped during my interview. ________ (initials)

_____________________________________________________________________
Name of Participant (Printed)                                              ______________
_____________________________________________________________________
Name of Participant (Signed)                                               Date
_____________________________________________________________________
Name of Researcher (Signed)                                                Date
Appendix C: Survey Protocol

Link to survey: http://jmu.qualtrics.com/SE/?SID=SV_6VUHDSwTiE2dpUU

This survey is anonymous and will not ask for your name. If at any time you wish to discontinue this survey, please do so by exiting, there are no consequences for doing so.

This survey has been created to study learning strategies and support structures on success in the classroom for college students with learning disabilities.

Please be honest with your responses. Thank you for participating in this study.

Your responses will be recorded until March 15, 2012

Remember: The end of the survey will re-direct you to another site where you can enter your name and email address if you wish to be entered into the raffle to win a $20 gift card! (There are two $20 gift cards available!)

1. Do you struggle with a learning disability?
   a. Yes  b. No

2. What year are you at the university?
   a. Freshman b. Sophomore c. Junior d. Senior e. Fifth year d. Graduate student

3. Please select your age range:
   18-20   21-23   24-26

The following statements will ask you about your overall experiences with the Office of Disability Services (ODS). Please respond using the Likert scale of 1 = strongly disagree and 4 = strongly agree.

4. 1 2 3 4 ODS provided me with strategies to overcome my learning challenges
   1 2 3 4 ODS showed me how to process information provided in class
   1 2 3 4 I still utilize ODS for assistance for my learning challenges

5. What single learning strategy has helped you most in managing your learning disability? (Why?)

6. What best classifies the learning disability you identify with? (You may check more than one selection).
   Attention Deficit Hyperactivity Disorder (ADHD)   Orthopedic Impairments
   Autism Spectrum                                 Psychological
   Chronic Illness                                 Speech
Deaf/Hearing Impairment  Spinal Cord Disability
Dyslexia  Traumatic Brain Injury
Dyscalculia  Vision Impairment/Blindness
Auditory Processing Disorder
Mobility Impairment

The following statements will ask you about what you have learned as a result of utilizing learning strategies through the Office of Disability Services. Please respond using the Likert scale of 1 = strongly disagree and 4 = strongly agree.

7. 1 2 3 4 I try to summarize or paraphrase class reading assignments
  1 2 3 4 I can identify key points in a lecture
  1 2 3 4 I know how to study for tests in different types of courses
  1 2 3 4 I review my answers to essay questions
  1 2 3 4 I have set educational goals for myself
  1 2 3 4 I stop periodically when reading to review the content
  1 2 3 4 I create or use organizational aids
  1 2 3 4 I anticipate scheduling problems

The next set of statements will ask you what you still struggle with after using learning strategies offered through the Office of Disability Services. Please respond using the Likert scale of 1 = strongly disagree and 4 = strongly agree.

8. 1 2 3 4 I get easily discouraged by low grades
   1 2 3 4 I easily give up in difficult classes
   1 2 3 4 I am easily distracted while in class

The next set of statements will ask you about your experiences with assistive technology as a learning strategy/aid. Please respond using the Likert scale of 4 = strongly agree and 1 = strongly disagree.

9. 1 2 3 4 I have utilized some form of assistive technology to assist me academically
   1 2 3 4 The textbooks in accessible formats have helped me in my courses
   1 2 3 4 Using assistive technology improved my academic success
   1 2 3 4 Using course materials in accessible formats has helped me in my classes
1  2  3  4 I have more confidence in my academic abilities because of the help I receive through assistive technology programs

1  2  3  4 Using tests and quizzes in accessible formats has improved my academic success

1  2  3  4 Accessible formats help me overcome my learning challenges

The next set of statements will ask you about your experiences with emotional support and peer mentoring. Please respond using the Likert scale of 4 = strongly agree and 1 = strongly disagree.

10. 1  2  3  4 My family emotionally supports my learning strategies for academic success

1  2  3  4 My teachers understand my learning challenges

1  2  3  4 My teachers proactively offer learning strategies to tackle my learning challenges

1  2  3  4 I have benefited from peer-to-peer mentoring relationships

1  2  3  4 I have gained more confidence in my academic abilities because of my peer-to-peer relationships

11. I am interested and willing to participate in a 20-30 minute one-on-one confidential interview with the researcher to further discuss my experiences with having a learning disability.

You will be redirected to a site where you can provide your information to participate in an interview if you so choose.

Yes

No

Thank you for your submission.

*The participants will be automatically redirected to the following link http://www.surveymonkey.com/s/GHWRK86 upon completing the survey.

The two questions on the SurveyMonkey survey are:

Q1: Please provide your name and an email address where you can be reached. The researcher will contact you within the next week to set up an interview. Thank you for your participation!

Q2: Please provide your name and email if you wish to be put into the raffle to win a $20 gift card! (Two $20 gift cards will be given to two winning participants!)
Appendix D: Semi-Structured Interview Questions Protocol

1. What are your personal thoughts and opinions of learning disabilities (for yourself and in society)? (Please indicate what learning disability you identify with)

2. What are some struggles you face due to your learning challenge?

3. What services have you used through the Office of Disability Services to help you academically?

4. In what ways have the learning strategies you’ve gained through the Office of Disability Services helped you?

5. What types of assistive technology have you used to help you combat your learning challenges? Have you used accessible formats? Which ones?

6. In what ways have you received support from teachers? Family? Have they also supported you in using learning strategies to overcome your learning challenge? If so, how?

7. Have you participated in a mentoring program? What have been your experiences with this? What was your role?

8. Have the strategies you’ve gained boosted your confidence? In what ways have these strategies (as discussed throughout the interview) helped you in schools? (Looking for responses about better grades, ease in writing papers, etc.).

9. What additional services not provided by the Office of Disability Services would you recommend or like to see offered in the programs?

Interview Participant Profile:

(For Researcher) Number ____

For Participant:

Please fill out the following information. This form is to help with possible developing themes that might contribute to the study on learning disabilities in college students.

Year: _____________

Age: _____________

Disability: __________
## Appendix E: Subsets of Codes

<table>
<thead>
<tr>
<th>Codes</th>
<th>Transcript</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2) Perceived self-perceptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a) Sub codes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Comments on interactions with others (i.e. not intelligent, not competent)</td>
<td></td>
<td></td>
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<tr>
<td>A1: “As soon as you say anything about a disability they immediately think you’re not intelligent at all, that you’re not competent and can’t do it.” (p. 1)</td>
<td>Perceptions; stigma associated with disability</td>
<td></td>
</tr>
<tr>
<td>1) Identifying learning disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a) Sub codes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Diagnosis</td>
<td></td>
<td>Managing disability</td>
</tr>
<tr>
<td>- Disclosure of disability to others</td>
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<tr>
<td>A2: “When I first got here I didn’t tell anyone I was dyslexic until like the first couple weeks into school. And then like I would try not to tell anyone that didn’t need to. So I mean, I don’t know, it’s kind of something I don’t want to share if I don’t have to.” (p. 11)</td>
<td></td>
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<tr>
<td>2) Accommodations</td>
<td></td>
<td></td>
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<tr>
<td>2a) Sub codes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Type of</td>
<td></td>
<td>Processes of Office of Disability Services (ODS)</td>
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<tr>
<td>- Use of/frequency of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Effectiveness</td>
<td></td>
<td></td>
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<tr>
<td>A1: “Note taking, extra time on tests. Those have been helpful for me.” (p. 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) From teachers</td>
<td></td>
<td></td>
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<tr>
<td>2) From family members</td>
<td></td>
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</tr>
<tr>
<td>3) From friends</td>
<td></td>
<td></td>
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<tr>
<td>4) From ODS staff/faculty</td>
<td></td>
<td></td>
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<tr>
<td>A1: “My teachers in high school were very supportive and my family is very supportive.” (p. 4-5)</td>
<td>Support Structures</td>
<td></td>
</tr>
<tr>
<td>1) Suggestions for improvement</td>
<td></td>
<td></td>
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<tr>
<td>2) Criticism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Interactions/ relationship with ODS [personal viewpoint]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3: “Letting people know what we do and how to contact us and who to contact.” (p. 26)</td>
<td>Feedback for Office of Disability Services (ODS)</td>
<td></td>
</tr>
</tbody>
</table>
References


