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Learning environments, instructional strategies, and instructional methods for the training, development, and success of employees with attention deficit hyperactivity disorder

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Learning Environments, Instructional Strategies, and Instructional Methods for the Training, Development, and Success of Employees with Attention Deficit Hyperactivity Disorder

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Dedication

I would like to take the time to acknowledge God, my parents (Larry and Sherrese Wade), my brothers (Larry Jr. and Jerreme), my sorority sisters, and a host of family and friends who stood by me and encouraged me every step of the way. I am so grateful for having such a wonderful support system. I am blessed to say that I have chosen the road least traveled and for me, it has made all the difference.

To my parents Larry and Sherrese, I owe my success to you. You are my rock and I will forever love you. To the faculty of the Adult Human Resource Development program: you're Awesome! Thank you for everything and you will not be forgotten. To anyone who has been diagnosed with any learning disability, I dedicate this to you. Continue to achieve every goal against the odds. To my reader, I thank you for taking the time to realize the importance, knowledge, and education of Training, Development, and Success of employees with Attention Deficit Hyperactivity Disorder. Be blessed!

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Abstract

The purpose of this study was to investigate the impact of instructional methods and learning environments on the training, development, and success of employees with Attention Deficit Hyperactivity Disorder (ADHD). In this study, instructional methods refer to the variety of educational learning options that trainers can use to facilitate learning. Past research indicates that employees with ADHD are more successful when trainers understand their learning needs, use sound instructional design practices, and provide creative learning environments and structured activities. The researcher conducted a survey of employees from Bridgewater College, Eastern Mennonite University, and James Madison University who were formally diagnosed with ADHD. This survey was followed by interviews of two employees with ADHD from James Madison University. The researcher analyzed the data using quantitative and qualitative methods. Results indicated that the instructional method has a minor impact on learning, whereas the learning environment and instructional strategies greatly affect the learning and development of the employee with ADHD.

Chapter 1: Introduction

Attention Deficit Hyperactivity Disorder (ADHD) in adults is a continuation of the childhood disorder into adulthood. ADHD is a "pervasive neurobehavioral disorder that affects an estimated 9 million adolescents and adults in the United States" (Young, 2007, p. 3). Individuals who go undiagnosed will continue to experience mood swings, depression, hyperactivity, impulsivity, and inattention difficulties that could affect their academic growth. Many adults who suffer with this syndrome from childhood experience changes that occur during the lifetime of the illness. By adulthood, hyperactivity is normally decreasing, yet may develop into another mode of restlessness. Impulsivity is determined by the individual, yet characteristics are relatively the same in that all individuals are ready to enable an immediate response (Nadeau, 1997). Hechtman, Weiss, and Weiss (1999) found that "attention difficulties, the core presumption of ADHD, are altering into distraction, time management problems, and increase[d] lack of attention which can affect task success on the job" (p. 52). Experiencing the characteristics noted above, adults who have ADHD can be so stressed that they are either terminated or quit on their own accord. Some may even retaliate out of anger.

The purpose of this research is to investigate instructional methods and learning environments that impact the success of employees with Attention Deficit Hyperactivity Disorder (ADHD). The study of ADHD is increasing as it has become more prevalent among adult employees. This is an important topic because employees with ADHD face workplace difficulties including learning, being trained, staying on task, poor self-esteem, and resulting poor job performance. How are employees with ADHD supposed to

succeed in their careers if they are not helped to develop the learning strategies that contribute to their success? Every employee needs to contribute in order for companies to compete successfully in the business market. Particular training and learning strategies may help employees with ADHD perform tasks more effectively and efficiently.

The researcher has a special interest in the topic because of her personal diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), and her experience with the disorder as she transitioned from childhood to adulthood and from school to work. The researcher has encountered jobs that required training, after which she still felt clueless because she was not able to concentrate, or most importantly, retain the material in order to be more competent. One fear of sharing an ADHD diagnosis with management is that it often generates a question of what she can and cannot do, rather than how we can help her achieve her task? In doing this, management does not deal with the situation.

This research addresses the problem of optimal employee performance. If management is not aware that an employee has Attention Deficit Hyperactivity Disorder (ADHD), management may not be able to create a learning environment or use instructional strategies that address the learning needs of that employee. As management and HR professionals increase their awareness of learning disabilities and use strategic instructional strategies, the employee may be more productive and efficient in the workplace.

Research Question and Hypothesis

The idea that learning occurs in the workplace is not recent, and has developed over the years. Human Resource Development began with a mission to "enhance the

personal and work-related knowledge and skills of individuals, helping them to achieve their full potential" (Jarvis, 2004, p. 56).

The present research will explore the following questions:

1. What are the preferred instructional methods for employees with ADHD?
2. What has the most effect on the training, development, and success of the employee with ADHD?
3. How can companies improve learning and training for the employee with ADHD?

This research will examine four types of instructional methods: on-line learning, on-the-job training, classroom learning, and self-instruction (also known as self-learning). The present research will add to existing literature by raising awareness of ADHD and providing suggestions on how management and Human Resource (HR) professionals may improve workplace learning of employees with ADHD. With a better understanding of ADHD, HR professionals and management may also be able to recognize the symptoms of ADHD in employees and take action. Detecting the characteristics of ADHD in an employee could result in referring the employee for diagnosis, and providing learning assistance for the employee. As a result, HR professionals and management may be able to create better training that affords retention of learning, and transfer of training.

The researcher hypothesizes that learning environments and instructional strategies have more of an influence on learning and development than instructional methods.

The employee's environment is critical to how he or she succeeds in accomplishing his or her work task. It is up to management to find trainers and skilled Human Resource (HR) professionals who are cognizant of the disorder to provide effective training. In addition, management may help in the employee's success by improvising and creating an environment in which the employee can efficiently work (Nadeau, 1997, p. 19). Resources that increase career development and success are important when enhancing the skills and competency of the employee (Gerber & Reiff, 1994).

Assumptions, Limitations, and Scope

The researcher assumes that employees with Attention Deficit Hyperactivity Disorder (ADHD) who participated in the study have been clinically diagnosed by a mental health or health care practitioner. Other assumptions include that all careers include training as a part of task improvement. The researcher assumes that all participants gave honest answers to all questions presented in the survey. The survey is anonymous, giving the participant the opportunity to respond truthfully.

There are some limitations to this study. First, there may have been employees who were diagnosed with ADHD, but were not willing to participate in the study. Such a limitation may make the research less valid due to the small participant pool. Second, the sample may have been skewed because participants volunteered to take the survey. Finally, the study took place in Harrisonburg, Virginia and Bridgewater, Virginia and used employees from three local universities: Bridgewater College, James Madison University, and Eastern Mennonite University. The study included part-time and full-time

staff, student employees, and faculty. For this reason, the study may not generalize to the greater population of employees with ADHD.

Significance

This study will add to the existing literature on ADHD by examining the instructional methods, strategies, and learning environments preferred by employees with ADHD. It will increase awareness of ADHD, as well as provide information on what instructors can do to improve the effectiveness and efficiency of employee learning. The researcher's goal is to bring awareness of this issue to Human Resource professionals and management to help them realize that there are certain learning needs that should be met in order to maximize the productivity of the employee with ADHD. Without the employee, there would be no employer; and without a successful employee, there would be no successful organization.

Research Gap

This study examines how Human Resource (HR) professionals and management may improve the training, development, and success of employees with Attention Deficit Hyperactivity Disorder (ADHD). The researcher investigates how instructional methods and learning environments influence employee learning, and specifies what managers, HR professionals, and trainers should know about how ADHD may affect learning. The researcher suggests that training programs should be analyzed, designed, developed, implemented, and evaluated in an attempt to accommodate learning disabilities and various learning styles.

Key Definitions

Key definitions in the study are as follows:

Table 1: ***Attention Deficit Hyperactivity Disorder***
• "ADHD in adults leads to work performance deficiencies, absenteeism, turnover and interpersonal conflict at work" (Patton, 2009, p. 327). • Barkley, Murphy, and Fisher (2008) are sure that ADHD is a "…triad of symptoms of inattention, hyperactivity, with conduct disorder". • Defined as a learning disability (Gerber & Reiff, 1994, p. 205).

The definition for ADHD used in this research is Patton's (2009) definition, however the definition presented by Barkley, Murphy, and Fisher (2008) is also sufficient. According to the *APA Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (1994) symptoms such as inattention, hyperactivity, and impulsivity can be defined as:

Inattention:

a. Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
b. Often has difficulty sustaining attention in tasks or play activities
c. Often does not seem to listen when spoken to directly
d. Often does not follow through on instruction and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
e. Often has difficulty organizing tasks and activities

f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
g. Often loses things necessary for tasks or activities (e.g. toys, school assignments, pencils, books, or tools)
h. Is often easily distracted by extraneous stimuli
i. Is often forgetful in daily activities

Hyperactivity:

a. Often fidgets with hands or feet or squirms in seat
b. Often leaves seat in classroom or in other situations in which remaining seated is expected
c. Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings or restlessness)
d. Often has difficulty playing or engaging in leisure activities quietly
e. Is often "on the go" or acts as if "driven by a motor"
f. Often talks excessively

Impulsivity:

a. Often blurts out answers before questions have been completed
b. Often has difficulty awaiting one's turn
c. Often interrupts or intrudes on others (e.g. butts into conversations or games)

This study is not concerned with the kind or number of symptoms displayed by the participants. However these symptoms are the basis of ADHD and could affect the employee's learning and ability. For this reason, the list of symptoms is included. The present research is concerned with how ADHD affects employees in the workplace and

the learning environments that facilitate learning skills, time-management, self-efficacy, self-efficiency, and other contributors to employee success.

Table 2: ***Management***
• Hierarchal status of company (Nadeau, 1997). • Professional who is responsible for the employees and the workplace (Nadeau, 2005). • Characteristics such as: "supportive, flexible, focused on employee strength, understand basis of ADHD systems, comfortable to work with individuals" (Nadeau, 1997, p. 132).

Nadeau's (1997, 2005) definitions of management are important to this research. The researcher has chosen the third definition, which states the characteristics defined for managerial success when working with an employee with ADHD. This definition highlights what managers should attempt to uphold in the workplace when working with the employee who has ADHD. Nadeau (1997) describes the over-arching goal for management as being "supportive, flexible, focused on employee strength, understand basis of ADHD systems, and comfortable to work with individuals" (p. 132).

Table 3: ***Internal Factors***
• What is done by managers within the workplace (Nadeau, 132). • Factors that contribute to the success of employees that are determined by the manager in the workplace (Patton, 2009). • Desires, goal orientation, and reframing (Gerber & Reiff, 1994).

The researcher has chosen Patton's (2009) definition because of its focus on managerial and training contributions to employee success in the workplace. How managers will be able to maximize employee potential will be the determinate of success for the present research. Learning environments, instructional strategies, and instructional methods are the three determinants of employee success that are pertinent to this research.

1. *Learning Environments*: continuous and significant interaction is able to occur amongst learners, learner and teacher, and learner and subject (Osguthorpe & Graham, 2003).
2. *Instructional Strategies*: multiple, tailored methods of instruction to improve student learning (Osguthorpe & Graham, 2003).
3. *Instructional Methods*: innovative instructional options to facilitate knowledge (Osguthorpe & Graham, 2003).

In this research, instructional methods encompass online learning, classroom learning, self-instruction, and on-the-job training:

1. *Online Learning*: "an online learning model is proposed in which an instructor and learners are separated by physical distance, and online delivery media are used to bridge the instructional gap" (Huang, 2002, p. 28).

2. *Classroom Learning*: "immediate feedback, being familiar to instructors and students, motivating students, and cultivation of a social community" (Nunamaker et.al., 2004, p. 76).

3. *Self –Instruction:* "self-directive process through which learners transform their mental abilities into task-related academic skills" (Schunk & Zimmerman, 2001, p. 2).

4. *On-the-job Training*: Latham & Wexley (1991) describe on-the-job training as working on the task, gaining knowledge and experience as a way to increase competency.

Internal factors such as strategies for learning environments are based on cognition and instructional theories. These theories explain how instructors design training program that mirrors the characteristics of the learner and how these characteristics affect the outcome of the individual's learning experience (Schunk, 2008).

Table 4: ***Success***
• "High achieving adults with ADHD" given resilient factors (Nadeau, 2005, p. 551). • "Taking control and making internal decisions and getting external manifestation" (Gerber & Reiff, 1994, p. 207). • "Strong motivation, determination, ability to seek help when needed, enhanced skills, taking charge of ADHD in working environment" (Nadeau, 1997, p. 110-115, 215, 219). • Individuals with ADHD specializing in "fields of law, politics, science, and education" (Roffman, 2000, p. 243).

Nadeau's (1997) definition of success is most relevant to the research because it focuses on the primary characteristics that are necessary in order for the employee to be successful. In order to obtain success, these employees need to have motivation,

determination, ability to seek help, will to enhance skills, and defeat ADHD in the working environment (Nadeau, 1997; Nadeau, 2005). Learning environments that provide the employee with the ability to optimize their learning potential will in turn help the individual achieve success.

Table 5: ***Career***
• Refers to a general field or endeavor (Nadeau, 2005). • Hechtman, Weiss, and Weiss (1999) view career as a profession (jobs or tasks are what is done within the career).

Hechtman et al. (1999) interpret career as the general field, however what is done in the career is defined as tasks or job. For the purposes of this research, training and development for that certain task or job requires instruction.

1. *Training*: "training should be for the benefit of the firm, knowing that this in turn will benefit the individual" (Latham, 1988, p. 549).
2. *Development*: "organizations have the ethical responsibility for developing programs that minimize the technical obsolescence of their employees" (Latham, 1988, p. 549).

Overview

Overall, this study investigates instructional methods, strategies, and learning environments that are most influential in the training, development, and success of adult employees with Attention Deficit Hyperactivity Disorder (ADHD). The subjects of this research are employees who admittedly have been diagnosed with ADHD and work for

Bridgewater College, Eastern Mennonite University, and James Madison University. The employees responded to a survey that asked questions about preferred instructional methods, learning environments, and instructional strategies that impact learning the most. The purpose of this study was to recognize that instructional methods may not have as much impact on learning as the learning environment and instructional strategies employed. Results of this research indicated that with knowledge of the employee's condition, trainers may able to provide an environment more conducive to the employee's learning, thus maximizing the success of the individual and impacting the performance of the organization.

Chapter 2: Review of Literature

The conceptual framework for this research centers on the employee, exploring Attention Deficit Hyperactivity Disorder (ADHD), learning environments, and instructional methods. The researcher hypothesizes that regardless of the type of instructional method, the design of instruction allows for a successful training and development of the employee with ADHD. The following theoretical structure postulates that "since learning problems limit the acquisition of basic academic skills, educators need to understand how they can address employability skills in their training programs", as well as offer methods for helping individuals manage their circumstance (Cooper, 1996, p. 7).

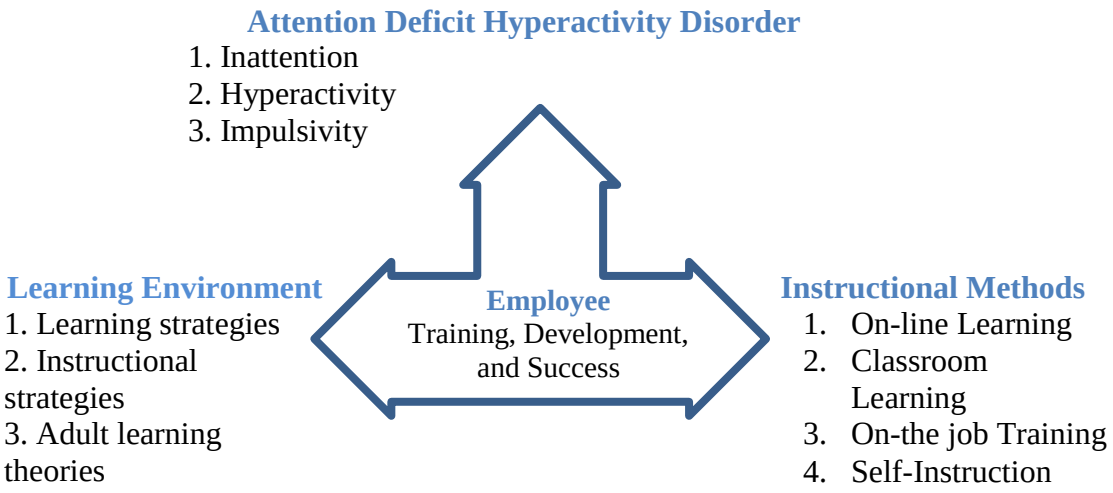


Figure 1: Conceptual Framework that illustrates the relationships of Learning Environments, Instructional Methods, and ADHD to the employee.

ADHD Learning Differences in the Workplace

A study written by Eric Patton (2005) suggests that "ADHD leads to work performance deficiencies, absenteeism, turnover and interpersonal conflict at work" (p. 327). Employees may be impulsive, hyperactive, and lack attention to some degree, which may affect their learning and performance in the workplace. Patton (2005) further notes that Human Resource professionals, training and development departments, and management lack knowledge of ADHD and how it affects the employee. Employee performance decreases over the years due to insufficient training and low self-morale; which also does not take into account the factors outside the workplace atmosphere. If there is no assessment of ADHD in adults, they do not get the help and correct training they may need (Patton, 2005).

Nadeau (2005) argues "that career consultants have little or no training in the areas of ADHD," therefore the design of instruction and instructional strategies, assessments, and evaluations of employees lack accommodations (p. 549-550). Adult ADHD affects workplace performance and in order to improve upon this, assessments of career consultants' and training professionals' awareness should be evaluated. Cooper (1996) found that most training professionals "report that they know little about learning problems and disabilities because the field is not included in their curriculum of professional studies or only mentioned briefly" (p. 2-3). He also found that teaching adults with special learning needs has been the most prevalent staff development need. The first step to providing this need is to understand ADHD and learning differences.

Nadeau (1997) has assessed the challenges that occur in the workplace for employees with Attention Deficit Hyperactivity Disorder (ADHD). Nadeau's (1997,

2005) research focused on adults with ADHD who are employed and the learning challenges they may have. Katz (2003) postulates that "there is a great deal of variability in the manifestation of ADHD in adults, and [management] should be cognizant of that factor as [they] seek to understand and work with such individuals as employees in various organizations" (p. 29). Nadeau's (1997) theory indicates that characteristics of management such as being more "supportive, flexible, creative in finding solutions, and understands the basis of [ADHD] symptoms" will ultimately help the employee obtain success (pp. 140-141).

> Barkley, Fischer, and Murphy (2008) view ADHD and occupational functioning: As ADHD children enter adulthood and take on full-time jobs that require skilled labor, independence of supervision, acceptance of responsibility, and periodic training in new knowledge or skill, their deficits in attention, impulse control, and regulating activity-as well as their poor organizational and self-control skills could begin to handicap them on the job. (p. 275)

This view suggests that employees with the disorder have greater problems with occupational functioning than those who do not. Evaluation and diagnosis of ADHD in adults can be given by psychologists or medical procedures (Hechtman et al., 1999) and is often the first step in helping the employee. Hechtman et al. (1999) suggest that employees should be in learning environments where learning disabilities are acknowledged and where support, advice, and management of the disorder will be achieved. Support from HR professionals and advice on retention may also help employees maximize the success of his or her skills.

Young (2007) suggests two ways to diagnose adults with the disorder: medically or psychologically. Impulsivity, hyperactivity, and inattention are the primary descriptors of Attention Deficit Hyperactivity Disorder (ADHD). The magnitude of the characteristics is tested and can vary amongst individuals. Young's (2007) research is about how ADHD affects one's life based on the theory that it can affect anyone. However, certain actions stand out more than others that lead to the diagnosis of ADHD.

Impulsivity, hyperactivity, and inattention can immensely affect the characteristics of the learner in the workplace. The employee can have difficulty listening, poor organizational skills, anxiety, and forgetfulness, which can digress the employee's attention to instruction, thus preventing learning (Thornberry, 2007). Another study by Zwart & Kallemeyn (2001) reported that individuals with ADHD have problems with taking notes, studying, and taking tests. Hechtman et al. (1999) have found that "many adults with ADHD have been impeded from obtaining an education appropriate to their true potential" (p. 69). Many reasons as to why this could be true are attributed to rejection of accommodations, evaluations, assessments, and effective instructional strategies throughout the individual's life as a learner. It is important that the "environmental restructuring is the adaptation of an individual's school or work situation to minimize the impact of the individual's [attention] deficits while optimizing the patient's capacity to draw on unique strengths" (p. 203).

Young's (2007) theory that Attention Deficit Hyperactivity Disorder (ADHD) is nonexistent in adults is most likely why employees are not afforded the accommodations they need to perform such tasks (Young, 2007). Roffman (2000) notes challenges such as learning, and strengths such as creativity, associated with employees with ADHD. He

also includes a variety of hands-on occupations that are accommodating to individuals with ADHD. Although specific careers are "ADHD friendly", it is always important to know that even in the friendliest environments, complications can still exist for the learner. Nonetheless, adults with ADHD should "seek counseling to help them fine tune their work situations so as to optimize their capacity to function and minimize their stress" (Hechtman et al., 1999, p. 219). Although accommodations are specific to the individual, learning and retention difficulties could exist in all employees with ADHD. Hechtman et al. (199) further believes that common themes of difficulty include remaining attentive, executing functions, and retaining information in general work and educational settings.

Other researchers such as Gerber, Ginsberg, and Reiff (1994) argue that success is an independent factor and that self-control will lead to career success. The foundation of the Vocational Model of Success suggests that the person is the determinant of his or her success. The "degree to which success is obtained is self-earned, internally and externally, by the individual" (Gerber, Ginsberg, and Reiff, 1994, p. 209). The model suggests that the individual has to want to succeed, thus doing whatever to obtain his or her goals. The researcher agrees that ultimately adults have to be motivated to learn and willing to improve to be successful. They must recognize their characteristics of learning and seek the assistance if needed.

Learning Environments and Instructional Strategies (Cognition and Theory)

An individual's characteristics of learning can affect the learning outcome and experience of the employee. The cognition and instruction theory are believed to be an epistemology of how the design of instruction affects learning. Characteristics of

learning outcomes are specific to the individual. Adult employees with Attention Deficit Hyperactivity Disorder (ADHD) may have learning differences that affect their learning. Learning outcomes according to Gagne's (1965) learning theory, postulates five different types of learning outcomes: intellectual skill, verbal information, cognitive strategies, motor skills, and attitude. Schunk (2008) states that learning "outcomes are [different] when learning requires different types of cognitive information processing and when learning enables different types of performances" (p. 286). Intellectual skills can include regulations, events, and concepts; verbal information can encompass details or dates; cognitive strategies can comprise of practice and problem-solving; motor skills are action skills; and attitudes include kindness, truthfulness and fairness (Schunk, 2008).

Figure 2 shows how the learning environment and instructional strategies can improve attention and retention, given the employee's stimulus and response to the training. The model shows that sensory input causes sensory registry to occur allowing the learner to have selective attention, thus choosing retention in either short-term or long-term memory. Human Resource professionals are having problems creating effective instructional strategies so that employees with ADHD can successfully be attentive, retain learning, and transfer the training into the workplace.

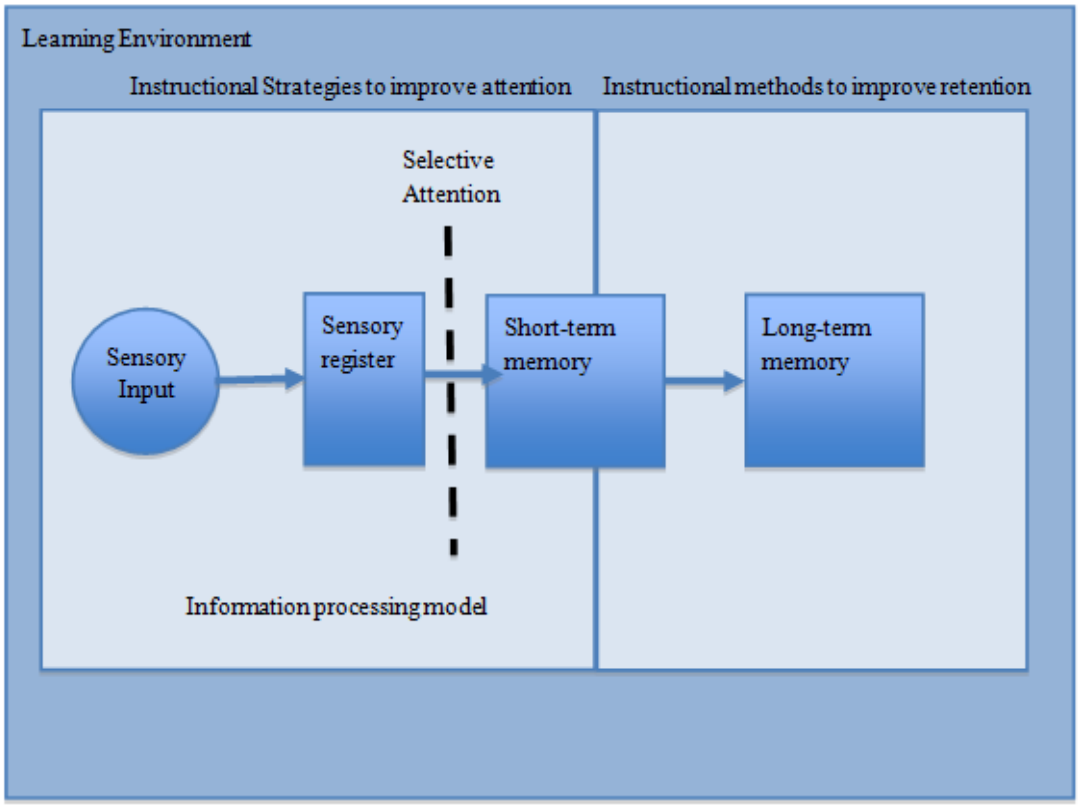


Figure 2**:** Information processing model showing how the stages that occur beginning with attention and ending with retention.

This section of the literature review emphasizes cognitive strategies used in instructional design and learning. Cognitive strategies include "cognitive information processing skills such as attending to new information, deciding to rehearse information, elaborating and using long-term memory retrieval strategies" (Schunk, 2008, p. 286). Cognitive information processing can occur during and after training.

For employees with Attention Deficit Hyperactivity Disorder (ADHD), lack of attention can cause lack of processing certain educational skills when being trained (Goldstein & Ingersoll, 1993). Knowing the complication that adult employees have with information processing, "trainers and instructors must become aware of the possible

learning disabilities and be prepared to make reasonable accommodations so that learners can keep their knowledge, skill and abilities up to date and receive training despite their learning disability" (Rothwell, 2008, p. 55). Creating a learning environment that will help individuals learn in the best way possible has a positive impact on development and success.

The implication that instructional design along with cognitive strategies can improve learning outcomes for employees with ADHD asserts that instructors are aware of learning disabilities and how to accommodate learning styles of the trainee (Rothwell 2008). Rothwell (2008) also suggests that it is important for instructors to recognize the barriers that stand in the way of successful learning. The information instructors gain from the students will help them gather information about the individuals learning characteristics and create an instructional strategies that will aid the individual in his or her learning.

Often in instructional design, trainers ask "why use a strategy approach?" The answer to this would be that "it is well known that strategy instruction can meaningfully improve performance among adult learners with [ADHD]" (Lienemann & Reid, 2006, p. 10). The idea that strategic instruction will improve performance is an indicator that it is important regardless of the instructional method.

From the cognitive perspective of instruction and training employees with Attention Deficit Hyperactivity Disorder (ADHD), "the key is the relationship between demands of the learning environment [e.g., the task, instructional materials] and how the learner processes information" (Lienemann & Reid, 2006, p. 6). Employees diagnosed with ADHD may experience deficits in cognitive processes such as memory, ability to

process information efficiently, or both. Past cognitive approaches to instructional design, leading up to current research, has evolved into a plethora of models and theories. One of the most significant is the information processing model. This model focuses on the cognitive process linking memory and learning (Lienamann & Reid, 2006). Memory, retention, and learning are goals that trainers should strive for in achieving success in employee skills.

It is important to note that "strategy instruction may fail if teachers lack critical knowledge of the theory or process behind it" (Lienemann & Reid, 2006, p. 16). In other words, if trainers do not understand why it takes completing a needs assessment during the process, using strategic instructional design will not be effective. To understand the theory of cognitive strategies and learning theory, trainers should apply designs of instruction using cognitive theory of learning, such as:

- Encourage learner intuition
- Organize instruction around pieces of the whole (whole-to-part learning)
- Provide learners with cognitive maps by taking steps to try to understand how people understand the big picture
- Guide learners to watch those who are successful at performing observable tasks to encourage social learning
- Use behavioral modeling to encourage social learning
- Encourage learners to try out what they are learning by doing behavioral rehearsals. (Rothwell, 2008, p. 24)

Theories and models of instruction "consider characteristics of learners as well as teachers that affect instruction and adult learning" (Schunk, 2008, p. 304). Some of the qualities of learner characteristics include learner aptitudes, cognitive styles, and information processing capabilities. Schunk (2008) describes aptitudes as "individual characteristics, such as abilities, personality variable, and demographic factors; and,

treatments are forms of instruction or sets of conditions associated with instruction" (p. 304). Aptitude-Treatment Interactions refer to the "differences in student outcome [e.g. achievements, attitudes] as a function of the interaction [combination] of instructional conditions [treatments] with student characteristic [aptitudes]" (p. 304). Specific to adult employees with Attention Deficit Hyperactivity Disorder (ADHD), their aptitude might encompass inattention, attitudes toward learning, and personality. With strategic treatment or conditions of instruction, the employee's response to learning and training may improve, thus improving cognitive processing and learning. Strategic trainers or educators should understand that all learners have specific needs (Schunk, 2008).

Flavel (1979) defines metacognition as the individual's "knowledge or beliefs about what factors or variables act and interact" to affect the outcome of cognitive beliefs (p. 907). According to Pressly &Woloshyn (1995), metacognition occurs when adults understand what variables should be retained, practiced, and why. Trainers should work with employee until the employee can:

- Know where to use a strategy and why it should be used.
- Monitor the strategy to check whether it is effective.
- Shield themselves from maladaptive thoughts that could impair performance.
- Develop the strong belief that strategy use makes them better thinkers.
- Use a strategy fluently to the point where it becomes automatic

(Lienamann & Ried, 2006, p. 29).

The theory of information processing affirms that the "environment plays an important role in learning" (Dempsey & Reiser, 2007, p. 38). There are three memory systems in the learner: sensory, short-term, and long-term memory. The memory systems

are able to receive information, store information, and memorize information for performance:

> With sensory memory, learners perceive organized patterns in the environment and begin the process of recognizing and coding these patterns. Short term or working memory permits the learner to hold information briefly in the mind to make further sense of it and to connect it with other information that is already in long-term memory. Finally, long-term memory enables the learner to remember and apply information long after it was originally learned. (p. 38)

Stages through which information passes, such as attention, encoding, and retrieval, can act on such information as it is acknowledged, converted, and soon to be used or practiced (Demsey & Reiser, 2007). When employees are not attentive during training sessions, they risk the possibility of not receiving the information, thus not effectively learning the material. In order for trainers to be influential, they need to consider that "attention must be directed so that learners hold specific aspects of the information they are being asked to learn" (p. 38). Trainers should create a learning environment where the goals are clear and the objectives are specific to the tasks being learned.

Obtaining different theories of attention vary, however one conclusion can be made that satisfies all doubt: attention is necessary for learning to occur (Schunk, 2008). The trainee must be attentive and willing to internalize certain information. This may be harder for employees with Attention Deficit Hyperactivity Disorder (ADHD), however attention can be achieved if instructors are creative in their training delivery. Having

materials such as colors, bells, stickers, and other attention-getting trinkets may help the employee focus well.

Theories and models of learning and instruction vary in precision, theoretical orientation, and critical components. No attempt has been made to be politically correct, however these models are theories of assumption in what can better instruction and learning. Carroll (1963, 1965) formulated a model of learning that emphasizes the instructional time being spent on learning. The foundation of this model states that students successfully learn according to how much time they spend learning (Schunk, 2008). *Time* "means academically engaged time, or time spent paying attention and trying to learn" (p. 291). The conceptual framework of this model is the *Degree of Learning*:

Figure 3: Degree of Learning Model that emphasis the amount of instructional time being spent on learning.

Ideally, "learners should spend as much time as they need to learn (degree of learning=1), but learners typically spend either more time (degree of learning >1) or less time (degree of learning <1)" (Schunk, 2008, p. 291). Employees with Attention Deficit Hyperactivity Disorder (ADHD) may need more time than time spent. However, in the reality of workplace training, employees with learning needs may not be afforded more time. This could be for a number of reasons: the trainer is not cognizant of the learner's diagnosis, neither has the trainer strategically designed instruction so that more time is incorporated; money, time, and other factors of training stand in the way of development; or the employee will not speak up and say he or she needs more time.

There are many researchers who spend time developing instructional methods to facilitate training. The use of instructional methods intends to guide the instructor in his or her facilitation to maximize learning. Rothwell (2008) describes *Gagne's Events of Instruction* as one of the most popular models of instruction. Gagne's (1965) theory uses reception, expectancy, retrieval, selective perception, semantic encoding, responding, reinforcing, retrieval, and generalization:

1. Gain attention (reception)
2. Inform learners of the objective (expectancy)
3. Stimulate recall of prior learning (retrieval)
4. Present the stimulus (selective perception)
5. Provide learning guidance (semantic encoding)
6. Elicit performance (responding)
7. Provide feedback (reinforcing)
8. Assess performance (retrieval)
9. Enhance retention and transfer (generalization) (1965)

Gagne's (1965) first step in his model asserts that the trainer should grasp the attention of the employee in order to begin the learning experience. This model is relevant and useful for employees with Attention Deficit Hyperactivity Disorder (ADHD). It is also important for the trainers to assess the following questions for themselves:

- What are the goals and purposes of training?
- What are the roles of training in advocating values, belief, ethics, and attitudes?
- Which feedback systems should be used with the learner, and why are some better than others?
- Who are the Learners?
- Who are the Trainers?
- What is the learning process?

- What are the training methods and approaches?
- What is the role of the work environment in training transfer?
- What are other key issues that affect what trainers do? (Rothwell, 2008, p. 19)

For the learner, Rothwell's (2002) theory of the *Workplace Learning Process* is insightful for those who pursue employment training and development and is conducive to all characteristics of learning:

1. Experience a triggering circumstance
2. Recognize the importance of the issue
3. Become more curious
4. Seek information
5. Process information
6. Convert or transform information into useful knowledge
7. Apply the knowledge
8. Remember what was learned
9. Reflect on what was learned
10. Evaluate the learning experience (p. 114)

Working through the difficulties of learning differences will help the employee understand what learning is and how it occurs, no matter what the characteristics of learning are. The model stated above "depicts the complexities of learning in real-time work situations that is also broad enough to include learning in planned learning experience, such as classroom or online courses" (Rothwell, 2008, p. 27). Rothwell (2002) also formulated a model that exhibits *Applying the Workplace Learning Process* for those who facilitate training to:

1. Open a planned learning experience with a compelling effort to capture learner's attention.

2. Emphasize the importance of the issue.
3. Lead learners to consider questions that will help them understand the full complexity of the issue.
4. Supply suggestions about how learners could find out more.
5. Help learners interpret and critically examine information they have found.
6. Encourage learners to explore what is the meaning of the information they have found and interpret it.
7. Provide structures by which learners can experiment with or try out what they have learned.
8. Help learners develop memory joggers, job aids, or performance support tools that will enable them to apply what they have learned.
9. Structure situations that will encourage such reflection.
10. Structure situations that will encourage double-loop learning (p. 71).

The *Applying Workplace Learning Process* model and the *Workplace Learning Process* model can be integrated, encouraging individuals to take responsibility of their own learning, and can help training professionals organize instruction.

Epistemologies of learning and instruction can influence how trainers facilitate. Knowledge of learning barriers, characteristics of learning, different learning disabilities, and strategic instructional design effects the learning outcome of employees with ADHD. "Practical ideas may be obtained by contemplating various theories of learning; hence theories of learning affect the practice of training and the learner's practice of learning" (Rothwell, 2008, p. 20).

Instructional Methods

Reiser & Gagne (1983) define instructional methods as the "physical means by which an instructional message is communicated" (p. 5). That is, "most educators view instructional media as supplementary means of presenting information" which is what Dempsey & Reiser (2007) simplify to be all physical, educational tactics of learning (p. 18). Self-instruction, classroom learning, on-the-job training, and on-line learning are all techniques of instructional methods and will be further discussed.

Self-instruction.

Self –Instruction is the "self-directive process through which learners transform their mental abilities into task-related academic skills" (Zimmerman & Schunk, 2001, p. 2). Self-instruction occurs often, especially in employment where training does not exist. Employees with Attention Deficit Hyperactivity Disorders (ADHD) may often experience lack of organization and strategic learning within the workplace and during training. For learners with such learning disabilities, "problems [with learning] are due to lack of effective strategies as opposed to deficits in specific abilities" (Lienamann & Ried, 2006, p. 71). Learning strategies for self-instruction include self-monitoring, self-regulation, goal setting, and self-reinforcement.

Schunk (2008) suggests that self-regulated learning occurs most in situations where "a teacher gives students no latitude in why, how, when, what, where, and with whom to complete a task" (p. 116). For adults with Attention Deficit Hyperactivity Disorder (ADHD) and other learning disabilities, self-regulated learning may be very frustrating because in most cases the adult may lack strategic thinking skills when a

facilitator is not present. The response to the stimulus of anxiety could lead to "experiencing a conditioned chain reaction that begins with discomfort, or panic and leads to an inability to perform, shame, escape, and lowered self-esteem" (Nadeau, 1997, p. 63). Learning anxiety is prominent in employees who have experienced learning difficulties in elementary, secondary education, college, or when placed in a new situation that reminds them of frustrating and embarrassing past experiences.

Self-instruction, a component of self-regulation is necessary for employees training through an activity or task. With self-instruction, "students can literally learn to talk themselves through a task" (Lienamann & Ried, 2006, p. 78). There are two levels of self-instruction described by:

1. *Task approach*: general and appropriate for a wide range of situation in training
2. *Task specific*: aimed at a particular situation and would not get generalized in training (Lienamann & Ried, 2006, p. 78-79)

Depending on the employee's task to be learned, task approach or task specific will be used to help the trainee with self-instruction. Lienamann & Ried (2006) also describe six functions of self-instruction that are incorporated within the two levels of self-instruction.

1. *Problem definition*-defining the nature and demands of a task
2. *Focusing attention/planning*-attending to task and generating plans
3. *Strategy related*-engaging and using a strategy
4. *Self-evaluation*-error detection and correction
5. *Coping*-dealing with difficulties/failures
6. *Self-reinforcement*-rewarding oneself (Leinamann & Ried, 2006, p. 80)

For employees with ADHD, focusing attention and planning might be the most difficult of the six functions of self-instruction. When there appears to be no structure for the learning process or anxiety occurs, the employee may feel misguided and confused.

Swanson, Hoskyn, & Lee (1999) argue that self-instruction techniques are very flexible and helpful for trainees with Attention Deficit Hyperactivity Disorders (ADHD) and other learning disabilities because self-instruction helps with reinforcement, motivation, and focus. Lienamann & Ried's (2006) four step process used to help employees with ADHD involves the importance of self-talk (verbalization) to minimize negative self-talk and encourage successful learning; the trainee has an example or model to use during self-instruction (guided practice when needed); the trainee is engaged in peer learning and using peer-examples; and the trainee is verbalizing what and how they have learned step by step. The last step encourages the trainee to express what he or she has learned, thus transferring the training.

Rothwell (2008) argues that "adult learners have the stamina and fortitude, both cognitively and personally to take responsibility for their own learning and assertively pursue what is needed to help them solve problems they face or goal they seek to achieve" (p. 69). The researcher does not agree with this statement because it is not reasonable to say that all adult learners know what or how to actively pursue their own learning in order to achieve their goals. There are boundaries to that assumption especially in consideration for adults with learning disabilities such as ADHD. The statement does not take into consideration adult employees with learning disabilities who may suffer from learning anxiety that causes them to feel incompetent. Also, employees

may often deny the responsibility of their own training and not assertively pursue training.

Self-instruction learning strategies should incorporate self-regulation, self-monitoring, and goal setting strategies, which may help employees with self-reinforcement and self-efficacy in the workplace. Self-instruction can "enhance [employee] performance and perception of their [own] learning progress and self-efficacy" (Schunk, 2008, p. 62). Reid, Trout, and Schartz (2005) agree that self-reinforcement and self-monitoring are key components in promoting self-instruction and self-regulation when promoting academic achievement.

Classroom Learning.

Classroom learning is the "immediate feedback, being familiar to instructors and students, motivating students, and cultivation of a social community" (Nunamaker et.al., 2004, p. 76). Social cognitive theory makes several assumptions that link learning and performance of behaviors. Zimmerman & Schunk (2003) infer that the assumptions address the 1) shared interactions among persons, behavior and environments, 2) the differences between enactive and vivid learning, and 3) the distinction between learning and performance. Classroom learning presents an environment conducive for education where both the trainer and trainee interact. Learning by observation can occur in the classroom and is part of the social cognitive theory, which "distinguishes between new learning and performance of previously learning behaviors" and performance that may occur in the work place (Schunk, 2008, p. 81). Learning by observing may traditionally occur in the classroom, however observed learning can take place anywhere.

Models are often used in the classroom and can be essential to learning. Rosenthal & Bandura (1978) defined modeling as "any stimulus array so organized that an observer can extract and act on the main information conveyed by environmental events" (p. 622). The significance of modeling is prevalent in face-to-face learning where trainees can interact with each other and the trainer. Modeling is also a helpful learning strategy for improving skill development in the workplace.

Employees with Attention Deficit Hyperactivity Disorder (ADHD) may "need significantly more repetition" and "visual imagery than non-ADHD adults to learn a new task" (Nadeau, 1997, p. 67). Modeling and visual learning can help the employee process information. Nadeau (1997) states that for adults with ADHD, "prolonged effective listening is a problem for many" and "their ability to concentrate while receiving new information auditorily is limited" (p. 68). Because of inattention and verbal information processing difficulties, visual imagery and experimentation may help employees with ADHD transfer and retain what they have learned. A classroom environment that incorporates trainee-to-trainer interaction, modeling, visual imagery, interaction with peers, and experimentation is necessary for successful learning.

The Zone of Proximal Development (ZPD) is a theory postulated by Lev Semenovich Vygotsky (1978), a theorist of constructivism and socio-culture. He considers the "social environment to be critical for learning and thought that social interactions transformed learning experiences" (Schunk, 2008, p. 243). Vygotsky and Cole (1978) define ZPD as "those functions [of learning] that have not yet matured but are in the process of maturation" (p. 86). Models, visual imagery, and interaction can develop the individual's learning. In the ZPD, the trainer and trainee "work together on a

task that the [trainee] could not perform independently because of the difficulty level" (Schunk, 2008, p. 245). Trainer and trainee interaction can occur in the classroom to assist the learners with their task and develop their skills that apply to their career. Classroom learning provides trainees with an instructor who is more skilled and knowledgeable and can guide the trainee toward achievement of his or her skills in the work place.

Classroom and facilitated learning offers a guided and hands-on approach to training and development. As management incorporates more of a learning culture (training and educational organizations), it is possible for adults with or without ADHD to have the same negative approach to training. Rothwell (2008) suggests that if learning is not relevant to the employee, he or she will be less engaged (p. 88). Companies and organization should offer incentives for employees to engage in training and development. No matter what the technique is to involve employees with training, instructional strategies is always needed to facilitate effective learning and successful training among all types of workers.

On-line Learning.

On-line Learning is defined as a "learning model in which [the] instructor and learners are separated by physical distance, and online delivery media are used to bridge the instructional gap" (Huang, 2002, p. 28). On-line learning is considered to be the most recent and innovative learning method for distant learning and instructional media. Twenty years ago, for instance, it was unimaginable to use "iPods, Wikipedia's, or learning management systems as viable vehicles by which to deliver instruction" (Rothwell, 2008, p. 105). Depending on the learning styles of employees with ADHD,

on-line learning can be an advantageous or disadvantageous experience. However, with educational technology taking over, it is necessary for adult learners to be competent in using technology in the work place.

Adult learners need the skills and willingness to use new technology. Those who have fewer skills and less access with technology face more obstacles to be motivated to maximize technology usage. Rothwell (2008) believes that new learning technology will help learners access non-traditional learning experiences that keep them engaged such as "web-based video teleconferencing, audio conferencing, web or alternative instructional media such as iPods" (p. 106). On-line learning and other technologies may be useful for adult employees with Attention Deficit Hyperactivity Disorder (ADHD) because this allows them to be active learners and engaged in the training.

There is a plethora of software used for assessing learning needs, designing training, delivering instruction or evaluating results. Rothwell (2008) lists and explains the following computer based learning methods:

1. *E-learning*: any instruction lending itself to electronic delivery.
2. *Computer-mediated learning*: both computer-based training (using personal computers) and online instruction (which includes virtual classrooms).
3. *Electronically assisted learning*: all modes of what is called *distance learning*, such as video teleconferencing, audio conferencing, electronic whiteboards, videotapes, etc. (p. 108).

Most managers and Human Resource professionals are in agreement with using instructional technology "because it can often be accessed during downtime on workers' desktops, thereby eliminating the need for workers to attend off-the-job training and have

their work pile up while away" (Rothwell, 2008, p. 108). While instructional technology can appear to be convenient, Rothwell, Butler, Maldonado, Hunt, Peters, Li, and Stern (2006) suggest that there is a need for creative strategies to design blended learning and mix methods to improve training delivery.

In supporting training delivery, an instructional design can support blended learning characteristics such as those pertaining to adult learners with Attention Deficit Hyperactivity Disorder (ADHD). There are certain software and technology that are conducive to the learning conditions of those with ADHD and can help keep employees more attentive during training, with the use of on-line and learning via technology. Jonassen et al. (1999) explains the functions of technology as:

1. *Tools* to support knowledge construction
2. *Information vehicle* for exploring knowledge to support learning by construction
3. *Context* to support learning by doing
4. *Social medium* to support learning by conversing
5. *Intellectual partner* to support learning by reflecting (p. 228)

The fact that computers require attention could be an instructional medium needed for employees with Attention Deficit Hyperactivity Disorder (ADHD). In addition to the abundance of functions computers provide, on-line learning and technology is particularly helpful for individuals with ADHD because the "computer commands students' attention and provides immediate responses" (Schunk, 2008, p. 313). The opportunity for trainees to learn and retain information requires them to be attentive, understanding, and provide feedback. Schunk (2008) further notes that "feedback can be of a type not given in the classroom, such as how student's present

performances compare with their prior performances to show progress in learning" (p. 313). As stated earlier, computer based training creates an educational environment that makes learning convenient and also gives immediate assessment and progress evaluation, which is often what adult learners with ADHD need.

On-line learning can enhance skill development in the work place and be more effective than many traditional instructional methods. When "computer learning shows more of an advantage than traditional instruction, it may be because computers have more prepared materials [that] implement more effective instructional design" (Schunk, 2008, p. 319). In computer-based training, trainees are expected to take the initiative and be self-directed. There is "no trainer in many—even most— on-line training programs, thus learners must proceed through the training experience at their own pace" (Rothwell, 2008, p. 110). The disadvantage of using on-line learning and being self-directed, may cause employees with ADHD to not complete the training if someone is not facilitating, unless the training is creative enough to keep the student interactive.

The use of technology should also depend on the learning goals and the learning environment that the employee with ADHD prefers. As Rothwell (2008) points out, "technology has the potential to foster different learning goals, [however] it may not be the best way to promote student interaction through peer teaching, group discussion, or cooperative learning" (p. 319). Technology can be beneficial, but it has its disadvantages such as the interaction students would receive in a classroom learning environment. Blended learning will continue to increase as a means of information communication; however, classroom learning continues to take precedence to many other instructional methods.

On-the-job Training.

Latham & Wexley (1991) describe on-the-job training as working on the task and gaining knowledge and experience as a way to increase competency. On-the-job training provides hands-on experience. In some professions, on-the-job training is the most efficient way employees can get a better understanding of how to learn a particular job or task. Little research connects on-the-job training to employees with Attention Deficit Hyperactivity Disorder (ADHD); however, the researcher has found that experiential learning is very beneficial to the employee's future performance.

Learning by investigation and experience is also known as the Conditioned Theory of learning. The importance of making a connection with what has been learned and how to apply it is very pertinent to the employee's career tasks. In most cases, during or following any type of instructional method, there should be some form of hands-on training. Thorndike's (1914) fundamental ideas are embodied in what is known as the Laws of Exercise:

1. *Law of Use*: a response to stimulus strengthens the connection [employee and task].
2. *Law of Disuse*: when a response is not made to a stimulus, the connection's strength is weakened [forgotten]. The longer the time interval before a response is made, the greater is the decline in the connection's strength.
3. *Law of Effect*: emphasizes the consequences of behavior and adaption to environment-responses resulting in satisfying [rewarding] consequences are learned; responses producing annoying [punishing] consequences are not learned (p. 112).

The Law of Exercise explains that making a connection and experimenting while learning strengthens knowledge; and when there is no connection, the learner chooses not to learn, experiment, or do the task. Relevant to employees with ADHD and other learning disabilities, the Law of Exercise emphasizes that repetition and experience helps when transfer of training is expected to occur.

With the change of technology, society, and the economy, performance improvement is necessary to a successful career. As for the role of performance improvement, "training should always be considered as a perquisite for task and job development for all employees" (Swanson, 2007, p. 3). Performance improvement can occur at any time, whether covert or overt. It is important for the reader to understand that training and education are two very different terms. Webster defines *training* as "to form by instruction, discipline, or drill; to make or become prepared [as the exercise] for a test or skill" (Merriam-Webster Dictionary, 2004, p. 228). In order to not confuse on-job-training with the previous instructional methods discussed (classroom learning, self-instruction, and on-line learning), it is noteworthy to mention that on-the-job training is more task-focused and can help the learner strengthen his or her competency. On-the-job training for employees with ADHD may or may not be the most efficient way for employees to learn. Schunk (2008) suggest that "skills should be taught with different types of educational content for trainees to understand how to apply them" (p. 32).

Altonji & Speltzer (1991) suggest that "employer-provided training has long been viewed as an important determinant of productivity and success in the labor market" (p. 58). Training becomes a factor of measured success when it is implemented in a working environment. Organizations are often faced with "increasing competitive pressures to

improve the quality of their products and service," which may call for "structured training programs" (Ford et al., 1992, p. 511). Ford, Quinones, Sego, and Sorra (1992) state three dimensions of structured training:

1. *Breadth*: "During training, trainees often obtain the knowledge and skills needed to complete a variety of tasks on the job. Consequently, the most direct measure of the opportunity to perform involves the number of trained tasks that the trainee actually performs once on the job. The greater the number of trained tasks performed on the job, the greater the *breadth"* (p. 513).
2. *Activity level*: "…involves the number of times the trainee performs trained tasks on the job" (p. 513). The more the trainee practices the task, the better he or she will perform. Therefore, "in examining the opportunity to perform in a transfer of training context, a second critical dimension involves the *activity level* or the number of times trained tasks are performed" (Ford et al., 1992, p. 513).
3. *Type of tasks*: "Once on the job, trainees may perform an equal number of trained tasks or have quite similar activity levels but differ in the type of tasks they perform. Some may have the opportunity to perform only the simplest of those tasks while others work on the more complex and difficult tasks. Therefore, the third dimension of the opportunity to perform involves the *type of tasks* trained that are performed by the trainee once on the job" (Ford et al., 1992, p. 513).

A plethora of individual characteristics of employees with Attention Deficit Hyperactivity Disorder (ADHD) influence their opportunities to perform training tasks. Two characteristics contributing to this research are ability and self-efficacy. Ford et al. (1992) found that "high-ability individuals should be better prepared to complete trained

tasks" (p. 515). In Noe's (1986) study on ability and self-efficacy, he finds that an individual's "attitudes and attributes are hypothesized to have an impact on motivation to learn" (p. 743). Low self-efficacy and motivation to learn is normal for employees with ADHD. Okie (2006) suggest that adults with ADHD show "symptoms of inattention, impulsiveness, and hyperactivity that can impair school and work performance, damage self-esteem, interfere with relationships, and reduce the chances of success and satisfaction in many areas of life" (p. 2638). Work environments should provide structured training which motivates all employees to learn and builds self-efficacy, which in turn increases individual and organizational success.

Seminal Works

Studies that influence this research are those that address employee success and how management plays a role in achievement. Patton's (2009) study is a seminal work in that he is concerned with "Human resource professionals and management who do not pay attention to Attention Deficit Hyperactivity Disorder [and other learning disabilities] in working adults", and who in turn overlook instructional strategies for the employees with disorders (p. 327). The problem is not only do adults not recognize that they have ADHD, but even when they do, it is "exacerbated by another issue: the fact that ADHD may not be recognized as a legitimate ailment for adults" (p. 327).

There are strong reasons as to why "Human resource professionals and managers [should] work toward helping [employees with ADHD]; however, for several reasons, employees with ADHD do not get the help they need" which could cause diminishing returns on success and achievement in the workplace (p. 334). Patton's research is so influential because he insists that "instead of waiting for a crisis situation to occur before

acknowledging mental illness in the workplace, [HR professionals and management] could play a proactive role in dealing with the issue of mental illness in the workplace, including ADHD" (p. 335). In doing this, HR professionals and management will have a direct impact on the employee performance and organizational performance.

Nadeau's (2005) article is also seminal because she is interested in the assessment of the individual with the disorder and what factors in the work place and in management are influential to the success of the employee. Her study is about an employee named "Paul" who is tested for Attention Deficit Hyperactivity Disorder (ADHD) after struggling to keep up with workloads, concentration, and other characteristics that are consistent with ADHD diagnosis. The Case Illustration describes his process of diagnosis, measures taken to put him in the best career field, and internal factors in the workplace that helped him achieve success. Nadeau (2005) found that with the help of the diagnosis that specified the magnitude of "Paul's" ADHD, career counselors assessed his competencies and personality (Myers-Briggs Type Indicator) and made accommodations to help "Paul" be successful in his law profession. Nadeau's (1997) work is directly associated to this research because it is about how management can carry out goals to better accommodate and treat employees with ADHD.

Tangential Studies

Young (2007) recognizes the "inherently contradictory and paradoxical patterns of adolescent and adult presentations of ADHD" specifically hyperactivity, impulsivity, and inattention (p. 4). Once the diagnosis is confirmed, necessary actions could be taken in the workplace by management. Human resource professionals and management should be educated about the disorder, possible learning deficiencies, and what could be

done, if needed, to implement programs, strategies, and a variety of ways to help the employee achieve in the workplace. Young (2007) and other similar studies that focus only on the characteristics and treatment of ADHD were tangential to this study because they did not make a connection between the characteristics of ADHD, and how they influence the employee's learning in a working environment.

Nadeau's (2005) study of the *Stigmas and Social Psychological Barriers for Employees with Attention Deficit Hyperactivity Disorder (ADHD)* focuses on the psychological effects of ADHD. The researcher noticed that in much of the research on ADHD, the American Disabilities Act (ADA) for employees with disabilities in the workplace is discussed. The importance of the ADA was tangentially related the study because it suggested nothing for the training and development of the employee with ADHD. The researcher of this study was interested in how ADHD impacts the employee and learning environments and instructional methods that affect the employees learning.

Chapter 3: Methods Analysis and Data Research

The focus of this study was to examine how instructional methods, learning strategies, and learning environments impact the training, development, and success of the adult with Attention Deficit Hyperactivity Disorder (ADHD) at work. The research method chosen for this study was mixed method research consisting of a survey and interview. The survey was sent to approximately 5,400 employees at James Madison University (JMU) and Eastern Mennonite University (EMU), located in Harrisonburg, Virginia, and Bridgewater College (BC), located in Bridgewater, VA. The researcher requested that the survey be sent to all employees of the schools listed and asked whether they had been diagnosed with ADHD. Respondents chose whether or not to self-disclose their diagnoses of ADHD. Two interviews were conducted at JMU and the interviewees were employees at JMU.

The survey provided insight into the instructional methods preferred by employees with ADHD. The researcher hypothesized that learning environments and instructional strategies have more of an influence on learning than instructional methods.

Description of the Research Design

The researcher used Qualtrics™ Survey System to create the survey. It was distributed through email, and included the link to the survey. The survey consisted of eight closed-ended and three open-ended questions. The interviews, which followed the survey administration, consisted of the same questions used on the survey, but provided interviewees with the opportunity to elaborate on their responses. The closed-ended questions on the survey yielded quantitative data, whereas the text-entry questions

provided qualitative data. All survey responses were recorded anonymously. The study utilized a convenience sample of employees with Attention Deficit Hyperactivity Disorder (ADHD) from the three universities. The email of consent to participate was sent to all employees (faculty and staff) of the three universities.

The research methods chosen were appropriate because the researcher sought to gain information about the employees' perspectives on how they learn. The research was designed to add to the literature on challenges faced by adults with ADD/ADHD when learning on the job. It was designed to provide information to Human Resource professionals, trainers, and management on what employers can do to assist with training, development, and success of the employee with ADHD. The interviews and text-entry questions were confidential, which enabled the participant to freely provide information. Feedback from all participants was taken into consideration when compiling the results of this study.

Description of the Measure

The demographic information was gathered from employees who were at least 18 years of age and were currently employed at the time of the study. If employees did not meet these criteria, they were unable to take the survey.

Sampling techniques included emailing the survey to employees at JMU, BC, and EMU. The participants were encouraged to take the survey on their own computers and complete it at their discretion. Participants were assured of confidentiality in the Email of Consent (which was also approved by the Institutional Review Board), as well as in the Letter of Consent that was signed prior to conducting the interviews (see Appendix A and B).

Population and Sample

The population for the study consisted of employees from JMU, EMU, and BC. The survey was created in Qualtrics™ and sent to employees of the three universities through email. Given the sensitive nature of the questions, respondents were repeatedly told in the Email of Consent that their responses would be anonymous and confidential. If the participants responded affirmatively to the question about whether they had been diagnosed with ADHD, they were asked to complete the survey. If the participant answered "no" to that question, the survey concluded automatically.

The sample from JMU was collected, followed successively by BC and EMU. From each school, all participants were either faculty or staff. JMU is a much larger school than either EMU or Bridgewater College; with approximately 18,000 students at JMU compared to 1,600 students at EMU and 1,700 students at Bridgewater. There are approximately 4,500 employees at JMU, 530 employees at EMU, and 350 employees at Bridgewater; hence the researcher received greater participation.

Participants

All subjects were employees at JMU, BC, and EMU. The researcher sent the survey to all employees through the Human Resources Department and the Registrar's Office at JMU, and the Human Resources Department at BC and EMU. The survey had to be sent through the Registrar's office because student-employees were registered under a different portal than JMU employees. The two employees who participated in the interview were employees of JMU and worked in different departments. All participants

read the Email of Consent and chose to participate in the study at their own discretion. The participants who completed the interviews read and signed the Letter of Consent.

The Survey Instrument

The survey (see Appendix C) consisted of three open-ended and eight multiple-choice questions that addressed the sample demographics and research variables.

Demographic questions included job title, gender, age, and whether the employee was faculty or staff (e.g. 'What age range would you classify yourself to be in?' and 'Are you male or female?'). These questions were entirely multiple-choice, except for the question pertaining to job title, which was text entry. The demographic questions provided the researcher with information about nature of the participants.

Table 6 below shows the composition of the sample collected from the three universities.

***Table 6*: Demographics of Sample**

Gender	***Age Range***	***Faculty***
Male: 31%	18-35: 31%	34%
	25-35: 29%	
Female: 69%	36-45: 14%	***Staff***
	45+: 26%	66%

The remainder of the survey questions addressed research variables. Participants were asked a series of questions. The most important and first question ('Have you been diagnosed with ADD/ADHD?') was asked, followed by other questions requiring "yes", "maybe", or "no:"

- Do you believe that having ADHD requires acknowledgement and learning accommodations from Human Resource professionals and management in the workplace?
- Should Human Resource professionals and training instructors be more knowledgeable about employees with ADHD, thus knowing how to assist them?
- Would you agree that no matter what Instructional Method is used in training, as long as there are sufficient instructional strategies and a conducive learning environment, learning can take place?

One ranking question asked the respondent to put in order their preference of the instructional methods given (classroom learning, on-line learning, on-the-job training, and self-instruction). The order ranged from 1 (the most preferred learning environment) to 4 (the least preferred).

Power, Werba, Watkins, Angelcucci, and Eiraldi (2006) reported that individuals with Attention Deficit Hyperactivity Disorder (ADHD) tend to rush, procrastinate, fail to complete, and/or fail to accurately record when assignments are relatively time consuming all at once. Therefore, the researcher put all of the questions on one page so that the respondents would focus on the content of the survey and not how long it would take. The researcher hoped that the study would not have a high mortality rate; however, failure to complete did occur. Forty-seven participants reported having ADHD, yet only thirty-five completed the survey.

Description of Data Collection Instruments

The survey data consisted of collected information from the participants. The researcher ensured the validity of the research (survey) and interviews by being specific

and staying on the topic of what was being investigated. All other factors were irrelevant if not stated by the researcher. The steps taken by the researcher helped to ensure reliability and replication of the study in the event that others would want to investigate this same topic. The survey and interviews also investigated whether human resource development and management strategies are needed to improve career development, self-efficacy, and success of employees with Attention Deficit Hyperactivity Disorder.

The data were collected during the first twelve weeks of the academic school year for each institution (beginning the first week of September 2010). It was important for the researcher to have a large sample of individuals diagnosed with ADHD complete the survey and not drop out. Twelve weeks gave the participants enough time to participate and complete the survey. The researcher performed the two interviews in the last week of data collection at James Madison University.

Interview Questions and Protocol

The researcher interviewed two employees of James Madison University. Each employee had been clinically diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). The researcher recruited each participant through acquaintance and they both expressed interest in participating in the interview. The request to interview was accepted by the Institutional Research Board and the researcher began the interviews immediately. The interviewees signed the Interview Consent form before participating in the interview.

The questions used for the interviews were the same questions asked in the Qualtrics™ survey. Using the same questions kept the research consistent and improved the validity of the study, allowing the participants to expound upon the answers from the

questions on the survey. All responses were recorded and each interview was approximately 15 minutes long. The results from the interviews and survey are located in the following chapter.

Chapter 4: Results and Data Analysis

The research questions in this study were:

1. What are the preferred instructional methods for employees with ADHD?
2. What has the most effect on the training, development, and success of the employee with ADHD?
3. How can companies improve learning and training for the employee with ADHD?

Description and Justification of the Data Analysis Techniques

The researcher chose to use mixed methods research because she felt it was the best way to investigate her topic. The researcher examined the surveys (35), and reviewed the graphs and descriptive statistics provided by Qualtrics ™. In addition, the researcher analyzed the interview data for common themes and trends in the data.

Results: Survey Questions

Out of the 317 individuals who participated in the survey, 47 claimed to have been diagnosed with ADHD (Figure 4 below); however, only 35 of them completed the survey. According to the results, 11% of the employee population at BC, EMU, and JMU combined had Attention Deficit Hyperactivity Disorder. The 11% was calculated by dividing the number of those with ADHD who completed the survey (35), by the total (270 + 35).

1. Have you been diagnosed with Attention Deficit Hyperactivity Disorder/Attention Deficit Disorder?

#	Answer		Response	%
1	Yes		47	15%
2	No		270	85%
	Total		317	100%

Figure 4: Diagnosis of ADHD.

Wender, Wolf, and Wasserstein (2001) found that "of the 3 to 10% of children diagnosed with ADHD, one- to two-thirds (somewhere between 1 and 6% of the general population) continue to manifest appreciable ADHD symptoms into adult life" (pg. 1). These results suggest that between 1 and 6% of the general population have ADHD, whereas the present study found that 11% of those working in Harrisonburg and Bridgewater, Virginia claimed to have ADHD. These differences may be due to the demographics of the sample.

2. Are you Faculty or Staff?

#	Answer		Response	%
1	Faculty		12	34%
2	Staff		23	66%
	Total		35	100%

Figure 5: Faculty or Staff.

Figure 5 shows that 66% of the employees are staff and 34% are faculty at their respective schools.

3. What is your job title?

There were a variety of job titles for staff. The most common jobs contained the words Director, Administrative Assistant, Graduate Assistant. Faculty consisted of instructors, professors, and administrative faculty.

4. What age range would you classify yourself to be in?

#	Answer		Response	%
1	18-25		11	31%
2	26-35		10	29%
3	36-45		5	14%
4	45+		9	26%
	Total		35	100%

Figure 6: Age Range.

As shown in Figure 6, 31% (n=11) of the participants diagnosed with ADHD are in the age range of 18-25, followed by the 29% (n=10) in the age range of 26-35, and lastly 26% (n=9) who are in the age range of 45+. Surprisingly, in this study, only 14% (n=5) of adults in the age range of 36-45 have been diagnosed with ADHD. This contrasts with a study conducted by Michelson's et al. (2003) where the mean age of adults with ADHD is 40.2 (p. 115). In the present study, 60% of the respondents were under the age of 35, so the data in the present study do not support the results of

Michelson, Adler, Spenser, Reimberr, West, Allen, Kelsey, Wernicke, Dietrick, and Miton (2003). Although the statistics of this study may be inconsistent with the results of Michelson et al. (2003), one must consider that this study was conducted on three college campuses, where the demographics may include more students and individuals from the ages of 18-35.

5. Are you Male or Female?

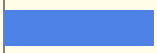
#	Answer		Response	%
1	Male		11	31%
2	Female		24	69%
	Total		35	100%

Figure 7: Gender.

Sixty-nine percent of the participants (n=24) in this study were female and 11% were male (n=11). According to a study conducted by Michelson et al. (2003), out of the 280 participants, 89% were male and 51% were female. Again, the results of the present study are inconsistent with Michelson et al.'s study. This difference could be due to the demographics of the population sampled. James Madison University was historically a college for females. Currently, approximately 60% of its students are female.

6. Please rank in order the instructional method according to your individual preference. (1-most preferred and 4-least preferred

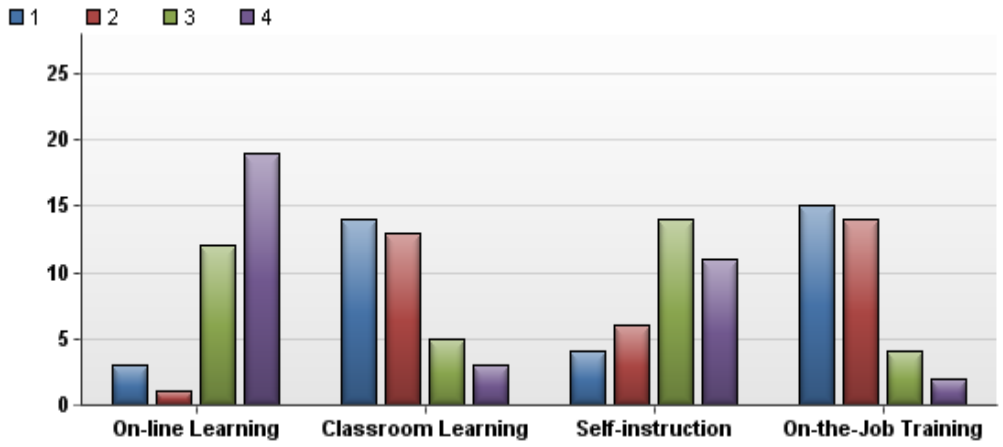


Figure 8: Instructional Method Preference.

Figure 8 shows that number of participants who ranked their preferred instructional method (1 being the most preferred and 4 being the least preferred).

According to this graph, 15 recorded on-the-job training to be the most preferred, while 14 recorded classroom learning as most preferred; second, is on-the-job training preferred by 14 and classroom learning preferred by 13; next, is self-instruction with 13 participants; and finally, on-line learning is the least preferred by 19 participants. Classroom learning and on-the-job training are the most preferred instructional methods. In the following question, participants are asked why they chose the order of their preference.

7. Explain why you choose the order in the previous question.

On-the-job training and classroom learning were the most preferred (15 participants choose on-the-job training and 14 participants choose classroom learning).

When asked to explain why they chose the specific order in question six, the following themes emerged:

Hands-on experience and engagement

- "I prefer on-the-job training because learning through experience helps me to remember what I've learned."
- "When I am on the job training/learning or teaching myself my focus and thoughts stay sharp and clear since my senses are engaged and I can experience the challenge of the objective."
- "I learn best through more practical experiences, plus it engages me most."
- "I find that training on the job gives me immediate feedback for the information and helps me to better retain it and use the information in context."
- "I retain better with experiential learning."
- "On-the-Job Training-Although it may not be preplanned or well structured, I like on-the-job training. It is a multi-sensory, audio/visual and hands-on experience, which helps to understand and retain the information."

Gaining experience and engagement was one of the main themes for the 15 participants who chose on-the-job training as the most preferred method of instruction. It is also stated that experiential learning helped the participant retain and transfer the information.

Structure

- "I prefer some guidance in a cooperative learning environment. I tend to procrastinate and struggle with determining what is important and relevant if I

have to teach myself. I focus on every detail instead of the whole picture. This becomes overwhelming and I do not learn much."

- "Classroom Learning-It is preplanned and well structured."
- "Interactive and guided learning has always been the best way for me to learn and keep ahold of what is being taught."
- "I like the structure of the classroom and have always done well with lecture style presentations as well as hands on learning."
- "I'm more easily distracted if I'm not in a structured environment."

Structure and planned instruction was necessary for the 14 participants who preferred classroom learning to the other methods. As the second leading method preferred, it can be suggested that employees with ADHD learn more efficiently in a structured learning environment.

Interaction

- "Prefer a classroom setting for the combination of visual and auditory effect."
- "I find that I focus better when I can engage with another person. Otherwise, I tend to look at what I am reading/ seeing but often think of other things. I also get easily frustrated trying to understand the content when there is no one to ask."
- "I like classroom instruction, because there's an instructor present to answer any questions I have."

- “It is easier to concentrate in a focused group that is working together to understand a concept (for example classroom learning) or when training for a job.”
- “I learn best through dialogue and conversation.”
- “Classroom Learning-This is a multi-sensory "audio/visual" experience which allows for direct interaction with the instructor.”

The need for interaction, visual, and auditory learning are common themes for adult learners with ADHD who learn most efficiently by dialogue, modeling, and physical interaction. On-line learning and self-instruction do not provide the qualities that classroom learning and on-the-job training can contribute to the transfer of training, such as immediate feedback and interaction.

8. Do you believe that having ADHD requires acknowledgement and learning accommodations from Human Resource professionals and management in the workplace?

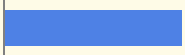
#	Answer		Response	%
1	Yes		13	37%
2	Maybe		21	60%
3	No		1	3%
	Total		35	100%

Figure 9: Acknowledgement and Accommodations.

Sixty percent of the participants respond that ADHD may require learning accommodations and acknowledgment in the workplace. However, 37% (n=13) answer that having ADHD requires acknowledgment and accommodations and only 3% (n=1) answer that it having does not. The statistics could mean that the participants are indifferent of the learning accommodations and acknowledgments in the workplace if they haven't been exposed to a learning environment or the benefits of helpful HR professionals and managers.

9. How do you suggest companies/organizations can help those with ADD/ADHD and improve the training and learning quality in the workplace?

As the researcher analyzed the responses to this question, she found suggestions for both the work environment and the learning environment. The following are five most common concerns by the participants:

Work Environment

- "Understanding and tolerance are most importantly needed. Everyone with ADD/ADHD is different and requires different accommodations, so companies/organizations should be aware and flexible to provide an appropriate atmosphere."
- "Extra time if needed. Change the context of meeting set up and logistics. Keep reminders and directions specific and to the point. Engage as much as possible."
- "I think having supervisors who are willing to help an employee specifically organize work is very helpful but also one who has the flexibility to allow the employee to do things in his/her own way."

- “Companies can do a better job of providing an environment with fewer distractions.”
- “…arranged a flexible schedule with my supervisor where if needed..”

Learning Environment

- “It concerns me that there is a push for online training. I can't imagine a time when that would be effective for me. Additionally, I find too often that training sessions are treated like academic classes with a "professor" lecturing for hours at a time. Individuals with ADD/ADHD need to be engaged. Unfortunately, many subject matter experts are terrible facilitators.”
- “I think by acknowledging ADHD as a style of learning, and not as a condition that necessarily hinders the learning process or work performance, it could become easier for those of us with ADHD to take on new training on the job or elsewhere.”
- “As a former manager and a trainer in corporations (as opposed to University), I found that you have to pay attention to your students. You can usually figure out who responds to what style of interaction and accommodate them reasonably well.”
- “Provide multiple options for training & learning.”
- “HR professionals and trainers could be more cognizant of learning disabilities, thus accommodating the learning styles of the trainees.”

10. Should Human Resource professional and training instructors be more knowledgeable about employees with ADHD, thus knowing how to assist them?

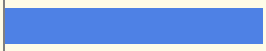
#	Answer		Response	%
1	Yes		19	54%
2	Maybe		15	43%
3	No		1	3%
	Total		35	100%

Figure 10: Assisting ADHD.

Fifty-four percent (n=19) of the participants answered “yes”. This question of assisting ADHD is not too different from the question concerning learning accommodations and acknowledgement of ADHD (question 8), however, 60% (n=21) answered “maybe” to the question 8. The researcher assumes that the open-ended question between ten and eight (question nine) stimulated the thought of what management could do to help employees with ADHD, hence the higher percentage of “yes” answered to question ten.

11. Would you agree that no matter what Instructional Method is used in training, as long as there are sufficient instructional strategies and a conducive learning environment, learning can take place?

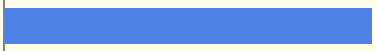
#	Answer		Response	%
1	Yes		27	77%
2	Maybe		5	14%
3	No		3	9%
	Total		35	100%

***Figure 11: Instructional Strategies and Learning Environments*.**

The question above answers the research question 1: what is more effective for the training, development, and success of learning of the employee with ADHD? Learning environments and instructional strategies have more of an impact on the learning of employees with ADHD. Seventy-seven percent (n=27) of the participants answered “yes”; 14% (n=5) answered “maybe”; and, 9% (n=3) answered “no”. With this information, it can further be suggested that the instructional methods implemented for training has less of an impact on learning than the learning environment and instructional strategy. The training will not be effective without a learning environment conducive to the learning needs of the employee.

Results: Interviews

As aforementioned, the researcher interviewed two employees of James Madison University. The following responses were based on the preference of instructional methods, learning and work accommodations, and suggestion for HR professionals and managers.

Preference of instructional methods

Interviewee One

1. Classroom learning: chance to interact, work with other people
2. On-line learning: distraction, someone else created
3. Self-instruction: the individual choosing how she learns for herself
4. On-the job training

Interviewee Two

1. On-the-job training: experiential learning, I enjoy learning what pertains to my job
2. Self-instruction learning: like to go at own pace, allows more space and time to manage
3. Classroom learning: I enjoy the structure but like to go at my own pace; I'd rather learn than have someone teach
4. On-line-learning: too many distraction and it is based on needs and convenience

The instructional preferences of interviewee #1 and #2 did not yield the same results, as well as was different from the survey given. However, both interviewees could agree that either classroom learning or on-the-job training was the most preferred method of instruction.

Learning and Work Accommodations

Interview #1 does not need accommodations, however did not want to comment for others with ADHD. She states that it "depends on magnitude of person with ADHD; personally [I] need to take notes, [be] self-awareness, and [do not] need anyone else's accommodations because [I] already know. I can't assume others will accommodate me." Interviewee #2 believes that accommodations should not just focus on the individual, but also on the condition of ADHD. They mention that "HR trainers should look more into how they could make universally designed environments conducive to other underrepresented groups and acknowledge difference and diversity."

Suggestions for HR professional and managers

Interviewee One

- use good learning principles, take into consideration Malcolm Knowles learning principles, working memory is limited, visual aids, audio, reading material, ADHD students struggle because trainers aren't using learning principles.
- HR/training should understand that people learn differently
- Main goal of educational trainers should be for people to learn; individual's attention disabilities can impact their learning
- Learning Environment and Instructional Strategies: Technically learning strategies should occur; just because there are effective strategies do not mean they will work for the employee with ADHD
- Have informative evaluation and pull together people to evaluate program...go back to basic adult theory. Pilot soft skills topic…chance of failure is higher for those with attention difficulties.

Interviewee Two

- Teaching explicitly stating that the organization is committed to working with those with a difference in learning so individuals can be comfortable in working environment. Have trainings for supervisors on how to universally design training. Organizations can hold seminars or trainings on time management, organizing tasks, or project management, how to communicate. Create a diverse training culture
- In acknowledgment of ADHD, the rankings are not the same; don't make generalization…as for training, provide multiple modalities for trainees...have variety of training

The following chapter concludes this research. Discussion, suggestions, and limitations of the research will be mentioned. Results of this research and how they pertain to preexisting research will also be discussed.

Chapter 5: Conclusion

This study was a small-scale study conducted in three universities in the Shenandoah Valley of Virginia. For this reason, there were limitations to the study.

Threats to the validity of this study were potential maturation, instrumentation, and attitudes of the subjects. Maturation is the threat that, as a study progresses, subjects dropout. During the survey, although 47 participants admitted to being diagnosed with ADHD, only 35 completed the survey. One reason for maturation was due to a lack of interest as time progresses, which can also happen to the researcher. Lack of interest was the most difficult threat to control for internal validity.

The researcher hoped that maturation would not occur, and participants who got through the study would outweigh those who had decided not to finish. Threats of instrument decay included the researcher being tired and overwhelmed from other situations that occurred during the research. In order to help control unexpected timing errors, the researcher sent out the survey at a convenient time for her and the participants. The survey was available for three months on-line and was discontinued the week before the final exams of each institution. Mortality can be a threat to research if the subjects' attitudes, personality, and perceptions influence their participation. The researcher limited the negative attitudes by assuring the participants of confidentiality and the hopeful intent of the study. The researcher accounted for biases by not putting self-experiences into the research no matter how invested she was in the topic.

Results Discussion

The research questions in this study were:

1. What are the preferred instructional methods for employees with ADHD?
2. What has the most effect on the training, development, and success of the employee with ADHD?
3. How can companies improve learning and training for the employee with ADHD?

The researcher hypothesized that learning environments and instructional strategies have more of an influence on learning and development of employees with ADHD, than instructional methods. The hypothesis was supported as 77% of the participants agreed that the instructional strategies implemented and a learning environment conducive to the individual's learning needs have more of an impact on training and development. Nadeau (2005), aforementioned in this research, states that "career consultants have little or no training in the areas of ADHD," therefore the design of instruction and instructional strategies, assessments, and evaluations of employees lack accommodations (p. 549-550). The results suggest that because instructional strategies are most necessary for training and development, HR professionals and management should take the time to focus on strategic instructional planning and implementation.

The results also infer that the learning environment has a great impact on the individual's learning. Schunk (2008) states that learning "outcomes are [different] when learning requires different types of cognitive information processing and when learning enables different types of performances" (p. 286). As mentioned in the literature review in Chapter 2, creating a learning environment conducive to the individual's learning needs will produce the maximum outcome of learning, thus the maximum productivity in the workplace.

According to the results of the present study, the most preferred methods of instruction were classroom learning and on-the-job training. These results pertain to Nadeau's (1997) research, suggesting that for employees with Attention Deficit Hyperactivity Disorder (ADHD), they may "need significantly more repetition" and "visual imagery than non-ADHD adults to learn a new task" (Nadeau, 1997, p. 67). Modeling and visual learning can help the employee process information. As for on-the-job training, the results are relative to the Conditioned Theory of Learning, also known as learning by investigation, mentioned in the present literature. The importance of making a connection with what has been learned and how to apply it is very pertinent to the employee's career tasks.

The suggestions and recommendations made by the participants were parallel to the literature found in this research. Improving the learning and work environment were to two trending themes. Mentioned in the present study, Patton (2009) believes there are several reasons as to why "Human resource [HR] professionals and managers [should] work toward helping [employees with ADHD]; however, for several reasons, employees with ADHD do not get the help they need" which could cause diminishing returns on success and achievement in the workplace (p. 334). Many of the participants suggestions include how HR professionals and management could improve the work environment of employees with ADHD resulted in Nadeau's (1997) theory. Nadeau's (1997) theory indicates that characteristics of management, such as being more "supportive, flexible, creative in finding solutions, and understands the basis of [ADHD] symptoms" will ultimately help the employee obtain success (pp. 140-141).

Among many researchers mentioned in this literature who suggest best practices of training and development, Rothwell (2002) formulated a model that exhibits *Applying the Workplace Learning Process* for those who facilitate training to:

1. Open a planned learning experience with a compelling effort to capture learner's attention.
2. Emphasize the importance of the issue.
3. Lead learners to consider questions that will help them understand the full complexity of the issue.
4. Supply suggestions about how learners could find out more.
5. Help learners interpret and critically examine information they have found.
6. Encourage learners to explore what is the meaning of the information they have found and interpret it.
7. Provide structures by which learners can experiment with or try out what they have learned.
8. Help learners develop memory joggers, job aids, or performance support tools that will enable them to apply what they have learned.
9. Structure situations that will encourage such reflection.
10. Structure situations that will encourage double-loop learning (p. 71).

Among the suggestions and recommendations made from the participants in this study, improving the training and learning quality of employees was the most trending theme. As stated in the present literature, Altonji & Speltzer (1991) suggest that "employer-provided training has long been viewed as an important determinant of

productivity and success in the labor market" (p. 58). Training becomes a factor of measured success when it is implemented in a working environment.

Discussion

The researcher has challenged Human Resource professionals, management, trainers, and employees to become more aware of Attention Deficit Hyperactivity Disorder in adults, specifically in the workplace. The researcher hopes that management will use this research as a guide for how they can decrease the challenges that employees may incur by instituting instructional strategies and a learning environment conducive to the work place.

There is little research similar to the present study which analyzes the learning environment, instructional strategies, and instructional methods for employees with ADHD. Much research does not explain the importance of being cognizant of the learning disabilities that adults endure in the workplace or learning environments and instructional strategies that can help the adult learn in the workplace. It was the researcher's objective to educate the reader about the

- characteristics of ADHD in adults and how it affects their learning
- best practices of learning environments that could help transfer the training of the adult
- assess the instructional method preferences of adults with ADHD.

Suggestions

From the results, the researcher concluded that classroom learning and on-the-job training would be the best methods to train employees with ADHD. The researcher has also concluded that no matter what instructional method is implemented, it is important to use learning environments and instructional strategies conducive to the employee with ADHD. Creating learning environments and instructional strategies will ultimately yield his or her success in the workplace through training. Although this research is centered on employees with ADHD, the researcher also suggests that these best practices are necessary for training and development of all employees, not just employees with learning disabilities. With that, HR professionals and management should be aware that 77% of employees with ADHD agree that learning environments and instructional strategies conducive to the employee would insure the transfer of training to their skills on the job.

In accordance with the researcher's hypothesis, the recognition of an encouraging learning environment and instructional strategies helpful to the employee are paramount; the instructional methods used in training are only secondary to the learning process. HR professionals and management should allocate more resources into better knowing their employees' learning needs and how to capitalize on skill development.

Appendix A: Email of Consent

Consent to Participate in Research (Web/Email Consent Form)

Identification of Investigators & Purpose of Study

You are gratefully invited to participate in a research study conducted by Jessica Wade from James Madison University. You should only agree to participate and complete the survey if you have a diagnosis of Attention Deficit Disorder or Attention Deficit Hyperactive Disorder.

The purpose of this study is to investigate efficient learning styles and instructional design/media for the training of employees with Attention Deficit Hyperactive Disorders. This study will contribute to the researcher's completion of her Reading and Research project, thus fulfilling a Master's degree in Education. The following content is information about the Survey included for the Thesis Research of Learning Environments and instructional methods or the training, development, and success of employees with ADHD.

Research Procedures

Should you decide to participate in this research study, you will be asked to read this consent form once all your questions have been answered to your satisfaction. This study consists of a survey via Qualtrics™ that will be administered to individual participants via email. You will be asked to provide answers to a series of questions related to instructional methods and learning environments.

Time Required

Participation in this study will require 15 minutes (maximum) of your time.

Risks

The investigator does not perceive more than minimal risks from your involvement in this study, however, as a participant, you are able to resign from the survey to your discretion.

Benefits

Potential benefits from participation in this study include more effective and efficient methods for management and career trainers to indulge in the maximum success of the training of employees with ADHD.

Confidentiality

The results of this research will be presented in a Reading and Research Study. 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. The researcher retains the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents with their answers will be destroyed.

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 withdrawn 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:

Jessica Wade
James Madison University
wadejl@dukes.jmu.edu

Dr. Diane Wilcox
James Madison University
drdianewilcox@gmail.com
(540) 568-6707

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. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

By clicking 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_9BR8Cju7ciV7oAk

Appendix B: Letter of Consent

Consent to Participate in Research (Letter of Consent)

Identification of Investigators & Purpose of Study

You are being asked to participate in a research study conducted by Jessica Wade from James Madison University. The purpose of this study is to investigate efficient learning styles and instructional design/method for the training of employees with Attention Deficit Hyperactive Disorders. This study will contribute to the researcher's completion of her Reading and Research project, thus fulfilling a Master's degree in Education.

Research Procedures

Should you decide to participate in this research study, you will be asked to read this consent form once all your questions have been answered to your satisfaction. This study consists of an interview. You will be asked to provide answers to a series of questions related to instructional methods and learning environments.

Time Required

Participation in this study will require 60 minutes (maximum) of your time.

Risks

The investigator does not perceive more than minimal risks from your involvement in this study, however, as a participant, you are able to resign from the survey to your discretion.

Benefits

Potential benefits from participation in this study include more effective and efficient methods for management and career trainers to indulge in the maximum success of the training of employees with ADHD.

Confidentiality

The results of this research will be presented in a Reading and Research Study. 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. The researcher retains the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents with their answers will be destroyed.

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 withdrawn 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:

Jessica Wade
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Dr. Diane Wilcox
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drdianewilcox@gmail.com
(540) 568-6707

Questions about Your Rights as a Research Subject

Dr. David Cockley

Chair, Institutional Review Board

James Madison University

(540) 568-2834

cocklede@jmu.edu

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. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

☐ I give consent to be (*video/audio*) taped during my interview. _____ (initials)

_____

Name of Participant (Printed)

_____ _____

Name of Participant (Signed) Date

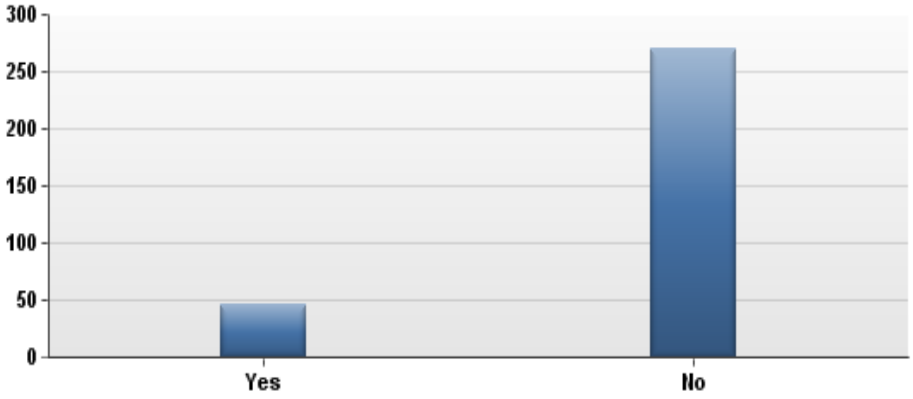
_____ _____

Name of Researcher (Signed) Date

Appendix C: Initial Report

1. Have you been diagnosed with Attention Deficit Hyperactivity Disorder/Attention Deficit Disorder?

1	Yes		47	15%
2	No		270	85%
	Total		317	100%



1	Yes		47	15%
2	No		270	85%
	Total		317	100%

Min Value	1
Max Value	2
Mean	1.85
Variance	0.13
Standard Deviation	0.36
Total Responses	317

2. Are you Faculty or Staff?

1	Faculty		12	34%
2	Staff		23	66%
	Total		35	100%

Min Value	1
Max Value	2
Mean	1.66
Variance	0.23
Standard Deviation	0.48
Total Responses	35

3. What is your job title?

Director
Technical Support Analyst
Resident Advisor
Editor of the Madison Historical Review
Procurement Officer 1
Asst. Event Service Coordinator
Associate Director of Information Analysis and Modeling
Admissions Counselor
Manager of the climbing wall
Administrative and Professional Faculty
Customer Support Specialist - Computing Support
Professor
Director of Human Resources
Scene Shop Supervisor
Resident Advisor
Instructor
I am a full-time graduate student and have an assistantship in the Academic Success Program.
Administrative Assistant for Mad 4 U
Coordinator of Gift Planning
PC Services Technician Sr.
RTA
Part time admin. assistant
xxx
Housekeeping Supervisor
Disability Services Specialist
student assistant/graduate assistant
Associate Professor
jhoyhu
Counselor
Admin Asst.
housekeeping
student

Dining Services Employee
Head Coach
Associate Director, Summer Peace building Institute

Total Responses	35

4. What age range would you classify yourself to be in?

1	18-25		11	31%
2	26-35		10	29%
3	36-45		5	14%
4	45+		9	26%
	Total		35	100%

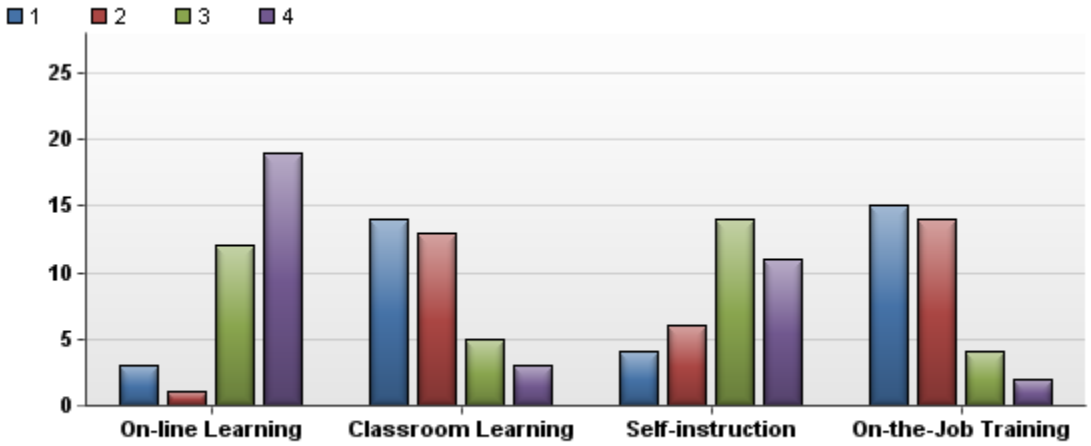
Min Value	1
Max Value	4
Mean	2.34
Variance	1.41
Standard Deviation	1.19
Total Responses	35

5. Are you male or female?

1	Male		11	31%
2	Female		24	69%
	Total		35	100%

Min Value	1
Max Value	2
Mean	1.69
Variance	0.22
Standard Deviation	0.47
Total Responses	35

6. Please rank in order the instructional medium according to your individual preference: (1-most preferred and 4-least preferred)



1	On-line Learning	3	1	12	19	35
2	Classroom Learning	14	13	5	3	35
3	Self-instruction	4	6	14	11	35
4	On-the-Job Training	15	14	4	2	35
	Total	36	34	35	35	-

Min Value	1	1	1	1
Max Value	4	4	4	4
Mean	3.34	1.91	2.91	1.80
Variance	0.82	0.90	0.96	0.75
Standard Deviation	0.91	0.95	0.98	0.87
Total Responses	35	35	35	35

7. Explain why you choose the order in the previous question.

I find that I focus better when I can engage with another person. Otherwise, I tend to look at what I am reading/seeing but often think of other things. I also get easily frustrated trying to understand the content when there is no one to ask. In an on-line setting, technology issues are enough to cause me to end the session.

I'm more easily distracted if I'm not in a structured environment.

I prefer on-the-job training because learning through experience helps me to remember what I've learned better than just studying. Next I like classroom instruction, because there's an instructor present to answer any questions I have. Next is self-instruction because, while I have to find my own answers, I can choose my own curriculum. I like online learning least because I have trouble focusing when I'm given something specific to read or study, but have no more guidance than that.

It is easier to concentrate in a focused group that is working together to understand a concept (for example classroom learning) or when training for a job. Self instruction can often be better, but I am more likely to be distracted when working alone or doing on-line learning.

I learn best through dialogue and conversation. I get board and distracted with online learning.

I feel I do not always understand the methods of training/learning that may work for most people, If I am given a objective I like to explore different ways to reach that objective on my own and by doing so I feel that I learn quicker and have a better understanding of the objective because I know not only what works, but also what doesn't work. From that understanding of what works and doesn't work by either trial and error or by seeing and touching I can explore new ideas techniques. This keeps my minds active and engaged. When put in a classroom or online setting my focus tends to drift, I worry about things(anything) that does not pertain to the task at hand and I find it very hard to get engaged by a lecture or book. They both have their time and place but for me shouldn't be a primary means of teaching me something. When I am on the job training/learning or teaching myself my focus and thoughts stay sharp and clear since my senses are engaged

and I can experience the challenge of the objective.

Reading the book takes too long. I end up trying things and getting frustrated. Classroon is great because it moves quickly hitting the need to know. I can usually figure stuff out after I get the basics explained

I learn best through more practical experiences, plus it engages me most. Next self instruction is great, because it is similar to practical experiences and I can alter and modify the way in which I learn to fit my styles. Further I can go at my own pace. Classroom is next because of the interaction and on-line is last because it is the least engaging

I learn better with experience.

I just haven't been very engaged by online methods. I like the structure of the classroom and have always done well with lecture style presentations as well as hands on learning.

I find that training on the job gives me immediate feedback for the information and helps me to better retain it and use the information in context. I also find myself learning better when I'm interested in the topic -- If i'm self-learning, it's probably about something I'm interested in. Classrooms do not provide the amount of flexibility and trial-and-error interactions with the subject that I need to be fully successful in learning the course content. I learn better in smaller classes than larger classes. On-line learning provides too much distraction and is easily put off and forgotten.

Self-directed learning is definitely my preferred method. Online learning can be good, but not if I'm forced into a linear sequence. Classroom learning really depends on the subject matter.

I retain better with experiential learning. I could never concentrate on self-instruction.

I work with my hands, I learn better with my hands. Interactive and guided learning has always been the best way for me to learn and keep ahold of what is being taught.

I have severe difficulty learning online. I prefer to find things out on my own or have things presented to me.

I hate online learning in the sense that I would not be able to pay attention without the lesson being given in person. I would not initiate self-instruction. Finally, I just like classroom, better than on-the-job training.

I prefer hands on experience and lecture to self-teaching -- it helps keep me focused and motivated.

I've never done online learning before. I'm not sure I'd have the patience or will to sit down to teach myself, I'm a student so I'm used to a class room invironment, and hands on is the way I learn best.

I prefer to learn in a hands-on orientation. If I'm in a room with the person teaching me, I retain the information better, and it's easier for me to concentrate.

-1- Classroom Learning - This is a multi-sensory "audio/visual" experience which allows for direct interaction with the instructor. It is preplanned and well structured. It is focuses just on the specific training topic and minimalizes distractions from other sources. -2- On-the-Job Training - Although it may not be preplanned or well structured, I like on-the-job training. It is a multi-sensory, audio/visual and hands-on experience, which helps

to understand and retain the information. It allows for direct interation with the instuctor(s). It may be either individual or small group training, which keeps it more personal. -3- On-line Learning: The main benefit is that it is at your convenience. I like it less because, it is less likely to be multi-sensory, usually you can't contact an instructor, and there are distractions in you're office or training location. -4- Self Instruction: I'm not too fond of this, because you don't have the benefit of overall planning or direct feedback from an instructor. It is mostly just written media.

Prefer a classroom setting for the combination of visual and auditory effect

I prefer some guidance in a cooperative learning environment. I tend to procrastinate and struggle with determining what is important and relevant if I have to teach myself. I focus on every detail instead of the whole picture. This becomes overwhelming and I do not learn much.

xxx

I have to involved to learn. Self instruction is hard. I guess through online answers

1) I'm a hands on learning who likes apply learning in "real world" situations. 2) I am engaged by class room conversations and learn well there. 3) This works too but I tend to get distracted and do other things when I'm learning things myself in isolation. 4) Boring, distracting, attention wanders.

I can learn best in the classroom where there is student-teacher interaction and responses

As a faculty member, I spend most of my time on self-instruction, although I really enjoy learning in a classroom. Although I teach online and spend a great deal of time using on-line learning materials, on-line learning is my least favorite method of training. With on-line learning, I find that it is easier for me to "miss" something because of my attention issues.

ukygj

I am very visual in my learning so doing and seeing work very well for me.

1)I learn better from doing, 2)then learn better from doing or seeing in person,3)sometimes offers photos or do along with options, 4)do not self motivate well, get distracted.

i have trouble consent on everything

I am a very hands-on person, and have difficulty learning without seeing how things should be done. I am not an auditory learner at all, and if I learned using the Internet I would constantly be distracted.

On-line learning is great and all, but it takes away the ability to ask questions when you are unsure of something. Self-instruction is only slightly better, as you can get a feel for what you are doing, unlike online learning. Classroom learning is a good way to train as it will show you examples of what an employee will be doing, as well as giving the how-to of anything he/she will do. On the job training is the best, as it allows the trainee to learn everything first hand, while also allowing questions to be asked along the way.

interaction potential

1. Classroom learning. I should say that this is a specific type of classroom learning, an

elicitive learning model with a lot of small group work. I learn best in small groups and the classroom structure I am used to (Masters from Center for Justice and Peacebuilding, EMU and currently taking a newer MA class not for credit) has been set up to do a lot of small group work. 4. I get too distracted (even on Adderal XR) to do much online. I am always wondering if something new is on CNN or if I have any new e-mails.

Total Responses	35

8. Do you believe that having ADHD requires acknowledgement and learning accommodations from Human Resource professionals and management in the workplace?

1	Yes		13	37%
2	Maybe		21	60%
3	No		1	3%
	Total		35	100%

Min Value	1
Max Value	3
Mean	1.66
Variance	0.29
Standard Deviation	0.54
Total Responses	35

9. How do you suggest companies/organizations can help those with ADD/ADHD and improve the training and learning quality in the workplace?

It concerns me that there is a push for online training. I can't imagine a time when that would be effective for me. Additionally, I find too often that training sessions are treated like academic classes with a "professor" lecturing for hours at a time. Individuals with ADD/ADHD need to be engaged. Unfortunately, many subject matter experts are terrible facilitators.

Quiet, comfortable workspaces (private offices, etc.)

Be aware that those with ADD/ADHD may zone out or get distracted more often than others, and may need a gentle reminder to focus at times. In my experience, more interactive training also makes it easier to stay focused.

Understanding and tolerance are most importantly needed. Everyone with ADD/ADHD is different and requires different accommodations, so companies/organizations should be aware and flexible to provide an appropriate atmosphere.

Don't know haven't thought about it. I would say that they should offer a variety of formats for information/training. I actually do instruction in my position and I offer self paced online tutorials, one-on-one meetings, and quarterly group trainings to my customers. All cover the same topic.

I think by acknowledging ADHD as a style of learning, and not as a condition that necessarily hinders the learning process or work performance, it could become easier for those of us with ADHD to take on new training on the job or elsewhere. Training seminars, classrooms, any learning environment can be catered to a specific learning style; we do it all the time now, trying new venues, approaches, etc. When people sit down to design the newest conference style if they could have knowledge of what engages a ADHD person specifically(speaking as a general categorization) then they could incorporate some of that into the Conference design just like they do with other learning styles.

As a former manager and a trainer in corporations (as opposed to University), I found that you have to pay attention to your students. You can usually figure out who responds to what style of interaction and accommodate them reasonably well. For example, some people need to see the words while others respond the a picture. It's pretty easy to combine them. Though I don't know for sure, I suspect the ADD people like the pictures. I don't think a good instructor needs to know about a persons ADD unless it is an extreme case. People with ADD have to learn how to manage themselves as well. At least I did. I don't agree with instructors, particularly k-12 instructors having to cater to every single child. a) we don't pay them enough and b) the working world doesn't care about your problem - you need to get the work done. We need to instill that in kids.

Extra time if needed. Change the context of meeting set up and logistics. Keep reminders and directions specific and to the point. Engage as much as possible.

More activites, less lecture

I think having supervisors who are willing to help an employee specifically organize

work is very helpful but also one who has the flexibility to allow the employee to do things in his/her own way.

As each person is different I can only speak to what makes me successful in my job. I need to have more than one project available so that I can switch when I get antsy or stuck but can still be productive. While it would seem that isolating me from others would be best, I find that I perform better when surrounded by job oriented people who are not easily distracted themselves. If i find that I do need isolation, it is nice to have a conference room or empty cube where I can go to focus on completing one task. The allowance of toys (small toys to fidget with) at my desk helps me do something with my body while focusing on written or problem solving tasks. It is also helpful to have a whiteboard or bulletin board on which I can list tasks and keep track of important information.

Provide multiple options for training & learning.

yes

Have hands on activities and learning materials

Just by talking with people who have the disorder firsthand so they know what challenges to expect for the person with the disorder.

Provide structure!

I think they need to give people extra accommodations in regards to time and patience.

I believe it all depends on the person, sometimes ADD can help with creativity, but other times it's very difficult to keep your mind on the job. I'm not sure how it can be improved however

They can provide more hands-on, stimulating training.

As a JMU employee, my experience has been that JMU is very good at this. I have been with JMU for 23 years, so I don't have experience with any other employers to know what they are doing or how they might improve. The environment can be full of distractions.

They need to be aware of the employee's learning issues and try as much as possible to tailor training to meet those needs. It makes sense if an organization wants to be successful.

Providing on the job training of skills that may help ADD/ADHD employees do their job more efficiently.

xxx

Offer different options for learning.

By having people who have ADD work for them and give them suggestions.

HR professionals and trainers could be more cognizant of learning disabilities, thus accomadating the learning styles of the trainees

Companies can do a better job of providing an environment with fewer distractions. For example, when my ADD/ADHD was pretty bad and I wasn't on medication, the company I worked for decided to move everyone out of offices with doors and into a more open environment (cubes with low walls). At the same time, they were having us take a lot of

training on computers at our desks. For me, this was extremely difficult because I could not tune out the distracting conversations going on around me while I was trying to learn. Needless to say, my productivity went down. When I explained to my boss my difficulty with the noise, they gave me a noise canceling headset to screen out the sounds around me while I was taking online training. It helped, but still wasn't ideal.
;jil
I think when people know if makes it easier for you to share with them how you learn best and hopefully the company/organization can be mindful and present information in more than one format.
Yes,
they need to be more understand
Asking them how they learn best instead of having one set model to deal with everyone.
One thing that makes a lot of difference is to keep those with ADD/ADHD busy, that way they have things to do and are less likely to get distracted. You can also help steer them in the right direction when they do get distracted.
ask and establish the needs of employees
I sometimes need to burn off energy and have arranged a flexible schedule with my supervisor where if needed, I can leave for an hour mid-day to go to the gym and then work that hour at another time or take it as vacation/personal time. I do well multi-tasking, always have. I always thought it was the quick processing speed that is one of the traits of Tourette's. However, I do not finish any assignments until they are due (right now I'm doing this questionnaire instead of another assignment that is not specifically due today). Hard and fast deadlines work best for me, as does the realization that I will have it done by the deadline, but probably not before. Also, changes affect me greatly, in a negative way. ie, moving a deadline up from Friday to Wednesday will probably be fine, but I may initially panic a bit. I will take a deep breathe, realize I can get it done in time, and go on. I usually e-mail myself those "how could you change deadlines on me" messages that might be harsh, which gets the anxiety out without showing it, but bosses should be aware that schedule changes can cause concerns/anxiety.

Total Responses	35

10. Should Human Resource professionals and training instructors be more knowledgeable about employees with ADHD, thus knowing how to assist them?

1	Yes		19	54%
2	Maybe		15	43%
3	No		1	3%
	Total		35	100%

Min Value	1
Max Value	3
Mean	1.49
Variance	0.32
Standard Deviation	0.56
Total Responses	35

11. Would you agree that no matter what Instructional Method is used in training, as long as there are sufficient instructional strategies and a conducive learning environment, learning can take place?

1	Yes		27	77%
2	Maybe		5	14%
3	No		3	9%
	Total		35	100%

Min Value	1
Max Value	3
Mean	1.31
Variance	0.40
Standard Deviation	0.63
Total Responses	35

References

Altonji, J.G. & Speltzer, J. R. (1991). Worker Characteristics, Job Characteristics, and the Receipt of On-the-job Training. *Industrial & Labor Relations Review, 45(1),* 58, Retrieved May 26, 2010 ABI/INFORM Global DID: 529619.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Washington, DC: American Psychiatric Association; 1994

Barkley, R.A., Fisher, M., & Murphy, K.R. (2008). *ADHD in Adulthood*. New York: The Guilford Press.

Carroll, J.B. (1963). A model of school learning. *Teachers College Record*, 64, 723-733.

Carroll, J.B. (1965). School learning over the long haul. In J.D. Krumboltz (Ed.), *Learning and the educational process* (pp. 249-269). Chicago: Rand McNally.

Cooper, R. & Center for Alternative Learning. (1996). Statewide Staff Development Project: Learning Differences and Multi-level Classroom Techniques. Retrieved from ERIC database.

Dempsey, J.V., & Reiser, R. A. (Eds.) (2007). *Trends and issues in instructional design and technology. (2nd ed.).* Upper Saddle River, New Jersey: Prentice Hall.

Flavel, J.H. (1979). Metagcogition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34, 906-911.

Ford, J.K., Quinones, M.A., Sego, D.J., & Sorra, J.S. (1992). Factors affecting the opportunity to perform trained tasks on the job. *Personnel Psychology, 45(3),* 511-527. Retrieved ABI/INFORM Global DID: 10.1111/j.1744-6570.1992.tb00858.

Gagne', R.M. (1965). *The Conditions of Learning*. New York: Holt, Rinehart & Winston.

Gerber, P.J., Ginsberg, R., & Reiff, H.B. (1994). Employment Success for Adults with Learning Disabilities. In Gerber, P.J. & Reiff, H.B (Ed). *Learning Disabilities in Adulthood: Persisting Problems & Evolving Issues* (pp. 204-213). Boston: Andover Medical Publishers.

Goldstein, S. & Ingersoll, B.D. (1993). *Attention Deficit Disorder and Learning Disabilities: Realties, Myths, and Controversial Treatments*. New York, NY: Doubleday.

Hechtman, L.T., Weiss, G., & Weiss, M. (1999). *ADHD in Adulthood: A Guide to Current Theory, Diagnosis, & Treatment.* The John Hopkins University: Baltimore London.

Huang, Hsiu-Mei. (2002). Toward constructivism for adult learner in online learning environments. *British Journal of Educational Technology, 33(1),* 27-37. Doi: 10.1111/1467-8535.00236.

Jarvis, Peter. (Ed.) (2004). *Adult Education and Lifelong Learning: Theory and Practice (3rd ed.).* London and New York: Taylor & Francis Group:

Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999). *Learning with technology: A constructivist perspective*. Upper Saddle River, NJ: Merrill/Prentice Hall.

Katz, L.J. (2003). Providing opportunities in the workplace for individuals with ADD. Employment Relations Today, 30(2), 29-39. Retrieved December 7, 2009, from ABI/INFORM Global. (Document ID: 393502501).

Latham, G.P. (1988). Human Resource Training and Development. *Annual Review of Psychology, 39,* 545-582.

Latham, G.P, & Wexley, K.N. (1991). *Increasing productivity through performance appraisal.* Addison-Wesley Reading, MA.

Lienemann, T.O. & Reid, R. (2006). *Strategy instruction for students with learning disabilities.* In Harris, K.R. & Graham, S. (Eds.). New York: The Guilford Press.

Merriam-Webster Dictionary. (2004). (11th edition).Springfield, Massachusetts: Merriam-Webster, Incorporated.

Michelson, D., Adler, L., Spenser, T., Reimberr, F.W., West, S.A., Allen, A.J., Kelsey, D., Wernicke, J., Dietrick, A., and Miton, D. (2003). Atomoxitine in Adults with ADHD: Two Randomized, Placebo-Controlled Studies. *Biology Psychiatry, 53 (2),* 112-120.

Nunamaker, J.F., Zhang, D., Zhao, L.J., Zhou, L. (2004). Can E-Learning Replace Classroom Learning? *Communications of the ACM, 47(5),* 75-79.

Nadeau, K.D. (1997). *ADD in the Workplace*. Pennsylvania: Brunner/Mazel.

Nadeau, K.D. (2005). Career Choices & Workplace Challenges for Individuals with ADHD. *Journal of Clinical Psychology, 61(5),* 549-563. doi: 10.1002/jclp.20119

Noe, R.A., (1986). Trainees attributes & attitudes: Neglected influences on training effectiveness. *Academy of Management Review, 11,* 735-736.

Okie, S. (2006). ADHD in Adults. *The New England Journal of Medicine, 354(25),* 2637-2641. Retrieved from www.nejm.com.

Osguthorpe, R., & Graham, C. (2003). Blended Learning Environments. *Quarterly Review of Distance Education, 4(3),* 227-233. Retrieved from Academic Search Complete database.

Patton, E. (2009). When Diagnosis Does Not Always Mean Disability: The Challenge of Employees with Attention Deficit Hyperactivity Disorder. *Journal of Workplace Behavior, 24(3),* 326-343. doi: 10.1080/15555240903176161.

Pressley, M., & Woloshyn, V. (1995). *Cognitive strategy instruction that really improves children's academic performance*. Cambridge, MA: Brookline Books.

Power, T.J, Werba, B.E., Watkins, M.W., Angelcucci, J.G., & Eiraldi, R.B. (2006). Patterns of Parent-Reported Homework Problems Among ADHD-Referred and Non-Referred Children. *School Psychology Quaterly, 21 (1),*13-33.

Reid, R., Trout, A. L., & Schartz, M. (2005). Self-regulation interventions for children with attention deficit/hyperactivity disorder. *Exceptional Children, 71, 361-377.*

Reiser, R.A., & Gagne', R.M. (1983). *Selecting media for instruction*. Englewood Cliffs, NJ: Educational Technology Publications.

Roffman, A.J. (2000). *Meeting the Challenge of Learning Disabilities in Adulthood*. Baltimore: Paul H. Broods Publishing Company.

Rosenthal, T.L., & Bandura, A. (1978). Psychological modeling: Theory and practice. In S. L. Garfield & A. E. Bergin (Eds.), *Handbook of psychotherapy and behavior change: An empirical analysis* (2nd ed., pp. 621-658). New York: Wiley.

Rothwell, W.J. (2002). *The Workplace Learner*. New York: AMACOM.

Rothwell, W., Butler, M., Maldonado, C., Hunt, D., Peters, K., Li, J., & Stern, J. (2006). *Handbook of Training Technology: An Introductory Guide to Facilitating Learning With Technology-From Planning Through Evaluation*. San Francisco: Pfeiffer.

Rothwell, W.J. (2008). *Adult Learning Basics*. Alexandria, VA: ASTD Press.

Schunk, D.H., & Zimmerman, B.J. (Eds.) (2001). *Self-regulated learning and academic achievement: Theoretical perspectives* (2nd ed.). Mahwah, NJ: Erlbaum.

Schunk, D.H. (Ed.) (2008). *Learning Theories: An Educational Perspective (5th ed.)*. Upper Saddle River, NJ.

Swanson, H.L., Hoskyn, M., & Lee, C. (1999). *Interventions for students with leaning disabilities: A meta-analysis of treatment outcomes*. New York: Guilford Press.

Swanson, R. (2007). *Analysis for Improving Performance: Tools for Diagnosing Organizations and Documenting Workplace Expertise.*(2nd Ed.). San Francisco: Berrett-Koehler Publishers, Inc.

Thornbory, G. (2007). How can OH address ADHD?. *Occupational Health, 59*(12), 29-31. Retrieved from Academic Search Complete database.

Thorndike, E.L. (1914). *Mental Work and Fatigue and Individual Differences and Their Causes. Educational Psychology (Vol. 3).* New York: Teachers College, Columbia University.

Wender, P.H, Wolf, L.E, and Wassanstein, J. (2001). Adult Attention Deficit Hyperactive Disorder: Brain Mechanisms & Life Outcomes. *Academy of Science, 931 (1),* 1-6.

Vygostsky, L.S. & Cole, M. (1978). *Mind in Society: The development of higher psychological processes.* Harvard University Press.

Young, J.L. (2007). *ADHD Grown Up: A Guide to Adolescent & Adult ADHD*. New York: W.W Norton & Company.

Zimmerman, B.J., & Schunk, D.H. (2003). Albert Bandura: The scholar and his contributions to educational psychology. In B.J. Zimmerman & D.H. Schunk (Eds.), *Educational psychology: A century of contributions* (pp. 431-457). Mahwah, NJ: Erlbaum.

Zwart, L.M., & Kallemeyn, L.M. (2001). Peer-based coaching for college students ADHD and Learning Disabilities. *Journal of Postsecondary Education and Disability, 15,* 1-15.