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Meredith M. Moates

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EFFECTS OF THE SELF- DETERMINED LEARNING MODEL OF INSTRUCTION ON  
GOAL ATTAINMENT AND SELF-DETERMINATION FOR STUDENTS WITH AUTISM  
SPECTRUM DISORDER.

A dissertation submitted in partial fulfillment of the requirements of the degree of Doctor of  
Philosophy at Virginia Commonwealth University.

By

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## Table of Contents

List of Tables.....	x
List of Figures.....	xi
Abstract.....	xii
<b>INTRODUCTION.....</b>	<b>1</b>
Statement of the Problem.....	2
Rationale for the Study.....	3
Self-determination.....	4
Postsecondary Education.....	5
PSE Support Services.....	6
Overview of the Study.....	7
Transition outcomes for Students with Disabilities.....	9
Transition and ASD.....	10
Hypotheses & Research Questions.....	13
Research Design.....	15
Phases of the Intervention.....	17
Levels of the Intervention.....	19
<b>LITERATURE REVIEW.....</b>	<b>20</b>
Students with Disabilities.....	20
Autism Spectrum Disorder.....	20
Self-Determination and Self-Efficacy.....	21

Self-Determination Theory and Motivation.....	22
Social Cognitive Theory.....	24
Individuals with Disabilities Education Act and Transition.....	25
The Rehabilitation Act of 1973.....	26
Evidence and Research-Based Practices in Transition.....	26
Student Focused Planning and Development Practices.....	29
Predictors of Postsecondary Education and Employment.....	30
The Self-Determined Learning Model of Instruction.....	31
Goal Setting, Attainment, and Self-Monitoring.....	38
Postsecondary Education.....	39
Research in Transition.....	40
Policy in Transition.....	41
Limitations.....	42
Research Gap.....	42
METHODOLOGY.....	44
Research Design.....	45
Inclusion Criteria.....	48
Participants.....	49
Rationale for Inclusion of the Subjects.....	50
Background Information.....	54
Individualized Education Plan.....	54
Psychological Evaluation.....	54
Participant 1.....	55

Participant 2.....	55
Participant 3.....	55
Participant 4.....	55
Prior PSE and Work Experience.....	56
Participant 1.....	56
Participant 2.....	56
Participant 3.....	56
Participant 4.....	56
Settings and Materials.....	57
Settings.....	57
Education Course Settings.....	57
Off-Campus Support Settings.....	58
Materials.....	58
SDLMI Training.....	59
Modifications to the SDLMI Intervention.....	60
Data Collection and Measures.....	60
Instrumentation.....	61
Goal attainment.....	61
The Arc's Self-Determination Scale.....	62
The Support Intensity Scale.....	62
Intrinsic Motivation Inventory.....	63
Autism Challenges.....	64
Procedures.....	66

Procedure for recording daily case notes.....	66
Baseline sessions.....	67
Intervention sessions.....	68
Maintenance sessions.....	69
Interrater Reliability and Agreement.....	69
Validity.....	69
Treatment Fidelity.....	70
Data Collection and Analyses.....	70
Percentage of Non-Overlapping Data.....	71
Social Validity.....	72
RESULTS.....	73
Research Questions.....	73
Research Question 1: Effect of the Self-Determination Intervention.....	74
Results.....	74
Participant 1 Results.....	77
Vocational Goal 1: Construct and send e-mails.....	77
Phase 1.....	77
Phase 2.....	77
Phase 3.....	78
Data Evaluation.....	78
Maintenance Session: Goal 1.....	78
Vocational Goal 2: Career Exploration.....	79
Phases 1 - 3.....	79

Data Evaluation.....	79
Maintenance Session: Goal 2.....	80
Vocational Goal 3: Portfolio Project #2.....	80
Data Evaluation.....	81
Maintenance Session: Goal 3.....	81
Participant 2 Results.....	82
Vocational Goal 1: Exploration of Majors.....	82
Phases 1 – 3 .....	82
Data Evaluation.....	83
Maintenance Session: Goal 1.....	84
Vocational Goal 2: Declaring a Major.....	84
Data Evaluation.....	85
Maintenance Session: Goal 2.....	85
Vocational Goal 3: Resume.....	86
Data Evaluation.....	86
Maintenance Session: Goal 3.....	86
Participant 3 Results.....	87
Academic Goal Attainment: Requirement for Employment.....	87
Data Evaluation.....	87
Maintenance Session: Goal 1.....	88
Academic Goal 2: Resume.....	88
Data Evaluation.....	88
Maintenance Session: Goal 2.....	89



Academic Goal 3: Study materials.....	89
Data Evaluation.....	90
Maintenance Session: Goal 3.....	90
Participant 4 Results.....	91
Academic Goal Attainment: Measurement.....	91
Data Evaluation.....	91
Maintenance Session: Goal 1.....	92
Academic Goal 2: Exploration of degree .....	92
Data Evaluation.....	92
Maintenance Session: Goal 2.....	93
Academic Goal 3: Study guide.....	93
Data Evaluation.....	93
Maintenance Session: Goal 3.....	94
Inter-observer Agreement.....	96
Treatment Fidelity.....	96
Research Question 2.....	97
ARC-SDS Results.....	97
Autonomy.....	98
Self-Regulation.....	98
Psychological Empowerment.....	99
Deliverance of the Measure.....	99
Research Question 3.....	100
Participant 1.....	101

Participant 2.....	102
Participant 3.....	103
Participant 4.....	103
Goal Attainment Scaling.....	103
Autism Challenges.....	104
Research Question 4.....	106
Social Validity.....	108
DISCUSSION.....	109
Limitations.....	109
Summary of Study Findings.....	110
Use of the SDLMI to Increase Goal Attainment.....	113
Use of the SDLMI to Increase Self-Determination.....	113
Use of the SDLMI to Decrease Support Intensity.....	114
Implications.....	115
Secondary Education Support.....	115
Autism Programming.....	116
College Coursework.....	116
Informing Programming Practices.....	117
Conducting SDLMI Research.....	117
Generalization.....	118
Implications for Students with ASD in PSE.....	118
Future Research.....	119
Conclusion.....	120

REFERENCES.....	122
APPENDICES	
A. IRB Approval and Consent Form.....	133
B. Participant Consent Form.....	135
C. SDLMI Intervention.....	137
D. Teacher Procedures and Educational Supports.....	140
E. Academic and Vocational Task List.....	142
F. Goal Attainment Scaling.....	145
G. Support Intensity Scale, Subtest Lifelong Learning.....	146
H. Autism Challenges Observations.....	148
I. Intrinsic Motivation Inventory.....	151
J. Treatment Fidelity.....	153
K. Implementation of the Intervention.....	155
L. Essential Characteristics of Self-Determination.....	158
M. Tips for Working through the Phases.....	160
N. Order of Operations.....	161
O. Case Notes by Week of Study.....	172

## LIST of TABLES

1.	Results of Identified Studies.....	34
2.	Description of Research Questions, Intervention, and Measurement.....	48
3.	Description of Participant Characteristics.....	49
4.	Participant ASD Characteristics.....	53
5.	Description of SDLMI Educational Supports.....	59
6.	Instrumentation.....	65
7.	Baseline and Intervention Means and Median Scores.....	76
8.	ARC-SDS Scores.....	97
9.	Participant SIS Scores.....	100
10.	Participant Autism Challenges.....	105
11.	Participant IMI Results.....	107

**LIST of FIGURES**

1.	Theoretical Framework.....	25
2.	Participant 1 Goal Attainment.....	82
3.	Participant 2 Goal Attainment.....	87
4.	Participant 3 Goal Attainment.....	91
5.	Participant 4 Goal Attainment.....	94
6.	Goal Attainment with Participants Staggered into the Intervention .....	95

## Abstract

Even with current transition practice and service delivery requirements mandated for students with disabilities by the Individuals with Disabilities Education Act (IDEA, 2004) participation in postsecondary education and employment for individuals with autism remains low (Shattuck et al., 2012; Newman, Wagner, Cameto, & Knokey, 2011). The purpose of this study was to determine the effects of the Self-Determined Learning Model of Instruction (SDLMI; Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000). The intervention was designed to facilitate student development, and participation in community college course settings, increase academic and vocational goal attainment and self-determined behavior while decreasing support needs. The SDLMI has been shown to be effective for teaching students with disabilities how to access the general education curriculum and increase self-determination skills to achieve academic and vocational goals. A multiple probe design across participants with four college-aged students with autism evaluated the effects of the intervention for three different postsecondary education goals. Study findings show the extent to which the intervention affects participants' ability to be more self-determined in their decision-making regarding the management of postsecondary educational goals and course requirements using self-directed learning. *The SDLMI Teacher's Guide for Model Implementation* (Shogren, Wehmeyer, Burke, & Palmer, 2017) and teacher-facilitated procedures (National Technical Assistance Center on Transition, 2017) were used to ensure intervention implementation fidelity. The researcher and trained research assistant compared real time data in point-by-point agreement ratios to quantify the number of times the observers agreed about what they saw in each observation to determine

differences during data collection. The baseline, intervention, and maintenance sessions lasted 13 weeks, and data were collected during all sessions. Results from the intervention effects showed a functional relationship (cause-effect) between the intervention and goal attainment. Participants increased their ability to use self-determined behaviors to attain goals through student questions, teacher objectives, and educational supports. Self-determined behaviors increased while support needs greatly decreased. Social validity data were collected through student self-monitoring using goal attainment scaling and parent perspectives to inform support intensity results. Factors related to self-determination, motivation, and expectations for future goals contribute to a better understanding of goal attainment through this research.

## Chapter 1

### INTRODUCTION

The diagnosis of autism spectrum disorder (ASD) affects 1 in 59 children of all races, ethnicities, and socioeconomic groups. While almost half of individuals with ASD (44%) have average to above-average intelligence, some individuals have significant cognitive disabilities (Centers for Disease Control and Prevention [CDC], 2018). ASD may affect an individual's communication, interactions, behavior, and learning in varying degrees. For individuals with average intelligence, other symptoms can be severe, such as having little interest in others and limited verbal language, and differ significantly from person to person (CDC, 2018).

Currently, the Diagnostic Statistical Manual for Mental Disorders (2013) criteria for an ASD diagnosis includes (1) persistent deficits in social communication and interaction, manifested by challenges in social-emotional reciprocity; (2) nonverbal communicative behaviors used for social interaction; and (3) difficulty developing, maintaining, and understanding relationships.

There are three levels of severity identified in the manual: Level One - requiring support; Level Two - requiring substantial support; and Level Three - requiring very substantial support.

Severity is based on social communication impairments and restricted, repetitive patterns of behavior, learning, thinking, and problem-solving skills (CDC, 2018). The National Health Survey indicates the prevalence of ASD almost doubled between the years 2011 and 2013, from 1.25% to 2.24% (Zablotsky, Black, Maenner, Schieve, & Blumberg, 2015). Around 50,000 adolescents with ASD turn 18 years old every year, and many have goals of attending a college or university (Shattuck, Narendorf, Cooper, Sterzing, Wagner, & Taylor, 2012; Camarena &



Sarigiani, 2009). As the population of individuals with ASD continues to rise, the number who attend college and enter the workforce after postsecondary education (PSE) will also rise.

### Statement of the Problem

The Office of Special Education Programs (OSEP) of the U.S. Department of Education funded the National Longitudinal Transition Study-2 (NLTS-2) to evaluate transition and post-school outcomes of secondary school students with disabilities in a ten-year study. The study's results are generalizable to students with disabilities in the special education disability categories. Using the NLTS-2, Shattuck and colleagues (2012) found more than 50% of students with ASD within two years of leaving high school, have not participated in any PSE or employment compared to approximately 70% of students without disabilities who attend college after high school (Institute of Educational Sciences: National Center for Educational Statistics, 2018). Factors related to participation in PSE include accommodations and supports, and limited education in vocational instruction during high school due to participation in general education and academic course requirements (Newman, Wagner, Cameto, & Knokey, 2010; Taylor & Seltzer, 2011).

Instruction in self-determination is not always provided to high school students. In a survey of over 1,000 teachers, Wehmeyer, Agran, and Hughes (2000) indicate that about 40% of participants saw a lack of student benefit in providing instruction in self-determination, and nearly 30% indicated a more urgent need for instruction in other areas as reasons for not teaching self-directed behaviors. Evidence-based research indicates self-determination plays a role in supporting students with disabilities in secondary education (Test, Mazzotti, Mustian, Fowler, Kortering, & Kohler, 2009). Students with disabilities often require instruction in how to access resources, identify community interests, set and monitor goals, plan and manage time, and

problem solve (Wehmeyer, 2007). Opportunities to practice in different situations help students with ASD apply what they have learned to other situations (Hume, Plavnik, & Odom, 2012). The study utilized a self-determination training program intervention that focuses on creating student-directed and self-determined vocational and academic transition goals through career exploration, vocational education and training, and specific degree-seeking classes in community college settings. Participants used task analysis to break down large goals into smaller, more manageable steps, and self-management strategies to track progress. Wong and colleagues (2014) indicate task analysis and self-management as evidence-based practices for students with ASD.

Task analysis involves breaking a chained task into parts and teaching the steps to achieve a goal. The participant becomes more independent in his or her ability to achieve the goal as the steps are completed in a systematic process that leads to reaching criterion (Wong et al., 2014). In a multiple probe design across conditions, those conditions can be dimensions of time, instruction, activity, setting, and the person implementing the intervention (Gast & Ledford, 2014). The conditions in this study were goals that varied for each participant depending on their self-determined goals, based on college course requirements, and identified using the Self-Determined Learning Model of Instruction (SDLMI).

### **Rationale for the Study**

Using the SDLMI, an evidence-based practice in transition literature and student development, and ASD-specific services and supports, the study sought to demonstrate how students with ASD can create and meet self-directed goals and education-related activities through learning and utilizing self-determined behavior. The intervention included student questions, teacher objectives, and educational supports specified in the appendix. Evidence-

based self-determination transition practices in secondary educational settings have the potential to benefit students with disabilities in PSE settings with self-determined attainment of goals (Test et al., 2009). Factors related to self-determination and motivation in the study were present in percentage data based on task lists, formal pre- and post-data collection and measurement, decreased intensity of support to learn and apply skills, and informal observations of behaviors throughout the intervention phases.

**Self-determination.** Self-determination includes the attitudes and abilities required to act as the “primary causal agent in one's life and to make choices regarding one's actions free from undue external influence or interference” (Wehmeyer, 1992, p. 305). Self-determination involves students making their own decisions in daily activities, academic goals, and post-school outcomes; breaking long-term goals into short-terms tasks; and involvement in educational planning (Wehmeyer, 2002). “When acting on the basis of these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults in our society” (Wehmeyer, 2002, p. 2). Shogren and colleagues identify four characteristics of self-determined actions: (1) volitional action such as acting autonomously and self-initiation, (2) agentic actions involving self-regulating behavior including self-direction and identifying ways to solve problems, and action-control beliefs like psychological empowerment; “believing that you have what it takes to reach your goals and that you can reach your goals when you try”, (3) acting in a self-realizing style, and (4) control expectancy: “believing that you can use your skills and the people around you to influence your environment and reach a goal” (Shogren, Wehmeyer, Burke, & Palmer, 2017, p.5).

There is a relationship between self-determination and more positive transition-related outcomes, and a need for literature to examine the role of self-determination in participation and

goal attainment in postsecondary educational settings with student-focused transition goals (Shogren, Wehmeyer, Palmer, Rifenbark, & Little 2015; Williams-Diehm, Wehmeyer, Palmer, Soukup, & Garner, 2008). Self-determined behaviors assist students in seeking supports and accommodations in PSE (Thoma & Getzel, 2008). Wehmeyer and Palmer (2003) found that higher self-determined behavior impacts job attainment one year after high school. Self-determined behavior in the PSE setting promotes access to college learning experiences while concentrating on the importance of instruction that assists and supports students interacting with the content in college-level courses.

**Postsecondary education.** Around 10% of college students reported having a disability between the years 2010 and 2011 (US Department of Education, National Center for Educational Statistics, 2016). PSE is one of the highest predictors of higher earnings in employment, reported in a large data set supporting information for The Rehabilitation Service Administration. However, few students with ASD receive college services (Migliore, Timmons, Butterworth, & Lugas, 2012). In an extension of the National Education Longitudinal Survey, self-reported results indicate increased earning effects of PSE at community colleges, even if the student is not seeking a credential (Marcotte, 2006).

PSE is particularly important for employment acquisition. Around 65% of jobs will require some PSE (Carnevale, Jayasundera, & Hanson, 2012), and about 10-30% of community college students earn degrees (Bailey, 2006). Even if a student is non-degree seeking and is pursuing a certificate or diploma from the community college, higher education promotes employment outcomes (Newman, Wagner, Cameto, Knokey, & Shaver, 2010). Approximately 50% of students with ASD enroll in a PSE program within six years of transitioning from high school. PSE programs include community colleges, business, technical and vocational schools,

and four-year higher educational institutions (Sanford, Newman, Wagner, Cameto, Knokey, & Shaver, 2011).

**PSE support services.** Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 mandates that PSE institutions must not discriminate in admissions for people with disabilities, and that reasonable access and support services be provided throughout an individual's academic program. Most supports are academic adjustments that allow students to access the curriculum. The regulations of the Office for Civil Rights of the United States Department of Education provide information on academic adjustments in PSE, non-discrimination against qualified individuals with disabilities, and available supporting aids. Colleges may not be required to provide aids or accommodations/modifications if they create financial hardships to the institution, require alterations to the programming, violate accreditation, or require the waiver of essential program or licensing requirements within an academic course of study (Office for Civil Rights, 2018).

Accommodations and services identified in NLTS-2 data indicate that about 80% of students with disabilities use testing accommodations, 60% use human aides, and around 40% use material/technology adaptations (Levine, Marder, & Wagner, 2004). In the current study, the researcher and research assistant are a personal attendant accommodation (human aide) for three of the four participants at the community college. NLTS-2 data indicates that 19% of postsecondary students with disabilities in secondary schools reported receiving accommodations or supports from their postsecondary schools. However, when in high school, 87% received some type of accommodation or support because of a disability (Newman, Wagner et al., 2011). Further, "Sixty-three percent of postsecondary students who were identified by their secondary schools as having a disability did not consider themselves to have a disability by the

time they transitioned to postsecondary school” (Newman, Wagner et al., 2011, p. xv). In internship-based research for students with ASD during secondary education, Wehman and colleagues (2014) provided supports consisting of behavioral consultation, consistent structure, teaching and assisting with social skills using role-playing and practice to establish work expectations, visual supports to increase implementation of strategies, self-monitoring checklists, and intensive instruction and monitoring. The support of a human aide/personnel attendant permits extensive monitoring and support, including employer-based ASD-specific supports provided in the internship setting.

For students with ASD, services provided by PSE institutions, facilitated through disability support services offices, may not be intensive enough to address accommodations and modifications related to their educational needs. Despite the legislation and requirements for education and employment, many students with ASD experience unsuccessful integration into society.

### **Overview of the Study**

The current study tested the effectiveness of the SDLMI in PSE using a multiple probe design in a community college environment. The SDLMI is based on the principles of self-determination that enable teachers to instruct students to problem solve in decision-making, independent performance, and self-evaluation, and to adjust behaviors across domains. The intervention follows the Teaching Procedures from the SDLMI lesson planner for teaching goal setting and problem-solving, and recommendations for the processes and educational supports described in the Guide (National Technical Assistance Center on Transition [NTACT], 2017). During the Teaching Procedures, teacher objectives and educational supports are implemented as instructed for each phase of the intervention (Shogren et al., 2017). Student self-monitoring in

the proposed study uses goal attainment scaling for the participant to identify present level, benchmark progress, and goal attainment as operationally defined steps to reach the goal. The aim of the study was threefold: (1) to increase goal-attainment using the SDLMI measured by achievement of independently completed task lists percentages; (2) to increase self-determined behaviors measured formally with a scale of self-determination consistent with SDLMI literature; (3) and to decrease support needs assessed by pre- and post-measurement of interview style questions regarding support intensity (Lee et al., 2008; Shogren et al., 2013; Wehmeyer et al., 2000). The study will determine if the use of SDLMI in a higher education setting will increase participants' involvement in academic and vocational goal setting, decision-making, and goal attainment.

The participants, researcher, and research assistant interact with the SDLMI at a location in close relation to the community college setting. Each participant participates in two or three academic or vocational classes per week with approximately three hours outside of college courses. The intervention occurred in 30-minute sessions for participants to interact with the SDLMI intervention through teacher objectives and Guide-directed educational supports. The researcher and research assistant followed the lesson planner Teacher Procedures and Goal Attainment Scaling to adhere to fidelity to teach goal setting and problem-solving (Coffe and Ray-Subramanian, 2009; NTACTION, 2017; Wehmeyer, Palmer, et al., 2000). Time for completion of the Teacher Procedures, Teacher Objectives, and Educational Supports for each phase of the intervention as indicated in the Guide varies by participant (NTACTION, 2017; Shogren et al., 2017). The individualized intervention has each participant working towards self-determined goals and receiving separate time to construct the phases in the intervention outside of college course time at a non-profit organization supporting students with ASD in the higher education setting. Using

goal attainment within the intervention facilitated student control in monitoring goals, with researcher and research assistant support, and is consistent in current literature for goal setting and problem-solving using the SDLMI (Coffe & Ray-Subramanian, 2009). Goal setting is a significant predictor of self-determined behavior and students become more self-determined when they engage in problem-solving activities (Shogren, Wehmeyer, Palmer, & Paek, 2014; Wehmeyer, Shogren, Palmer, Williams-Diehm, Little et al., 2010).

The SDLMI has been evaluated for efficacy and is considered an evidence-based practice implemented with students with disabilities in high school settings (Lee, Wehmeyer, Palmer, Soukup, & Little, 2008). The current study explored the effects of implementing the model in postsecondary settings for career development and self-determined academic and vocational goals, specifically for students with ASD.

**Transition outcomes for students with disabilities.** In 2016, only about 18% of people with disabilities aged 16 and older were currently employed as indicated by The United States Department, Bureau of Labor Statistics (BLS, 2015). There are approximately 15 million working age adults (16-64) that are not institutionalized and have a disability. Approximately one-third of non-institutionalized, working age adults with a disability participate in the labor force, are employed, or are seeking employment. In 2014, 33% of workers with a disability were part-time, compared with 18% for those without a disability (BLS, 2014).

Transition outcomes for students with disabilities vary by disability category. Using the NLTS-2, Newman, Wagner, and colleagues (2011) found that in the six years following high school, a little over 50% of students with disabilities participated in PSE. They are less likely to attend college than students without disabilities, and just under 40% of students with disabilities enrolled in four-year colleges. Students with disabilities are more likely to have been enrolled in



two-year or community colleges than in vocational, business, or technical schools, or four-year colleges or universities. PSE attendance varies significantly by disability category ranging from 30% to 79% participation, with around 40% of students completing community college programs, and about 30% of students with disabilities completing programs at four-year colleges/universities (Newman, Wagner, Cameto, & Knokey, 2011). In a similar study examining the NLTS-2, results revealed a competitive employment rate of 39% for individuals with disabilities (Sima, Wehman, Chan, West, & Leuking, 2015).

With such staggeringly low statistics for employment for individuals with disabilities, new forms of intervention may better prepare students with disabilities, and more specifically ASD, with the self-determined skills to participate in PSE and employment while motivated to learn and work on tasks in self-determined goals. PSE institutions provide a wide range of opportunities for academic requirements towards degree and skill attainment, career exploration, and vocational education and training to prepare for employment in degree and non-degree seeking programs.

**Transition and ASD.** The Center for Disease Control and Prevention reported the number of children identified with ASD has significantly increased over the past ten years (CDC, 2018). The estimated total costs per year for children with ASD in the United States were between \$11.5 billion - \$60.9 billion in 2011 (Lavelle, Weinstein, Newhouse, Munir, Kuhlthau, & Prosser, 2014). The rise in the prevalence of ASD is a concern because of the costs of medical expenses, special education services, and reduced productivity from parents because of the additional responsibilities to care for their child (Buescher, Cidav, Knapp & Mandell, 2014). During secondary education, schools provide support services at no expense to parents. However, federally-mandated service-delivery ends when the student graduates from high

school, exits participation in the Individualized Education Plan (IEP), or reaches the age of 22 (PL 108-446). The level of support provided during secondary education under IDEA (P.L. 105-17) is relied upon by many students with ASD to participate in educational courses. When there is an abrupt change in supports after graduation and a significant decrease in the protection of IDEA to minor accommodations, students with ASD may not be provided the self-determination skills to develop the level of educational independence needed to be successful in college courses immediately upon leaving high school.

Newman, Wagner et al., (2011) studied the extent to which students with ASD enter PSE and subsequently become employed. Around 50% of students with ASD attend PSE institutions and approximately 35% graduate. Approximately 15% of these students attend four-year colleges or universities. During the time of the interview (eight years after high school), around 40% indicated they were employed. Another longitudinal study examined PSE and employment over a 12-year period, specifically among people with ASD. The participants were individuals with ASD and were between the ages of 10 and 52 years old at the beginning of the study. A total of 25% of participants were consistently engaged in PSE or competitive employment, over 40% were sometimes engaged, and around 30% never had attended PSE or participated in competitive employment (Taylor, Henniger, & Mailick, 2015). Results of the study showed that among participants who obtained a postsecondary degree, over half of the participants were unemployed or had limited employment after completion. NLTS-2 findings indicate around 45% of students with ASD are employed up to six years after high school ages 19 to 23, however they report lower hourly wages when compared to other disability categories and lower participation when compared to the longitudinal study (Taylor, Henniger, & Mailick, 2015).

Students with ASD with varying degrees of intellectual disability experience less favorable outcomes in transition literature. In a study involving 66 young adults with ASD who had recently exited secondary school, Taylor & Seltzer (2011) found less than 15% of participants had attended PSE or were supported or competitively employed, and less than half of students with ASD without intellectual disability (ID) in the study participated in PSE programs, compared to students with ASD and ID (less than 5%). Similarly, few participants who had ASD and average intellectual ability were competitively employed (Taylor & Seltzer, 2011).

In longitudinal studies Eaves and Ho (2008) and Howlin, Goode, Hutton, and Rutter (2004) evaluated students with ASD to determine postsecondary outcomes using data collected from childhood to adulthood. Eaves and Ho (2008) found a little over 50% of participants had been employed, but mostly in volunteer positions, sheltered workshops, or part-time work. The best indicator of good or poor outcomes for employment was IQ. Higher IQ was related to better outcomes; however, over 25% of participants in the study with higher IQ and more advanced functioning skills indicated a need for work (Eaves & Ho, 2008). Similarly, Howlin et al. (2004) found that students with an IQ greater than 70 experienced better outcomes for independent living activities, relationships, and/or employment compared to students with an IQ below 70. For students with a normal IQ range, IQ did not consistently correlate with employment outcomes. Students with higher intellectual ability demonstrated some severe behaviors associated with ASD that required intensive support to work and gain independence (Howlin et al., 2004).

The lack of transition preparation for students with ASD lends a possible explanation to low participation in postsecondary settings. Using the NLTS-2, Wagner, Marder, Blackorby,

Cameto, Newman, & Levine (2003) identified the following characteristics in secondary education for students with ASD: low school enjoyment, low school engagement, and few students on grade level in math and reading. Results also indicate students with ASD exhibited low functional skills, poor social skills, and inappropriate behaviors during school. Cameto, Levine, & Wagner (2004) found that most students with ASD had transition plans during secondary education, but were more likely to be working towards supported or sheltered employment than PSE or competitive employment. School staff rated the appropriateness of secondary educational programs for students with ASD as poor. A more recent study using findings in the NLTS-2 indicates a lack of relationship between curriculum in secondary education and post-school outcomes for students with ASD (Bouck & Gauri, 2015).

A systematic literature review of predictors of work participation for individuals with ASD identifies the factors hindering employment are intellectual ability, severity of ASD symptoms, co-morbid disorders, gender, lower speech-language ability, maladaptive behavior, poor social skills, lack of motivation, and previous institutionalization (Howlerda, van der Klink, Groothoff, & Brower, 2012). Increased participation from students with ASD in the workforce provides a solution to economic concerns about the continuous, rapid increase in prevalence. The elimination of ASD supports and lack of self-determination skills instruction in high school precipitates failure in college settings if the student has not experienced working independently on educational tasks, selecting goals, problem-solving to completion, or attainment.

### **Hypotheses and Research Questions**

The hypothesis for the current study postulated that utilization of SDLMI, a teacher-implemented and student-directed intervention, when applied to postsecondary goals for students with ASD, would improve the student's ability to use instructional strategies and educational

supports for goal attainment and increased self-determined behaviors. Acquisition of the skills in the intervention promote learning, growth, and subsequent independence in academic and vocational goal attainment, consistent with intervention to promote student involvement to teach students skills significant to self-determination and self-advocacy (Test, Mazotti et al., 2009). As the participants uses the SDLMI, they interact with the model in collaboration with the researcher and assistant to implement Phase One and identify an initial goal as a target behavior. The model enables the teacher to teach students to achieve goals with increased self-determination, motivation, and skill outcomes through student questions, teacher objectives and procedures, and educational supports. The participant assesses their interests, abilities, and instructional needs then receives instruction in awareness training, choice-making, problem-solving, decision-making, and goal setting.

The multiple probe design allows the interventionist to obtain baseline data and then teach; and to continue the pattern to mastery (degree-seeking, 80%) or criterion (vocational/non-degree seeking participants/100%). Teaching skills that enable students to be more self-determined in the current study lead to goal setting and attainment in education and training courses in a community college setting. The SDLMI Teacher's Guide assisted the researcher with implementing the model with fidelity (Shogren, K., Wehmeyer, M., Burke, & Palmer, 2017). The model has been used to assist in academic course access, career goals, objectives for academic access, and employability and career development. However, current literature does not provide effectiveness of the model at the postsecondary level, and therefore guided the research questions for this study.

Research questions for the study include:

1. What is the effect of the SDLMI with ASD-specific supports on academic and vocational

goal attainment of transition-aged students with ASD?

2. What is the effect of the SDLMI on self-determined behavior for transition-aged students with ASD?
3. What is the effect of the SDLMI on support intensity for transition-aged students with ASD for involvement in lifelong learning activities?
4. What is the effect of the SDLMI on intrinsic motivation for transition-aged students with ASD for learning academic and vocational goals?

### **Research Design**

The *independent variable* for the proposed study is the SDLMI with ASD supports. The effects of the intervention were measured using a single subject multiple probe design across participants. The students' IEPs and most recent Psychological Evaluations assist in the determination of present levels of educational performance and in acquiring background information and detailed descriptions of the individual characteristics of the participants. The *dependent variables* in this study include independent performance in skills measurement and goal attainment (percentage data), self-determination differences using The Arc Self-Determination Scale (SDS), and decreased support intensity measured by differences in the Support Intensity Scale (SIS). Wehmeyer and his colleagues developed the SDS to, “enable and empower students to become more self-determined by providing a vehicle by which they can, with appropriate supports and accommodations: (1) evaluate their own beliefs about themselves and their self-determination; (2) work collaboratively with educators and others to identify individual areas of strength and limitations related to self-determination goals and objectives; and, (3) self-assess progress in self-determination over time” (Wehmeyer, 1995, p.8). The SDS measures autonomy, self-regulation, psychological empowerment, and self-realization. The scale

is also used for “evaluating individual strengths and weaknesses, planning educational and treatment strategies, and evaluating intervention effectiveness” (Wehmeyer, 1995, p. 7).

The SIS, Lifelong Learning Subtest measured baseline support intensity to determine differences in pre- and post-intervention support outcomes (AAIDD, 2015). In addition, the Intrinsic Motivation Inventory assessed the participants’ experiences, which has been used to study intrinsic motivation and self-regulation. According to McAuley, Duncan, and Tammen, (1989) there is support for the validity of the measure.

After participants operationally defined each step towards goal attainment using a Goal Attainment Scale (GAS), they developed each task for the goal, which had approximately 10-20 steps to independently perform the skill. Data points involved the percentage of steps completed correctly and independently, taken 2-4 times weekly in 30-minute sessions. In the current study, the community college does not offer human aides for accommodations, but allows support services to come in and assist students in classes if maintained financially outside of the institution. Requiring human aides for all students needing the accommodation could create financial hardship for the institution. A non-profit agency organized by the researcher and research assistant provided the accommodation. The 15-week intervention period is consistent with previous measurement of changes in support intensity for students with ASD (Wehman et al., 2014). Participants received an adapted version of the Intrinsic Motivation Inventory (Deci & Ryan, 2000) post-intervention.

The researcher is a Master level teacher, ASD program specialist, and doctoral student in Education, and the research assistant is a Master level teacher and administrator. They were trained to use the model by the Teacher’s Guide and review of objectives and supports for each phase (Shogren, Wehmeyer, Burke, & Palmer, 2017). The research assistant was trained to

collect percentage data. In addition to the Teacher Guide, the book for Goal Attainment Scaling: Applications, Theory, and Measurement assists researchers and participants in accurately defining and measuring each rating on the scale for student self-monitoring (Kiresuk, Smith, & Cardillo, 1994).

**Phases of the intervention.** The research design included three phases in the SDLMI and three goals for each participant. Direct instruction and social learning (observing others) facilitated the acquisition of learning objectives. Phase One of the intervention involved setting a goal while addressing motivation, focused on the student's strengths, preferences, interests, beliefs, and abilities, and prioritized instructional needs in order of importance (Shogren et al., 2017).

Educational supports include self-assessment, awareness training, and instruction in choice-making, problem-solving, decision-making, and goal setting. The appendix details the SDLMI Guide and specific notes for the study application of educational supports. The supports are different for each phase of the intervention, but are the similar for each participant. Phase Two of the intervention required creating a plan of action, identifying instructional strategies, teaching self-directed learning strategies, and teacher-directed instruction. Educational supports for Phase Two focused on self-scheduling and instruction; antecedent-cue regulation, and choice-making, problem-solving, goal attainment, and decision-making instruction. Phase Two also incorporated self-advocacy and assertiveness training, communication, and self-monitoring. Phase Three required adjusting the goal or plan through self-evaluation of progress. This phase enabled the participant to determine if progress was adequate or if the goal was achieved. Phase Three educational supports included self-evaluation strategies, continued instruction in choice-making, goal setting, problem-solving, decision-making, self-reinforcement, self-recording



strategies, and self-monitoring. If the student achieves her goal or determines progress is adequate, a new instructional goal is chosen. she then chooses a new instructional goal. If progress is inadequate, the participant returns to Phase One (Shogren et al., 2017).

Characteristics of self-determined actions identified in the SDLMI Teacher Guide include: Volitional Action (autonomy, self-initiation), Agentic Action (self-regulation, self-direction, pathway thinking), and Action-Control Beliefs (psychological empowerment, self-realization, control expectancy). Teaching models in the SDLMI include role playing, direct instruction, social learning, and contingency management. The Guide also provides examples of how to implement each of these strategies. The intervention was used in the context of a learning community to establish expectations through creating norms, roles, rules, and procedures by providing descriptions, illustrations, practice opportunities, and feedback consistent with SDLMI literature (Shogren et al., 2017). The pre-intervention, intervention, and maintenance sessions were conducted with four participants staggered across three goals for a total of approximately 11 weeks. Participants entered the intervention after the establishment of at least three data points for the first participant. Each condition required approximately one and a half weeks to reach criterion or mastery.

The researcher and research assistant collected data on self-directed goal setting through percentages on the academic or vocational task lists in the three independent study goals, indicating student progress towards the goal, student challenges, and goal attainment percentages and scaling. Data was also collected on changes in self-determined behaviors and support intensity. Visual analysis and comparison of mean and median baseline to intervention scores determined if baseline probe scores differed significantly from the initial intervention percentage.

**Levels of the intervention.** The researcher implemented the SDLMI in 30-minute sessions approximately twice per week. Teaching the intervention took about one hour per week and students utilized educational supports while working towards goal attainment. The researcher instructed the participants through the phases, and both the researcher and research assistant observed and collected data. The researcher recorded the percentage of instances when the participant could not independently move forward on the task list.

## Chapter 2

### LITERATURE REVIEW

#### Students with Disabilities

This chapter reviews all relevant literature that justifies the use of the Self-Determined Learning Model of Instruction (SDLMI) intervention for transition-aged students with disabilities, ages 13 through 22, in PSE settings. The chapter examines peer reviewed literature that evaluates the efficacy of the SDLMI using experimental designs implemented by teachers for students. This study implements the SDLMI without the introduction or usage of other interventions to promote self-determination. The current study uses a review of research on the model, and other studies found since publication of the review. The table in this chapter identifies studies included in an SDLMI literature review, adapted to apply to this study guided by Hagiwara, Shogren, and Leko (2017).

#### Autism Spectrum Disorder

The newest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM V) no longer identifies specific categorical diagnoses for ASD. Before 2013, the term Asperger's Syndrome represented individuals with ASD who had average to above average IQs, and the lower part of the spectrum characterized students with significant intellectual differences requiring intensive support to function in school settings. Learning, thinking, problem-solving skills, and a range of identified levels of support needed in school vary extensively by individual. Establishing how individuals with ASD can contribute to their own quality of life, and to the larger society, affects future students' self-determined decision-making in how to attain

postsecondary goals and competitive employment. This chapter discusses the theoretical framework and literature for self-determination and PSE for transition-aged students with ASD.

### **Self-Determination and Self-Efficacy**

Self-Determination Theory (SDT; Deci & Ryan, 1985) and self-efficacy in Bandura's Social Cognitive Theory (Bandura, 1975) are the foundations for the proposed study. Field, Martin, Miller, Ward, and Wehmeyer (1998) defined self-determination as "a combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations, together with a belief of oneself as capable and effective are essential to self-determination" (Wehmeyer, 2002, p. 2). Martin and Marshall (1995), as well as Wehmeyer (2002 p. 147), described self-determined people as individuals who:

"...know how to choose - they know what they want and how to get it. From an awareness of personal needs, self-determined individuals choose goals, then doggedly pursue them. This involves asserting an individual's presence, making his or her needs known, evaluating progress toward meeting goals, adjusting performance, and creating unique approaches to solve problems".

Individuals are more motivated to learn when they have an active role in the educational process (Agran, 2000). Self-directed choices about transition require individual selections for goals of education and employment, and then motivation to reach those goals through learning, practice, and performance.

Students with disabilities can learn self-monitoring strategies to improve performance in education. Self-directed learning promotes self-determination and autonomy. Strategies for student-directed learning include performing a task using visual instruction, self-monitoring, and

self-evaluation. Student self-monitoring is an effective tool for behavior change using two components: measurement and evaluation (Loftin, Gibb, & Skiba, 2005). The student (1) measures and records his or her own behavior (measurement), and then (2) compares that recorded behavior to a determined standard (evaluation) (Loftin, Gibb, & Skiba, 2005). The importance of understanding what motivates students with ASD, and why they act certain ways, is based on the value the student places on the outcomes of the goal. Determination of knowledge that leads to increased self-determination ability in educational decisions and experiences that result in favorable outcomes could ultimately impact quality of life for individuals with ASD. In Social Cognitive Theory, self-efficacy refers to the belief the individual can perform and accomplish a goal or task by their own actions, and that “what people think, believe, and feel affects how they behave” (Bandura, 1986, p.25)

### **Self-Determination Theory and Motivation**

In SDT, motivation is a key feature, and there are several factors that contribute to a student’s decisions and subsequent motivations to achieve goals. Some components of self-determination include decision-making, problem-solving, goal setting and attainment, independence, self-regulation, positive perceptions of self-efficacy and outcome expectancy (Wehmeyer, 1997). SDT began with extrinsic rewards on intrinsic motivation to perform tasks. This theory is based on people being able to choose their actions. “When people engage an activity because they find it interesting, they are doing the activity volitionally” (e.g., I work because it is fun; Gagne & Deci, 2005, p.334). Environmental factors (i.e., educational/job content, context, and climate), individual differences, and outcomes are indicators of independent motivation. An increase in independent work motivation occurs when the work is interesting, challenging, and allows choices. In SDT, intrinsic motivation is based on the

individual's interests, and the person's importance is related to performance and satisfaction (Gagne & Deci, 2005).

SDT supports that there are three basic psychological needs of autonomy, relatedness, and competence. An individual must meet the three identified psychological needs to be considered to have self-determination, or to engage in behaviors that are self-determined in nature. Intrinsic motivation is the most self-determined form of motivation. Intrinsic motivation, from an activity perspective, refers to participation for the interest or enjoyment in the activity itself (Lonsdale, Hodge, & Rose, 2006). Being autonomy supportive (Deci and Ryan, 1985) means that an "individual in a position of authority (e.g., an instructor/teacher) takes the other's (e.g., a student's) perspective, acknowledges the other's feelings, and provides the other with pertinent information and opportunities for choice, while minimizing the use of pressure and demands" (Black and Deci, 2000, p.742).

Productive employment and life satisfaction affect self-determination and quality of life (Lachapelle, Wehmeyer, Haelewyck & Walsh, 2005). Wehmeyer and Schalock (2001) indicate instructional components in education and self-determination promote opportunities to experience control and choice. Test and colleagues (2009) identify self-determination as an evidence-based predictor of positive postsecondary outcomes in education and employment for students with disabilities.

Transition planning can incorporate self-determination for students with ASD and possibly impact current outcomes in activities for decision/choice-making, problem-solving, self-regulation, and student-directed learning. Improved quality of life outcomes from self-determined behavior include the ability to manage daily life, participation in the community

including education and employment, and involvement in daily life activities (Wehmeyer, Shrogan, Zagar, Smith, & Simpson, 2010).

### **Social Cognitive Theory**

Self-Efficacy (1986), as defined in Bandura's Social Cognitive Theory, affects how students approach tasks, goals, and challenges. There are four factors that influence self-efficacy in higher education settings: experience with success and failures, modeling (observing others being successful at a task), social persuasions (encouragements and discouragements), and psychological factors (emotional states) (Bandura, 1986). People are more likely to participate in activities they perceive to be able to have success in performing, and are more likely to persist in tasks than others who do not (Bandura & Cervone, 2000). Studies have shown a connection between a student's sense of self-efficacy and positive PSE outcomes, such as perseverance to master a skill or attain a degree (Shattuck et al., 2014). Motivation for behavior is determined by the importance of the outcome to the individual and helps students achieve goals. There is an expectation that a student's effort will lead to performance outcomes based on experiences, self-confidence, and expected difficulty of the goal (Wendelien & Thierry, 1996). Expectations that are unattainable may result in lack of motivation because the goals may not be those chosen by the student.

In a study focusing on the relationship between self-determination (autonomy, psychological empowerment, and self-realization) and the enrollment in and completion of PSE for students with disabilities using the NLTS-2, results suggest autonomy and psychological empowerment affect enrollment in college, and that self-realization affects student's completion of higher education (Percu, VanHorn, & Shrogren, 2017). Students with disabilities who leave school more self-determined, are more than twice as likely as their peers who were not as self-

determined to be employed one year after graduation, and earn significantly more income (Wehmeyer & Schwartz, 1997).

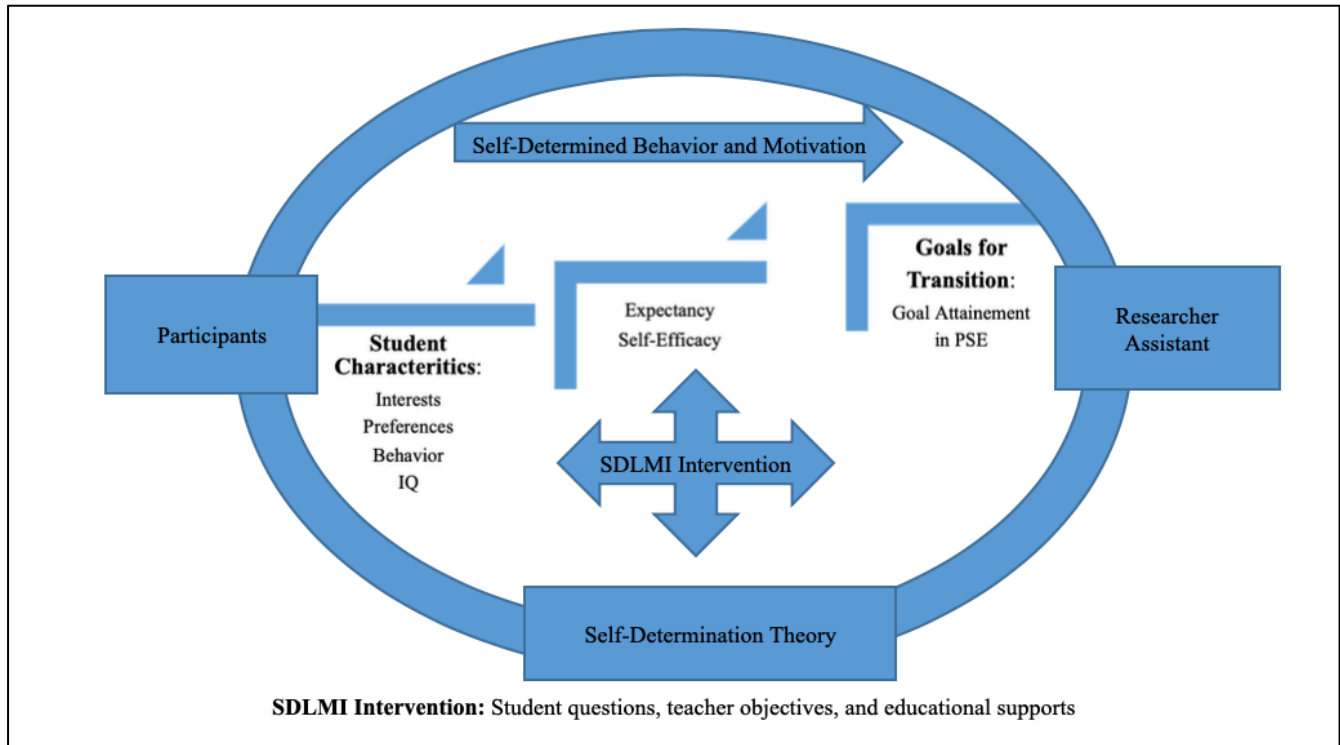


Figure 1. Theoretical Framework using Self Determination Theory and Self-Efficacy.

### Individuals with Disabilities Education Act and Transition

Transition services included in IDEA (2004) specify the Individualized Education Plan (IEP) require the designation, where appropriate, of goals and objectives for students with disabilities for PSE, vocational education, integrated and supported employment, continuing and adult education, adult services, independent living, and community participation (PL 108-446). Goals and objectives are based on the student's individual needs, strengths, preferences, and interests. Transition services initially identified within the IDEA of 1997 placed emphasis on the importance of special education and related services to ensure programs meet students' unique needs and they receive appropriate preparation for PSE, employment, and independent living (PL



105-17). IDEA 2004 added further education in addition to preparation for employment and independent living, after the initial transition law and definition modernized (PL 108-446). The definition in the earlier document, IDEA of 1997, Part A., Section 602 used the term transition services to include school to post-school activities, including post-secondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation based on student's needs, preferences, and interests (PL 105-17). The more recent legislation (PL 108-446), which identifies vocational education in place of the term vocational training, is designed to be within a results-oriented process to facilitate movement to post-school activities, and focused on the strengths of the student as well as preference and interests (PL 108-446). Additionally, according to IDEA of 2004, Part B, Section 614, the IEP indicates the need for appropriate, measurable postsecondary goals related to training, education, employment, and, where appropriate, independent living skills and transition services (including courses of study) to assist the student in reaching those goals (PL 108-446). After restructuring in 2004, IDEA indicated schools must prepare for transition through setting transition goals and establishing services beginning at age 16. This must be accomplished through the IEP process and developed by a team that includes the student and parent(s), school personnel, and representatives of agencies that may provide services to that individual after high school. Proactively addressing transition instruction in secondary education for students with ASD, and the use of ASD-specific, school-implemented, evidence-based practices in educational settings, concludes with the exit IEP at graduation or completion of attendance in high school.

## **The Rehabilitation Act of 1973**

The Rehabilitation Act was amended to Title IV of the Workforce Investment Act (WIA) of 1998 and provides services and protections for individuals with disabilities transitioning into higher education (U.S. Department of Education, 1998). Section 504 of this Act establishes vocational rehabilitation services and protects students with disabilities in the PSE environment through federal legislation (Katsyannis et al., 2009). Subpart E of Section 504 ensures access to PSE institutions that accept federal funds for individuals with disabilities who meet an institution's admissions requirements. This guaranteed the same admissions treatment for qualified students with a disability as their non-disabled peers (Katsyannis et al., 2009; U.S. Department of Education, 2019). The law also prohibits educational institutions from establishing admissions testing requirements that adversely impact students with disabilities (Section 504, Sec. 104.142). Section 504 also prohibits PSE institutions from being discriminatory against students with disabilities once they are enrolled (Katsyannis et al., 2009; U.S. Department of Education, 2019).

## **Evidence and Research-Based Practices in Transition**

By examining evidence and research-based practices for students with disabilities, researchers can identify how to implement effective strategies in the future for students with ASD. In a review of evidence-based practices in transition, Test and colleagues (2009) identified strong, moderate, and potential practices for group experimental designs, single subject designs, and meta-analysis. They recognized thirty-two secondary transition practices in the areas of student-focused planning, student development, family involvement, and program structures. Group and single-subject designs use quality indicator checklists to identify practices with moderate levels of evidence associated with student development. These include teaching life

skills using self-management, teaching job specific employment skills, teaching job specific employment skills with computer assisted instruction, and teaching self-management for employment skills. Teaching self-advocacy and self-determination skills, and job-related self-management and social skills showed moderate levels of evidence. Other practices associated with moderate levels of evidence were teaching parents and families about transition, community-based instruction, and structured programming beyond secondary school (Test et al., 2009).

The website for NTACT presents their information on current secondary transition practices. NTACT identifies effective practices and predictors while evaluating the amount, type, and quality of the research conducted. They label practices as evidence-based, research-based, or promising. This resource continues an ongoing review of the literature for transition planning, academic instruction, employment and life skills preparation, school completion, and vocational rehabilitation for students with disabilities.

Evidence-based practices identified by NTACT in education include student-focused planning practices, student development in academics, employment and life skills instruction, student-focused planning practices, and student development practices. Evidence-based practices demonstrate a strong record of success for improving outcomes, use rigorous research designs, and adhere to indicators of quality research. Research-based practices demonstrate a sufficient record of success for improving outcomes, use rigorous research designs, and may adhere to indicators of quality research (NTACT, 2017). Research-based practices identified by NTACT as predictors of PSE include inclusion in general education, occupational courses, paid employment and work experience, transition programming, vocational education, and autonomy (2017).

Predictors of employment are the same with the addition of work-study, and exceptions of transition programming and autonomy.

### **Student Focused Planning and Development Practices**

Evidence-based practices can be used to teach students how to actively participate in IEP development, implementation and monitoring. The SDLMI teaches students how to participate in self-directed and self-regulated learning to achieve education and employment goal attainment. It has been implemented with students aged 14-19 with Attention Deficit Hyperactivity Disorder (ADHD), ASD, learning disabilities (LD), emotional-behavior disorders (EBD) and Intellectual and Developmental Disabilities (I/DD; Agran et al., 2000; Agran et al., 2006; Lee, Wehmeyer, Palmer, Soukup, & Little, 2008; McGlashing-Johnson et al., 2003). Other evidence-based curricula designed to teach student involvement in the IEP meeting includes The Self-Directed IEP (Martin et al., 2003), The Self-Advocacy Strategy (Test & Neale, 2004), Whose Future Is It Anyway? (Wehmeyer, Lawrence, Garner, Soukup, & Palmer, 2004).and an adapted version of Personal Futures Planning model (Miner & Bates, 1997).

Teachers use the Self-Directed IEP (SD-IEP) to teach students how to make introductions and discuss their interests, skills, limits, and goals (Martin et al., 2003). This preparation helps increase the time students speak during their meetings. The Self-Advocacy Strategy, in combination with self-instruction, simulation, modeling, and computer assisted instruction, improves student contributions during the IEP meeting and increases self-determination (Test & Neale, 2004). The “Whose Future Is It?” program teaches students knowledge about transition planning, increase student’s self-determination, and increases self-efficacy for achievement of goals (Lee et al., 2010b). Person-Centered Planning uses an adapted version of the Personal

Futures Planning Model to increase the amount of time parents spoke during IEP meetings and time spent discussing concerns after the student leaves high school (Miner & Bates, 1997).

### **Predictors of Postsecondary Education and Employment**

Research based practices identified by NTACTION (2017) as predictors of access to and success in PSE include inclusion in general education, occupational courses, paid employment and work experience, transition programming, vocational education, and student autonomy. Inclusion in general education requires students with disabilities to have access to the general education curriculum and classes with same-age students without disabilities. Characteristics of inclusion include administrative support, specific instruction to support students with disabilities, formative assessments to determine accommodations, education about students with disabilities, identification of necessary interventions, and diverse instructional strategies (Rowe, Alverson, Unruh, Fowler, Kellems, & Test 2014).

Occupational courses support career awareness, enable students to explore career pathways, develop occupational specific skills through instruction, and provide experiences focusing on employment goals (NTACTION, 2017). Characteristics of occupational predictors include embedded career awareness, planning and assessments, inclusion of 21<sup>st</sup> century skills and technology, hands-on and community-based learning, incorporation of Universal Design for Learning, and opportunities for a variety of occupational courses to student's preferences, interests, needs, and strengths (Rowe et al., 2014). These researchers also determined experiences in authentic workplaces (e.g., work sampling, job shadowing, internships, apprenticeships, paid employment) were predictors of both PSE and employment. They also found that with transition programming such as individualized vocational opportunities, related

services, and onsite supports, students achieve their goals in education/training, employment, and independent living.

Vocational education is a predictor of both PSE and employment to prepare students with disabilities for a specific job or career including trades, technical, business, or professional careers. Correlation studies identified youth autonomy as a research-based predictor. NTACTION (2017) also identifies the SDLMI, SD-IEP, SAS, and Whose Future Is It? as predictors of PSE and employment. Research based student development practices not associated with academics include response prompting to teach employment skills, self-management instruction to teach specific job skills, and simulation to teach social skills (NTACTION, 2017).

### **The Self-Determined Learning Model of Instruction**

The SDLMI emphasizes that individuals are causal agents in their own lives and can make things happen for themselves (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000). The SDLMI has three phases: Phase One helps the student determine what they want to learn and identification of instructional goals, Phase Two allows students to address what they need to do to learn and possible barriers, and Phase Three of the model addresses progress, and actions taken to achieve the goal and barriers removed. Student-directed strategies used with the model include self-instruction, self-monitoring, self-evaluation, and problem-solving skills. Initial use of the model indicated over half of study participants met or exceeded expectations in attaining academic and transition goals when measured using GAS percentages of correct attempts. Several studies with the SDLMI use GAS for measurement of goal attainment (Agran et al., 2000; Lee et al., 2008; McGlashing-Johnson et al., 2003; Shogren et al., 2012; Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000). Post-measurement of the initial field test of the model indicated self-determination increased for participants measured using the *ARC Self-*

*Determination Scale* (Wehmeyer et al., 2000b) Wehmeyer and colleagues have determined a causal relationship between intervention to promote self-determination and increased student self-determination (Wehmeyer, Palmer, Shogren, Williams - Diehm, Kendra & Soukup, 2012) In a recent study of the relationship between self-determination and postschool outcomes using a large sample size (712) of students with disabilities, education in self-determination lead to better outcomes in employment and community access. The study measured participants over a period of two school years and evaluated the efficacy of the SDLMI and other interventions in secondary education (Shogren, Wehmeyer, Plamer, Rifembark & Little, 2015). The researchers initially recruited the participants for a longitudinal study measuring self-determination and the impact of interventions in PSE, and then again for postschool outcomes (Wehmeyer et al., 2012; Wehmeyer et al., 2013). The relationship between self-determined behavior one year after exiting revealed self-determination impacts adult outcomes. Limitations were largely the lack of effective evaluation of PSE, limited understanding of how education affected employment outcomes, and no outcome information about peers who did not participate in the intervention research (Shogren et al., 2015).

The effect of the SDLMI on academic and transition goal attainment and access to general education curriculum in a large sample of students with learning and intellectual disabilities indicated the intervention had significant impacts on goal attainment (Wehmeyer, Shogren, Palmer, William-Diehm, Little, & Boulton, 2012). An efficacy study of the impact of the SDLMI on student self-determination indicated higher levels of self-determination after exposure to the SDLMI intervention. The sample consisted of high school students with intellectual disabilities and measured the impact between groups from years 1 and 2 (Wehmeyer et al., 2012). The effect of the model on access to the general education curriculum and academic

and transition goal attainment for a large sample of students with learning and intellectual disabilities, indicated self-determination had a significant impact on goal attainment as measured by the GAS (Shogren, Palmer, Wehmeyer, William'Diehm, & Little, 2012). Shogren and colleagues (2014) also evaluated teacher perceptions for students' capacity using the SDLMI model. They found that when researchers supported teachers with implementation of the model, significant increases in teacher perception of student capacity and self-determination were present. The following table provides summary descriptions of the SDLMI studies reviewed here and accompanying results in table 1.



Table 1.

*Description of Studies Reviewed with Accompanying Results*

Author & Date	Method & Setting	Participants	Intervention Focus, Level, & Implementer	Dependent Variable & Measures	Results
Agran, Blanchard, & Wehmeyer (2000)	Delayed MB Across Groups; Job Sites, Work Training Camps	$n = 19$ (IDD = 9, LD = 2, MD = 5)	Transition (Work, Social, Academic, Community); 10 – 15 sessions; 80% mastery; 6 teachers, 8 paraprofessionals	Transition (Work, Social, Academic, Community); Sequential steps for each task; goal attainment; GAS; social validation form; percentage data	76-81% across sessions; 16/19 students met goal; GAS- 17 met or exceeded expectations; 21% of participants scores 50% on GAS
Agran et al., (2006)	MB-P; Gen. ed/resource room	$n = 3$ (IDD = 2, ASD = 1)	Academic; 15-20 min.; Study hall 10-18 Sessions; 80% Mastery across 3 sessions; 1 teacher, 2 paraprofessionals	Academic skills; Percentage data; Correct Responses; Correct Identification	Mean = 67%; Scientific inquiry $M = 87%$ ; Reference/map skill; $M = 53%$ Organ system
Agran et al., (2010)	MB-P; Open study hall, Breaks	$n = 3$ (IDD = 1; IDD/ EBD = 1)	Academic; 15-20 min sessions; 80% Mastery across 3 sessions; 1 researcher, 2 Paraprofessionals, 1 Gen ed. Teacher	Academic skills; Percentage data	$M = 80%$ Public speaking; $M = 76%$ relevant questions; $M = 81%$ following directions

Benitez et al., (2005)	AB; Alternative School	<i>n</i> = 5 (EBD)	Employment-related Supports; 30 min sessions, 3x per week, 11 weeks; Researcher	Conflict resolution; Assertiveness; Career exploration; Percentage data	Mean = 64% <i>M</i> = 87.5% <i>M</i> = 69% <i>M</i> = 74% <i>M</i> = 70%
Finn et al., (2008)	Pilot; Qual.; casual setting	<i>n</i> = 15 College-aged students with disabilities	Self-determination; Series of 8 modules; 8x90 min. sessions over 2 semesters; Staff	Self-determination; 4-point Likert type scale; Open-ended responses; Self-assessment	Increased self-confidence; understanding of compensation for disabilities, and seeking of supports; increased ability to break long-term goals into manageable parts, focusing on strengths and needs
Lee et al., (2008)	Randomized trial control group; Pre/Post Test	Control: <i>n</i> = 22 Intervention <i>n</i> = 20 (ADD = 2, EBD = 2, OHI = 1, LD = 14, ASD = 1)	Self-determination; Access general ed.; 2-11 weeks; 2x5 sessions/week; Teachers	Self-determination: Arc-SDS; AIR SDS; Access Gen. Ed.; MS-CISSAR; GAS	Time 1, Time 2 Self-determination: no statistically significant relationship with access to the gen. ed. curriculum; SDLMI: achieve higher than expected rate their self-set goals in general education curriculum <i>M</i> = 52.8% (GAS)
McGlashing-Johnson et al., (2003)	MB-P; Job placement for training	<i>n</i> = 4 (IDD)	80% Mastery; 8 weeks; Teacher, Job coach	% data of correct responses in the task analysis for each task important to community-based employment; GAS	<i>M</i> = 93%; transportation <i>M</i> = 70%; 80% maintenance; <i>M</i> = 80% task completion; <i>M</i> = 80% following work direction; ¾ met GAS

Shogren et al., (2012)	Group randomized/Control group; High school	$n = 312$ (IDD = 30%, LD = 70%)	Teachers received training; Special education teachers	General education access; Access Version of the Code for Instructional Structure and Student Academic Response Access CISSAR; Transition; GAS	Access: When students received access to the SDLMI, both students ID/LD showed significant increases in their access scores; Transition: ID: significantly higher goal attainment on transition goals but not academic goals LD: significantly higher goal attainment on academic goals but not on transition goals
Shogren et al., (2013)	Group randomized/Control group; High school	$n = 779$ (IDD = 30%, LD = 37%)	Research-based interventions to promote self-determination (ChoiceMaker, NEXT S.T.E.P. Self-Advocacy Strategy, SDLMI, Whose Future Is It Anyway?); Therapist	11 constructs; NLTS-2 items; ARC: SDS	Time 1 predicted SDS at Time 2, which predicted SDS at Time 3; SDS at Time 3 significantly predicted Community Access at Time 4 and at Time 5; Employment: SDS at Time 3 significantly predicted Employment at Time 4, but not at Time 5; Employment at Time 4 predicted Employment at Time 5; Differences for community access and employment decreased significantly 2 years post-school.

Wehmeyer et al., (2000)	High school	<i>n</i> = 21 (teachers) <i>n</i> = 41(students; LD = 17, EBD = 10, IDD = 13)	SDLMI Field; Teachers	Self-determination; ARC-SDS; AIR-SDS; GAS>60	AIR and ARC significant differences; GAS: 25% achieved 50% 30% Exceeded expectations 25% were between 40-49
Wehmeyer et al., (2003)	MB-P; 3 pairs; Session rooms	<i>n</i> = 6	Transition; Career and job-related goals and interests; 45 min over 6 weeks; Staff	Self-determination	N/A
Wehmeyer et al., (2012)	Group; Randomized Control Group	<i>N</i> = 312 Control: <i>n</i> = 111 (attrition); Treatment: <i>n</i> = 94 (IDD = 39%, LD = 70%); 26 schools, 12 students per school	Self-Determination; Special education; over 2 years; Teachers	Year 1: pretest- posttest control group comparison study of the impact of the SDLMI, ARC-SDS, AIR-SDS.	Intervention group showed significant improvements on both the AIR and SDS from baseline to the final measurement point (i.e., end of Year 2); Increases not found for the control group; Control groups: reduction in self-determination on both measures from Time 1 to Time 2

## **Goal Setting, Attainment, and Self-Monitoring**

Goal setting is a component of self-determined behavior. Goal setting instruction in teaching promotes self-directed learning for students with disabilities to achieve educational goals (Agran, Blanchard, & Wehmeyer, 2000). The process of teaching goal setting and attainment involves three steps. The first step is identification of the goal, followed by development of objectives or tasks to achieve the goal, and finally determination of the necessary actions to achieve the determined outcomes (Wehmeyer & Field, 2007).

King et al., (1998) examined the efficacy of using the GAS to evaluate therapy in a school setting for students with special needs, and concluded the GAS was appropriate for it. Students with ASD have used the GAS specifically to examine student IEP goals and to document progress. On the scale, “much less than expected” represents the present level of performance, “somewhat less than expected” indicates the benchmark, “expected outcome” indicates the goal and attainment, and “more than expected” exceeds the goal. There are specific criteria that establish rubrics for well-written goals using the GAS (King, McDougall, & Palisano et al., 1999).

Lack of self-management skills needed to independently organize and integrate aspects of college life could inhibit a student's ability to integrate. Self-monitoring measures a target behavior and compares it to a goal. Student self-monitoring involves the use of goal attainment scaling to identify present level, benchmark progress, and goal attainment as operationally defined steps to reach the goal. The strategy can result in lasting developments to that behavior, because of increased attention to the behavior (Kazdin, 1989). Rating scales, checklists, and frequency counts are structures for data collection in self-monitoring (Chafouleas, Riley-Tillman, & Sugai, 2007). Self-monitoring requires that the student periodically measure behavior

(Rafferty, 2010). Together, the researcher, research assistant, and student decided on the schedule of the student monitoring for GAS. The Intrinsic Motivation Inventory allowed participants to assess their own learning post-intervention. The intention of the Intrinsic Motivation Inventory is to assess an experience related to an activity, intrinsic motivation, and self-regulation (Deci, Eghrari, Patrick, & Leone, 1994). The tool measures participants interest/enjoyment, perceived competence, effort, value/usefulness, felt pressure and tension, and perceived choice during an experience. The interest/enjoyment subscale is a self-report measure of intrinsic motivation, an important concept in the theoretical framework. The value/usefulness subscale emphasizes that people become self-regulating performing activities that they experience as useful or valuable for themselves (Deci et al, 1994). The proposed study uses the measure post-intervention.

### **Postsecondary Education**

Continued education and employment are typical next steps after high school, however students with ASD have low participation in both activities, even with secondary programming in place for students with disabilities and legislative mandates to proactively address activities after high school (Hendricks & Wehman, 2009; Shattuck, Narendorf et al., 2012; Newman et al., 2011). By 2018, roughly two-thirds of all employment will require some level of college education (Carnevale, Smith, & Strohl, 2010). The U.S. Department of Education (2016) indicates nearly 60% of students with disabilities who attend PSE institutions attend community colleges in two-year programs or less than two years (degree-seeking or non-degree seeking). Enrollment in a community college often does not lead to a degree (Bailey, 2006). The Integrated Postsecondary Education Data System indicates between 10-30% of community college students earned degrees (Bailey, 2006). Many students who enroll in community colleges

intend to learn a skill and may not pursue obtaining a degree. Students with disabilities, and more specifically ASD, may require additional time to develop vocational skills and interact with others in an educational setting to become more independent and responsible in determining their own learning course (Alpern, 2007).

Enrollment in, and completion of, a PSE program influences long-term success for students with disabilities (Newman et al., 2011). In a study on academic coaching and self-regulation for students with disabilities, students self-reported and identified having someone to talk to, time management, and study strategies as reasons to attend coaching sessions. These sessions are used to identify their focus of need, support strategies for problem-solving, help them identify resources, and develop action plans (Mitchell & Gansemer-Top, 2016).

Curriculum courses provide opportunities for career exploration and development, and inclusion in an educational setting with same-age peers to facilitate social and behavioral skills.

Curriculum and continuing education programs prepare individuals for employment and assist in development of skills for personal and community enrichment, and workforce development.

Technical and vocational programs encourage the use of hands-on learning and services aimed at the attainment of occupational skills sets in identified areas of instruction, such as information technologies. Many technical and vocational departments implement the use of practical education, modern technologies, and career training to gain work experience in different career tracks, fields, industries, and trades.

### **Research in Transition**

Predictors of PSE and employment to increase student's self-determination and self-efficacy include the SD-IEP (Martin et al., 2003), Self-Advocacy Strategy (Test & Neale, 2004), teaching self-determination skills using the SDLMI (Wehmeyer et al., 2000), and Whose Future

Is It (Lee et al., 2010). Determining how students with disabilities benefit from these identified strategies in PSE provides an area of research to determine if a connection can also be made to students with ASD. Occupational and vocational courses are established as research-based practices for students with disabilities, and work-based learning through community-based instruction (Test et al., 2009). More research is needed to tie the strategies together in student-focused planning and self-determination of postsecondary goals. More intervention research identifying strategies that are associated with improved outcomes and causal relationships would be valuable in replication of current intervention studies in PSE settings.

### **Policy in Transition**

Needed supports and accommodations for students with disabilities in PSE may sometimes cause undue hardships to the institution, such as the assistance of a human aide. With the development of self-determined behaviors, students with ASD may be able to more independently focus on their future goals and objectives through setting goals and self-monitoring, decreasing the need for human aide in classroom settings. Perhaps there is an accommodation between human aide and no support in class that would allow colleges to address the characteristics of ASD as they relate to non-academic areas of instruction during the instruction and completion of assignment in academic and vocational areas.

Perkins IV (2014), the most recent Perkins Act reauthorization, is the main funding source for Career and Technical Education (CTE; PL 109-270). These services prepare students to transition using an education and training service delivery format to prepare for specific employment areas. Title I support development and maintenance of CTE at state and local levels and Title II, Tech Prep supports programs that incorporate secondary and post-secondary CTE programs as a sequence of courses. CTE curriculum options may lead to an industry-recognized



credential, certification, or license concurrent with a high school diploma. Completers of CTE surveyed indicated successful transition from secondary to PSE, employment, military, or part-time combinations of these transition indicators. For three consecutive years, more than 93% of Completers surveyed indicated successful transition after high school graduation, which exceeded the transition objectives (Perkins IV, 2014). The continuation of this dissertation study further examines CTE in higher education.

### **Limitations**

Many of the studies included in the review of literature of the SDLMI did not include participants with ASD. None of the studies discussed PSE in relation to self-determination curriculum(s). Shogren and colleagues (2012) examined post school outcomes but did not look at PSE. There was also a lack of treatment fidelity information in the studies reviewed, such as unspecified teaching procedures. Treatment fidelity ensures the interventionist, or person delivering the intervention, is accurately implementing the program as described. The studies also did not indicate the procedural fidelity. Several studies used trained observers, but did not specify how they were trained. The studies did indicate that they were trained as reliable, observed based on three characteristics of reliability, but did not indicate the requirements for application to the research studies or application to the implementation of the interventions (Kazdin, 1989).

### **Research Gap**

Researchers need more evidence to show that self-determination increases postsecondary outcomes. The purpose of this study is to determine if self-determination instruction improves vocational and academic goal attainment and self-determined behavior while decreasing support needs for this specific group of students with ASD attending higher education courses.

Measurement of support intensity and intrinsic motivation strengthen the outcomes of the intervention. Higher education settings have not implemented the SDLMI, and this study examined the effects in a community college setting.

Even though the SDLMI studies reviewed here use similar dependent measures such as GAS and percentage data, participant characteristics and tasks significantly varied across research studies, making it difficult to compare results (Agran, Blanchard, & Wehmeyer, 2000; Agran et al., 2006; Agran et al., 2010; Benitez et al., 2005; Lee et al., 2008; McLashing-Johnson et al., 2003; Shogren et al., 2012; Wehmeyer et al., 2000; McLashing-Johnson et al., 2003). The current study provided descriptive background data, individualized education information, and psychological evaluations, allowing extensive comparisons between participants. They represent a wide range of skills and abilities, and strengthening sample variability, whereas other studies using this intervention did not provide consistent reporting of participant characteristics and relied heavily on students of the same disability categories to have greater generalizability. Transition goals have been the focus of research using the SDLMI (Agran, Blanchard, & Wehmeyer, 2000; Finn et al., 2008; McLashing-Johnson, 2003; Shogren et al., 2012; Shogren et al., 2013) and the current study further examined the use of SDLMI in postsecondary settings for students with ASD .

## Chapter 3

### METHODOLOGY

Transition-aged students with ASD demonstrate challenges in different levels of severity in the following areas: social interaction, restricted patterns of behavior, interests and activities, communication, environmental, sensory, and social skills (DSM-V, 2013). These challenges interfere with preparation and participation in postsecondary education environments. Practices promoting self-determination have developed into evidence-based strategies for instruction (Test et al., 2009) and there are links to positive postschool outcomes and increased self-determination (Shogren et al. 2012; Wehmeyer & Palmer, 2003). An evidence-based practice for student-focused planning includes using the SDLMI to teach goal attainment in education (NTACT, 2016; Wehmeyer, Agran, Mithaug, & Martin, 2000). About 50% of students with autism attend postsecondary institutions (Newman et al., 2011), similarly identified in Shattuck et al., 2012. Around 15% attend four-year colleges or universities, and about 35% graduate from PSE (Newman et al., 2011). Vocational education is a predictor of both postsecondary education and employment to prepare students with disabilities for specific jobs, trades, technical, business, or professional careers (Rowe et al., 2014).

The focus of the study was the SDLMI with autism-specific supports to increase skills goal attainment and self-determined behavior, while decreasing support needs. Autism specific supports included task analysis and lists, and visual structures to implement intervention components. The student-role in the SDLMI was parallel with the teacher role, as opposed to traditional models where teachers facilitate all aspects of student learning. Supports provided by the teacher in the model facilitated greater responsibility and control for accountability of

learning by the student. The strategy used student-centered planning and learning that allowed the student to plan, perform, and monitor learning tasks (Wehmeyer, Agran, Palmer, Blanchard, & Mithaug, 2000). The teacher's role in the SDLMI was a combination of teacher, facilitator, and advocate for the student in self-understanding and subsequent self-determination.

Research questions for the study were:

1. What was the effect of the SDLMI with autism specific supports on academic and vocational goal attainment of transition-aged students with ASD?
2. What was the effect of the SDLMI on self-determined behavior for transition-aged students with ASD?
3. What was the effect of the SDLMI on support intensity for transition-aged students with ASD for involvement in lifelong learning activities?
4. What was the effect of the SDLMI on intrinsic motivation for transition-aged students with ASD for setting and attaining academic and vocational goals?

### **Research Design**

A multiple probe across participants design with the inclusion of four students with ASD ( $n = 4$ ) were used to address the research questions. Establishment of the relationship between the intervention, acquisition of academic and vocational skills goal-attainment, self-determined behavior, support intensity, and intrinsic motivation were examined. Interobserver Agreement (IOA) were compared between the researcher and research assistant during each weekly data collection session using point by point agreement, quantifying the number of times the two observers agree about what they saw in each observation for each time a student is observed (agreement/agreement + disagreements  $\times$  100; Kazdin, 1982). The researcher and research assistant were trained as reliable observers to determine how many steps the participant could

perform. Data collection procedures were compared between observers to reduce error and increase interrater reliability and agreement.

Because the behavior does not require immediate attention, postponing the intervention was not an ethical consideration of the study. Procedural reliability materials were critical in this design, and the use of intervention materials such as *Teaching Procedures and Educational Supports* (Shogren et al., 2017) were systematically implemented and monitored (Gast & Ledford, 2014) during the phases of the SDLMI intervention. The supports were implemented as part of the intervention package in the *Teacher's Guide* and were applied together for each participant, to each phase of the intervention. It took between two to four teaching sessions per goal for attainment depending on when the participant could not complete any more steps on the task list without instruction; however, previous literature used longer periods of time for mastery. Participants, and parents of the participants, were notified of the current study and participants signed consent after the dissertation committee and VCU IRB approval. A multiple probe across participants design provided information across several goals in practical areas, and percentages as the dependent measure were useful in the case of instructional programs measured as percentage correct when learning tasks in multiple baseline designs (Gast & Ledford, 2014). Percentage data were derived from the number of steps in the skill task list that were completed correctly and independently after teaching and training of the intervention. Task analysis are an evidence-based practice for teaching students with ASD used for address academic skills (Fleury, 2013). The researcher determined the baseline activities for each task list before implementing phase 1 of the intervention. The student questions, teacher objectives and educational supports were taught for phase 1, and then the participant would attempt to independently completed the list. When the participant required help, the assistant would take

data on the participant's performance, and the participant stopped working on that list and moved to a different course subject. The researcher would take data on the task list before the participant could move on to the next level of supports. Data points represented the participant's inability to complete any more steps on the task list without additional instruction using intervention supports.

The *independent variable* for the research questions is the SDLMI with autism supports. Autism supports included time outside of courses to interact with the course material and intervention, task analysis/lists (Odom et al., 2014), direct instruction, repetition of educational supports for generalization, and visual structure. *Dependent Variables* are as follows for each research question: RQ1: goal attainment presented in percentage data; RQ2: differences in self-determination pre and post intervention scores on the *SDS* (Wehmeyer, 1995); RQ3: differences in support intensity measured before the baseline sessions and after the maintenance sessions on the *SIS* (AAIDD, 2015); and RQ4: post-measurement intrinsic motivation and behavioral observations (Dalrymple & Ruble, 1995; Ryan, 1982). The *SDLMI Teacher's Guide* (Shogren et al., 2017) provided teacher objectives and supports included at each phase of the intervention. The following table visually represents the questions, variables, and measurement.

Table 2

*Description of Research Questions, Intervention, and Measurement*

Research Question	Independent Variable	Dependent Variable	Analysis/Measure
1	SDLMI	Goal Attainment	Percentage Data/GAS
2	SDLMI	Self-Determination	Pre/Post ARC-SDS
3	SDLMI	Support Intensity	Pre/Post SIS: Lifelong Learning
4	SDLMI	Intrinsic Motivation	Post IMI

*Note.* GAS (Kiresuk & Sherman, 1968), ARC-SDS (Wehmeyer, 1995), SIS (AAIDD, 2015), IMI (Deci & Ryan, 2000), Autism Behavioral Challenges (Darlymple & Ruble, 1995)

The Teaching Procedures (NTACT, 2017; Wehmeyer & Palmer, 2000) and recommended objectives and supports were followed and implemented to maintain treatment fidelity. The objectives and supports differ at each phase of the intervention and are detailed in the *SDLMI Guide* (Shogren et al., 2017) in the appendices. Model implementation began with the student questions and modifications to questions to facilitate student understanding.

### **Inclusion Criteria**

To participate in the study, the students had to have ASD based on a psychological evaluation done anytime during their educational careers, and be between 18-23 years of age. The convenience sample were recruited from students who attended the community college and participate in a non-profit organization that provides educational support for students with autism. Intellectual abilities vary between participants of the study; participants 1 and 2 participated in an occupation course of study in high school based on benchmark exams in Reading and Math, End of Grade (EOG) assessments, and service delivery in special education. Participants 3 and 4 were on a standard course of study in high school, indicating average intellectual functioning and grade level achievement on benchmark exams on Reading and Math

and End of Grade (EOG) assessments. Participants 1, 2, and 3 received autism programming support during their public high school education. In the autism programming, students attended typical high-school courses and participated in an elective, autism need course. Participation in the study was voluntary, and written consent was obtained from the participants and their parents.

Table 3

*Description of Participants*

Participant	Race/Gender	Age	HS Autism Programming	HS Diploma	Credential/Degree Seeking
1	C/Male	21	Yes	Occupational Course	Certificate/Diploma
2	C/Male	21	Yes	Occupational Course	Certificate/Diploma
3	C/Male	21	Yes	Standard Course	Associate Degree
4	C/Female	21	No	Standard Course	Associate Degree

*Note.* C indicates Caucasian ethnicity. HS indicates high school autism programming support instruction in behavior, organization, academic, and social skills.

The variability in the sample provided the opportunity to compare participants who graduated high school on different educational tracks with different levels of support to their performance in PSE with ASD based strategies.

### Participants

Four transition-aged students with autism all aged 21 participated in the study. Students were supported at the community college through a non-profit organization and have been working with the researcher and research assistant on school-based tasks. All participants had taken classes previously at the community college and received support with courses from the



researcher and assistant. The participants had not worked with a model of self-determination. The students participated in different curriculum courses based on interests and requirements for the programs. Two participants were non-degree seeking taking vocational courses based on their interests and employability skills (diploma or certificate seeking). Two participants were degree-seeking, taking required electives and courses for associate degree completion.

### **Rationale for Inclusion of the Subjects**

Subjects were chosen based on convenience, variability in secondary academic achievement, earned high school credential, and wide range of autism characteristics and support intensity needs related to academic and communication skills. The sample included 3 males and 1 female. Selection criteria for inclusion of participants were based on differences in the sample of students who graduated with a standard course of study diploma and occupational course of study (OCS) diploma. A standard course of study diploma was academically-driven, and the OCS diploma was vocationally-based. Participants 1 and 2 earned an occupational course of study diploma. The OCS diploma required 22 credits and does not require Credit by Demonstrated Mastery (CDM) like the standard credential. Students working towards the OCS diploma are also required to complete, “150 hours of school-based training with work activities and experiences that align with student’s post school goals; 225 hours of community-based training; and 225 hours of paid employment or 225 hours of unpaid vocational training, unpaid internship, paid employment at community rehabilitation facilities, and volunteer and/or community services hours, four Career/Technical Education (CTE) elective credits, career portfolio, and completion of the student’s IEP objectives” (North Carolina State Board of Education, 2018, p.2). The occupational diploma limited acceptance into a 4-year college or university until completion of specific academic college course requirements.

Students who participate in the OCS diploma were identified for the alternative credential through the IEP process. Course of study diploma considerations were based on past assessment and academic performance required to earn the standard credential (New Hanover County Schools, 2017). To provide a description of autism challenges and characteristics related to support and severity, data were collected using informal pre and post observations in the areas of social interaction, restricted and repetitive patterns of behavior, impairments in communication, learning characteristics, environmental challenges, and social skills a scale of 1-5 indicating how often the behavior is a challenge for the participant listed in table 10.

Participants 3 and 4 in the sample earned a standard course of study diploma. In the state of North Carolina, standard course of study diploma students, “are promoted from grade to grade based on the total number of credits earned, and students may receive credit for some high school courses by passing two phases of CDM to demonstrate foundational knowledge through an End-of-Course test, North Carolina Final Exam (NCFE) or locally designed assessment... and requires students to develop an artifact that demonstrates deep understanding of course content” (NHCS, 2017, p.2). The standard course of study diploma requires North Carolina State Board, NHCS High School Requirements, and 28 credits to graduate (NHCS, 2017). Participants 3 and 4 are associate degree seeking students.

The community college where participants take classes offers three potential credentials for acquisition with the following approximated credit requirements: certificate (20 credits); diploma (50 credits); or associate degree (70 credits). The certificates and diplomas are vocationally-based, and the associate degrees are academically driven, with transferable credit required for acceptance into a 4-year college or university. Participants 1 and 2 were certificate or diploma seeking; participants 3 and 4 were associate-degree seeking. Placement testing

identifies incoming college students reading and mathematics skills in relation to college expectations to determine which class will be most appropriate with their present level of performance. Students can use testing accommodations during placement testing. Incoming students either place into developmental classes or introductory English and math courses dependent on the assessed current skill level. Participants 1, 2, and 4 were placed into developmental reading and mathematics classes, and participant 3 was exempt from placement testing upon entrance into community college because of his academic achievement in high school, and automatically placed into introductory English and Mathematics courses.

Participant 4 is provided Vocation Rehabilitation through services for the blind because of a rare visual impairment termed Marcus Gunn phenomenon or Marcus Gunn jaw, affecting winking and movement of the jaw. Participant 4 did not receive secondary autism support and were not identified with ASD until after graduation from high school but had a service plan for vision and hearing impairments. Participant characteristics are described in table 4.

Table 4

*Participant ASD Characteristics*

Participant	Diagnosis	Social Interaction Challenges	Restricted Behavior Challenges	Communication
1	ASD	Back and forth social interactions Wanting to be left alone Participating in a group	Insistence on routines Negative reactions to change Difficulty with unstructured time	Answering and responding to questions Understanding abstract concepts
2	PDD-NOS	Reciprocal Interactions Not understanding Not being understood Inability to respond to social cues	Repeatedly watching videos/segments Pacing back and forth Problems with correction	Low initiation Reciprocal conversations Problems with speech Participate with a group
3	ASD (Asperger's, before 2013) OCD	Listening Commenting on a topic Back and forth interaction	Repeatedly watching videos/segments Difficulty with unstructured time	Participating in a group Waiting Getting attention appropriately Interacting with strangers
4	ASD without Intellectual Disability	Wanting to be left along Accepting correction	Sensitive to sounds Resisting change Problems making mistakes	Participating in a group Social chat Not being understood

Even though the participants have different levels of intellectual functioning, they exhibit similar behaviors in the areas of social interactions, restricted behaviors, and communication.

## **Background Information**

To collect background information, the participant's exit IEP from high school, and most recent psychological evaluation were reviewed by the researcher, research assistant, and community college disability support services (DSS) case worker. All participants had a diagnosis of ASD, and the specific information for each participant is discussed.

Accommodations are based on the participant's IEP and established accommodations during the meeting with the college's DSS. The researcher, research assistant, and participant met with the DSS director with and signed a disclosure form to allow the researcher or assistant to be a personal attendant (human aide).

## **Individualized Education Plan (IEP)**

The exit IEP provided information about the participant's support needs, accommodations, modifications, and service delivery. The IEP was provided to disability support services to identify types of supports the participant had in high school to determine if the student is eligible for the same types of services in college courses. The researcher and research assistant had already met with DSS before the beginning of the study. An identification of a personal attendant was allowed for three participants because they received paraeducator support in high school, and therefore were allowed continuation of the accommodation in college. One participant only received support outside of courses at the college, and their self-determined goals focused on organization of information, time management, and study skills.

## **Psychological Evaluation**

Parents and participants provided the researcher, research assistant, and college with the most recent psychological evaluation to provide background information about factors that led to the diagnosis of ASD. Psychological evaluations provided information regarding cognitive and

adaptive functioning. The colleges DSS also required the psychological evaluation for a description of disability, and to discuss areas of current need in higher education.

**Participant 1.** Had not received a psychological evaluation since elementary school, and the information was not accurate regarding intellectual ability. Participant 2 has not had a psychological evaluation since 2005.

**Participant 2.** Results of a psychological evaluation in 2005 indicated participant 2 showed average to low average cognitive skills, social skills delays, and speech delays. His diagnosis was consistent with characteristics of Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS) and ADHD, and Expressive Language Disorder.

**Participant 3.** A psychological evaluation was conducted in 2017 and the participant received a summary and clinical diagnosis of ASD-with mild cognitive and pragmatic language impairments, borderline intellectual functioning, Obsessive-Compulsive Disorder, Cerebral Palsy (by history), and Vocal Cord Paralysis (by history). The psychological evaluation indicated the participant required extensive and intensive supports to effectively maintain appropriate functioning in community-based settings.

**Participant 4.** Results of the psychological evaluation done in 2017 indicated ASD without intellectual impairment, and with language impairment. She met the criteria for ADHD, predominately inattentive, mild to moderate and also meets the criteria for specific learning disorder with impairments in mathematics. Additionally, the personality evaluation indicated depression, anxiety, obsessiveness, and generalized emotional distress.

## **Prior PSE and Work Experience**

**Participant 1.** Participant 1 completed unpaid vocational hours during high school in a grocery store and engineering firm, and participated in vocational interest areas courses. The work experiences were required for community-based completion of designated work-based hours to earn the standard/occupational diploma. Participant 1 had never been employed. The student attended a community college for one year in a program designed for basic skills instruction and continued education classes focused on employability. Participant 1 began community college programming right after high school two years ago; and completed courses in basic skills instruction for reading and mathematics, computer basics, employability, and online interest classes without use of the SDLMI.

**Participant 2.** Participant 2 completed unpaid vocational hours in a grocery store, and paid employment in a large pharmaceutical company during high school for required hours for vocational training to earn the standard/occupational diploma. He continued to work at the pharmaceutical company until he started taking community college courses. At the grocery, he stocked shelves and bagged groceries. At the pharmaceutical company, the participant shredded paper and completed some data entry activities.

**Participant 3.** Participant 3 is male, aged 20, and had never completed any work-based hours and never been employed.

**Participant 4.** Participant 4 is female, aged 21 who received a late diagnosis of ASD. She has already determined her major as visual arts. Participant 4 had a part-time job at a local grocery store and worked less than 20 hours per week.

## **Settings and Materials**

**Settings.** The study was conducted at the participants' local community college in the southeastern area of United States in the state of North Carolina, in a town of approximately 170,000 residents. Participants were provided in-class and outside of class support on the community college campus, and participants 3 and 4 only received assistance outside of courses. The researcher and research assistant were both present for implementation of the intervention. The researcher taught the supports, and the assistant monitored completion of the task lists. Curriculum courses included classes taken 2-3 days a week, or online, offering academic, technical, and vocational programs.

Accommodations specified by the college, as well as autism-specific supports were implemented by the researcher and research assistant during the courses, and outside of class at a location beside the campus at a non-profit organization. Accommodations provided in courses were established through meetings with DSS at the community college with the director, participant, researcher, and assistant. Before students begin classes at the college, procedures for the institution include a student discussion about identified accommodations with the professor after meeting with disability support services personnel to provide information about the requests. Participants 1, 2, and 3 have been allowed a personal attendant for any classes they attend at the college for autism-based needs. Participant 4 did not require in-class educational supports related to needs of the disorder.

**Education course settings.** On campus support in the courses was guided of the most recent psychological evaluation, secondary exit IEP, and established community college accommodations as indicated on the disability support services letter to the instructor; specified in an in-person meeting between participant, instructor, and personal attendant (researcher,



research assistant). The SDLMI components were used at the off-campus location to track progress towards the goals.

**Off-campus support setting.** The SDLMI student questions were asked outside of class, in an off-campus setting; and Teacher Procedures (NTACT, 2017; Wehmeyer & Palmer, 2000) and objectives and supports listed in the guide were provided in and out of courses. Service consideration off campus for students included awareness and support, communication: assessing and teaching focusing on the intervention, modifications and accommodations to learn coursework, evaluation of strengths and weaknesses, selection of classes/courses/electives based on interests, and career exploration. The off-campus setting allowed time for establishment and identification of ways to meet SDLMI steps/goals, data collection, and for implementation of autism specific supports.

**Materials.** *A Teacher's Guide to Implementing the SDLMI* (Shogren et al., 2017) and corresponding student worksheets and sample goals and phases were used to train for implementation of the model. Suggested SDLMI educational supports helped students identify their specific strengths and instructional needs, communicate preferences, and set criteria for achieving postsecondary goals. Educational supports for the intervention are listed in table 5.

Table 5

*Description of SDLMI educational supports*

Educational Support	Support in study
Antecedent-cue regulation	Visual Prompt
Assertiveness Training	Script applied to goal
Awareness Training	Expectations and Identify
Choice-Making	Task list/Transition goal
Communication skills	Questions/Comments
Decision-making	Requirements/Transition
Goal Attainment	Goal Attainment Scaling
Goal Setting	SDLMI questions
Problem-solving	Goal accomplishment
Self-advocacy	Transition goal
Self-assessment	Template (update by goal)
Self-evaluation	SDLMI, GAS
Self-instruction	Task list instruction
Self-scheduling	Planner, due dates
Self-monitoring	Task list, GAS

*Note. Each educational support is detailed in the Appendix by goal for each participant.*

**SDLMI Training**

The researcher and research assistant practiced using *The Self-Determined Learning Model of Instruction Teacher's Guide* (Shogren, Wehmeyer, Burke, & Palmer, 2017) to become familiar with how to implement the intervention. Additionally, both the researcher and research assistant trained using a presentation created by the author of the Guide and discussed

implementation of the *Teacher Procedures* (NTACT, 2017). The researcher and research assistant have over ten years of teaching experience and are very familiar with ASD programming and supports.

The researcher and research assistant used the educational supports listed for each Phase as a guide for instruction. The model taught participants a sequence of actions to elicit results that satisfied the student's needs and interests. The sequence for problem solving involved identification of the problem, potential solutions, barriers, and consequences of solutions. For students to participate in the community, the ability to solve problems is critical for independent functioning (Wehmeyer, 1997). Progress of goals were monitored by the participant, researcher, and research assistant.

**Modifications to the SDLMI intervention.** The *SDLMI intervention Teacher's Guide* detailed the educational supports and examples for how the intervention should be implemented. The researcher constructed the supports to be based on the course requirements in PSE. Because students with autism often require repetition to learn and generalize skills, the researcher used each educational support similarly for each goal.

### **Data Collection and Measures**

Intervention for participant 1 began after a stable baseline was established for task list skills not determined by the student created from skills assigned by the researcher, and observed by both the researcher and research assistant to compare IOA. The initial baseline tasks were not self-determined, did not use any other self-determination curriculum, did not have guided student questions or phases, did not have directed teacher objectives, and did not include educational supports before the start of the intervention. Three weeks after baseline for staggering the initial participant into the intervention Phase, occurred. During the phases, the blank forms in the guide

were used to adhere to procedural fidelity of the intervention (Shogren et al., 2017). The researcher and research assistant followed the teacher objectives and chosen educational supports. Tasks analysis using list percentages, GAS, SDS, SIS, IMI, and observations of autism challenges provided methods and measures for data collection.

### **Instrumentation**

**Goal attainment.** The main data collection tools were percentages from each task list for achievement towards the academic or vocational goal set with the SDLMI. Goal attainment for participants were measured by completion of activities in the vocational and academic course goals by independent and accurate completion of a task list for the goal. The steps on the task list completed during each data collection session were converted to percentage data and visually displayed. The participant set a goal with the researcher, and then the researcher made a task list for how to achieve the goal. The researcher and research assistant collected baseline data on how many steps in the task list the participant could complete independently and correctly without the intervention components. The researcher taught the educational supports to the participant for 30 minutes and the participant worked on the task list using the educational supports. The research assistant collected data when the participant could no longer move forward on the task list completing the steps independently and correctly. The time spent on each task list for each participant varied, but the implementation of the intervention components occurred during 30-minute lessons 2-3 times each week during the Spring semester. The researcher and research assistant collected data on the task list the same day and then continued with intervention components. The tasks lists were divided into 20% for task lists that were 80% criterion (academic) and 25% increments for goals that required 100% criterion (vocational) the participant to self-monitor goal attainment.

***The Arc's Self-Determination Scale (ARC-SDS).*** *The ARC-SDS* is a self-report measure administered by the researcher to the participants before baseline data were collected and after the study maintenance sessions were completed. The researcher read the directions for the section and sat with the participants to clarify information as they read the test questions to themselves. The scale identified student strengths and limitations in self-determination, and the relationship between features that encourage or impede self-determination outcomes. The scale has 72 items and four key components including autonomy, self-regulation, psychological empowerment, and self-realization. The primary focus of the scale was to assess student's strengths and weaknesses in relation to self-determination and involvement in educational plans. The measure shows reliability and validity in measuring self-determination for students with autism (Chou, Wehmeyer, Shogren, Palmer, & Lee, 2015).

***The Support Intensity Scale (SIS).*** *The SIS* is a standardized measure used to determine the intensity of support needs, and assessed adaptive behavior of students with disabilities to participate in daily life (AAIDD, 2015). *The SIS* did not have to be administered in order and the questions were asked a semi-structured interview style format to support staff and parents before the intervention began and after completion of the maintenance session. The scale identified levels of support to participate in the postsecondary environment.

*The SIS Lifelong Learning Subscale* is the only section of the measure used for data collection. *The SIS Lifelong Learning Subscale* subtest measures frequency, amount of time, and type of supports in the areas of interacting with others in a learning environment, participating in training and educational decisions, using technology for learning, accessing educational settings, learning self-determination skills, and self-management strategies (Thompson, Champbell, Bryant, & Wehmeyer, 2004).

The highest score in each area of the SIS: Lifelong Learning Activities is an 11 or 12, indicating maximum support depending on the sections of the measure in the subscale. The scale measures support in three ways: frequency, daily support time, and type of support. Frequency indicates how often support is needed for this activity, daily support time indicates on a typical day when support in this area is needed, how much time should be devoted, and type of support indicates the kind of support provided. Lower numbers indicate lesser support and numbers closer to 10-12 indicate that maximum support is required to perform the activity regarding learning and applying skills in settings within the community. The areas of the Lifelong Learning Subscale include: interacting with others in learning activities, participating in training and educational decisions, learning and using problem solving strategies, using technology for learning, accessing training and educational settings, learning functional academics, learning health and physical education skills, and learning self-determination skills. The standard score for each area was converted into a percentile score and then compared assigned a level based on the user guide (Thomson et al., 2004).

***Intrinsic Motivation Inventory.*** The informal measure provided information after the intervention about interest/enjoyment, perceived competence, effort, value/usefulness, felt pressure and tension, and perceived choice while performing a given activities. When individuals are intrinsically motivated, they demonstrate interest, enjoyment and satisfaction from an activity, and behaviors and are more likely to be repeated without rewards. The *IMI* has been used for intrinsic motivation and self-regulation and assesses interest, perceived competence, effort, value perceived pressure and choice. Validity has been established for the measure (McAuley, Duncan, and Tammen, 1989) and recently four subscales were tested for validity and reliability (Ostrow & Heffernan, 2018). The *IMI* has been used to evaluate a

person's motivation through self-determination with children, high school students, and employees.

**Autism challenges.** Observations conducted by the researcher and research assistant indicate behaviors that may be challenges for students with autism as they apply to participants. Areas of observation for this study include: social interaction, restricted and repetitive patterns of behavior, and impairments in communication, learning characteristics, environmental challenges, and social skills using a modified version of *Behaviors that may be Personal Challenges for a Student with an Autism Spectrum Disorder* (Dalrymple & Ruble, 1995). For the pre- and post-measurement, the researcher and research assistant used a 4-point Likert scale indicating whether the behavior occurs never, almost never, sometimes, almost always, and always for each participant. Data were collected pre and post intervention for the observations and is found in appendix.

Table 6

<i>Instrumentation</i>					
Instrument	Research Question	Person Administering	Method of Collecting Data	Frequency of Administration	Unit of Measurement
Task Analysis	1	Researcher Assistant	Structured Observation of Person Implementing Steps of Goals	At the beginning of each session prior to instruction	Percentage of steps completed independently
Goal Attainment Scaling	1	N/A, completed by participant with guidance on completion from researcher and assistant	Participant Completion of Rating Scale	At the beginning of each instructional session	Rating of accomplishment completed on goal based upon respondent's estimation of goal attainment
ARC/SDS	2	Researcher	Participant Interview	Implementation of SDLMI	Percentile data
SIS	3	Researcher	Support Staff Parent Participant Interview	Pre/Post Test	Percentile data
Intrinsic Motivation	4	Researcher	Participant	Post Test	Likert Mean score for 3 goals compared
Autism Challenges	4	Researcher	Structured Observation	Pre/Post	Likert Mean scores compared

Task lists provided detailed percentages of progress to goal attainment and a modified version of GAS assisted students in self-monitoring. Participants had difficulty with GAS used in the original scale structure using the following: -2 (baseline), -1 (benchmark), 0 (goal



attainment), 1 (exceeded goal), 2 (exceeds goal), so the scale was modified into quarter sections based on either 80 or 100% criterion for the tasks lists for participants to more easily self-monitor goal attainment. The *ARC-SDS* measured baseline and post maintenance sessions self-determination skills. The *SIS* provided extensive information from multiple respondents.

Participants also provided some information about their own support needs based on each section of the measure. Results indicate four support intensity levels called ILEP: I, intermittent; L, limited; E, extensive, and P, pervasive (Thompson et al., 2004).

## **Procedures**

The percentage of 100% on the task list were chosen for vocational education students because in employment settings workers are required to complete all tasks completely and correctly. For academic curriculum classes, students often demonstrate criterion at 80% because this percentage indicates approximate mastery in college courses. Consecutive sessions in postsecondary course settings and formats are introduced at scheduled times over the course of the study as self-determined behaviors indicated in the *SDLMI Teacher Guide* and *SDLMI Lesson Planner* are taught across three tiers.

**Procedure for recording daily case notes.** Organization for recording procedures included the following information: a data collection notebook shared between the researcher and research assistant; date of recording; indication of SDLMI Goal number (1-3); and intervention Educational Support strategies used at each phase of the intervention detailed in the *Teacher's Guide*. The intervention components occurred 2-3 times a week, using either observation or percentage data, for approximately 30 minutes per session during which the researcher worked with the participant using the phases of the SDLMI to help the student self-

direct goals. Each session the researcher and research assistant described information relevant to the session for the SDLMI intervention.

**Baseline sessions.** The purpose of the baseline sessions were to determine the participants' ability to complete specific vocational or academic tasks based on course requirements without the intervention, measured during 30-minute sessions, where educational supports were not provided.

The researcher and research assistant created the task list with the participant. The researcher and assistant separately determined how many of the steps the participant were able to complete correctly and independently for each of the participant's three goals, using percentage data, which is consistent with other studies using the SDLMI (Agran et al., 2000; Agran et al., 2006; Agran et al., 2010; Benitez et al., 2005). The percentages served as data points, and were described in quantifiable terms (e.g., percentage of correct independent attempts).

For the student-directed measurement, goal attainment scaling (Kiresuk & Sherman, 1968) were used on a 5-point scale. At the end of each instructional period (e.g., after students had received instruction using the model), the student, researcher, and research assistant selected the outcome for GAS that best described the student's progress on the goal. Baseline data pertaining to self-determination using the *ARC-SDS* and support intensity measure were obtained immediately on receipt of informed consent from participants, consistent with Lee et al., 2008, and other studies measuring self-determination pre-and post- intervention. Baseline measurement were taken on behavioral observations.

Baseline data were measured before the intervention began. The participant was measured on the potential skill (how many tasks in the lists are completed correctly and independently). Once the baseline data were stable for three to five data points, the SDLMI

intervention began for the first participant and lasted until criterion or mastery, approximately 1-2 Weeks.

**Intervention sessions.** The intervention components occurred 2-3 times a week, using either observation or percentage data, for approximately 30 minutes per session during which the researcher worked with the participant using the phases of the SDLMI to help the student self-direct goals. Phase 1 of the intervention involved setting a goal while addressing motivation, and focuses on the student's strengths, preferences, interests, beliefs, and abilities, while prioritizing instructional needs in order of importance (Wehmeyer et al., 1999). Phase 2 of the intervention required a plan of action, identifying instructional strategies, teaching self-directed learning strategies, and teacher-directed instruction. Phase 3 of the intervention enabled the participant to determine if the goal is achieved. The SDLMI intervention emphasized the use of a learning community to establish expectations through creating norms, roles, rules, and procedures by providing descriptions, illustrations, practice, and feedback as described in the *SDLMI Teacher's Guide* (Shogren et al., 2017).

Goal attainment was identified within the three courses and measured using task analysis percentage lists measured by the researcher and research assistant. The researcher plotted the data points to visually assess participant progress. After participant 1 reached criterion for the first goal in two weeks, participant 2 began the intervention in the first course goal. All participants reached criterion or mastery within two weeks.

During the intervention, the following educational supports were provided: review of self-assessments of interests' abilities, and instructional needs; awareness training; choice-making; problem-solving; decision-making; and goal setting instruction. Educational supports, definitions, examples, and teaching tips were listed in the *Teacher Guide* and assisted the

researcher and research assistant in following recommended strategies. Educational supports differed for each phase of the intervention.

**Maintenance sessions.** For each goal, a maintenance session goal was required. The maintenance session goal was as closely aligned with the goal during the intervention session as possible. Each participant required educational supports used during the intervention sessions to reach criterion for the vocational or academic goal in the maintenance sessions. The participants were measured concurrently after the intervention study were completed by the *SDS*, *SIS*, and *Intrinsic Motivation Inventory* (IMI).

### **Interrater Reliability and Agreement**

The researcher and observer trained to collect inter-observer agreement (IOA) data. The *SDLMI Teaching Procedures* (NTACT, 2017) and *Teacher's Guide* (Shogren et al., 2017) provided instructions of how educational supports are used to implement the intervention. When participants were measured for goal attainment, both the researcher and assistant compared percentages for 80% of the intervention study goals of vocational goal attainment, self-determination ratings, and support intensity. After training using the Guide, the researcher and research assistant gained an average IOA score of at least 80% across three intervention trials and three baseline sessions before collecting recorded IOA data. IOA were monitored twice a week when the participant discussed progress towards their goal. The researcher and assistant agreed on the progress of the goal based on percentages correct on the task list and goal scaling. Recommended objectives and supports were followed, and the case notes detailed the educational supports for each participant.

**Validity.** Because of the limited number of participants, it is difficult to generalize the findings from four participants to all students with autism exhibiting similar characteristics.

External validity was established through replication of the intervention across the goals and participants. Threats to history, maturation, and testing were controlled using the multiple probe design staggering the intervention across the three tiers or participants (Gast & Ledford, 2014).

### **Treatment Fidelity**

*Teacher Procedures* (NTACT, 2017) and *SDLMI Teacher's Guide* student questions, teacher objectives, and educational supports are detailed in the appendix (Shogren et al., 2017) were followed during the phases. Procedural integrity of the intervention was established by using the guide to move through each phase of the intervention. Treatment integrity and fidelity were followed according to the Program components and indicators of treatment fidelity were identified through instruction of educational supports. Instruction included the use of educational strategies, self-monitoring, supports, social and communication skills instruction, and implementation of goal attainment plans. Fidelity to treatment for implementation of the SDLMI were monitored by fidelity measurement (Fixen, Naoom, Blasé, Friedman, & Wallace, 2005) which involved training using the *SDLMI Teacher's Guide*. Training using the *Teacher's Guide* for implementation increased fidelity of the intervention. The researcher and research assistant completed informal online training and discussion of the guide including teacher objectives and potential educational supports. Direct observation, self-monitoring, and schedule and protocol of data collection adhere to treatment integrity.

### **Data Collection and Analyses**

For research question 1, the percentage data for within sessions were analyzed for level, trend, and variability for each session. To analyze the data for the SDLMI intervention effects, the researcher determined the level of each session, the mean of the data within the session. Next, the researcher analyzed the trend by determining the slope of the best-fit straight-line

describing data within the baseline, intervention, and maintenance, sessions. The researcher used the split middle method using the following:

1. Divide the data within each session in half.
2. Find the intersections of the mid-rate for each half. Mid-rate is the middle data point of the half.
3. Draw a line through the data that passes through both intersections.
4. Move the line there are equal number of data points above and below the line

The researcher evaluated the between-session analysis for change in level, trend, and variability. The immediacy of effect, percentage of non-overlapping data, and consistency of data patterns across the sessions for each goal, were assessed.

### **Percentage of Non-Overlapping Data (PND)**

To determine the PND calculations and compare baseline session to the intervention sessions, the researcher:

1. Determined the range of data points for the baseline session
2. Counted the number of data points in the intervention session
3. Counted the number of data points of the intervention session that fall outside the range of values in the baseline session
4. Divided the number of data points that fall outside the range of the baseline session by the total number of data points of the intervention session and multiplied the number by 100.

The computation is the percentage of overlap between baseline and intervention sessions, and intervention and maintenance sessions. The higher the PND between the sessions,

demonstrates a higher probability the intervention were responsible for the effect of the intervention (Gast & Ledford, 2014).

For research question 2, standard scores on the ARC-SDS were converted to percentile scores and pre- and post- data were compared, and differences reported. For research question 3, the standard scores on the *SIS: Lifelong Learning Subscale* were converted to a percentile, then classified based on 4 levels. The higher the score, the higher level of support needs (Thompson et al., 2004). The researcher reported the scores based on differences in pre and post score percentiles and then classified them in the following categories based on the *Supports Intensity Scale User's Manual*:

1. Level I= 84 or less (intermittent)
2. Level II= 85-99 (limited)
3. Level III- 100-115 (extensive)
4. Level IV= 116 or more (pervasive)

Research question 4 detailed the post experimental IMI culminating in a mean score for the three goals. The autism behavior challenges were compared by pre- and post-intervention and also used to describe autism characteristics for participants.

### **Social Validity**

Participants tracked their own academic and vocational goals using the task list and GAS to facilitate the use of self-directed learning steps and goal attainment based on pre-determined stages to acquisition. To report social validity data, the researcher provided detailed descriptions of how each participant reached each goal using the educational supports directly from the case study notes. Parents and support staff informally reported on support needs. The autism challenges observations detailed the specific autism challenges for each participant.

## **Chapter IV**

### **RESULTS**

The purpose of this study was to increase vocational and academic goal attainment in college coursework based on transition goals, and self-determined behaviors for students with autism who attended postsecondary education at a community college, while decreasing support intensity, using a model of self-determination for intervention. The researcher and participants used task analysis to break down a chained task into parts while using the model to teach and learn the steps to achieve a goal. Baseline data were taken before the intervention began for all participants, and baseline data were taken on each goal before intervention components were implemented. The participants became more independent in their ability to achieve goals as they progressed in steps to complete the task lists. For the purposes of this dissertation study, the SDLMI supported teachers to teach students to access, plan, and learn how to complete their academic responsibilities and requirements for achievement in college courses to prepare for employment.

#### **Research Questions**

Four research questions for the study examined the effects of the self-determination intervention on academic and vocational goal attainment, self-determined behavior, support intensity, and intrinsic motivation.

Research questions for the study included:

1. What was the effect of the Self-Determined Learning Model of Instruction (SDLMI) with autism-specific supports on academic and vocational goal attainment of transition-aged



students with ASD?

2. What was the effect of the SDLMI with autism supports on self-determined behavior for transition-aged students with ASD?
3. What was the effect of the SDLMI with autism supports on support intensity needs for transition-aged students with autism for involvement in lifelong learning activities?
4. What was the effect of the SDLMI on intrinsic motivation for transition-aged students with ASD for setting and attaining academic and vocational goals?

### **Research Question 1: Effect of the Self-Determination Intervention**

Self-determined behavior was directed by goals and active participation in strategies for setting and achieving goals. The SDLMI intervention teaching model guided students to participate in self-directed and self-regulated learning to acquire goal attainment through student questions, teacher objectives, and educational supports. Teacher objectives enabled students to identify strengths needs, communicate preferences, and prioritize needs to determine a plan of action and self-monitor progress. The researcher and assistant collected data on self-directed goal setting through percentages on the vocational or academic task lists for three independent study goals, indicating students' progress towards the goal, student challenges, and goal attainment percentages and scaling. The intervention was conducted with four participants staggered across three goals for a total of 11 Weeks. During the intervention, all participants began to use the strategies on their own to self-direct learning and attain vocational and academic course goals using educational supports instructed in the intervention.

The four participants were taught to use the educational supports to access postsecondary education course requirements. All participants attained three academic or vocational goals and self-monitored progress using a modified version of GAS (4/4 participants met 100% of goals).

The participants were instructed using student questions and educational supports during 30-minute intervention sessions; however, the participants required different amounts of time to interact with the supports and complete the task lists.

Task analysis provided percentages for goal attainment, and GAS (Kiresuk & Sherman, 1968) were used to self-monitor goals. Mean baseline, intervention, and maintenance sessions showed progression towards goals attainment and the ability for participants to track their own goals. With the intervention session there were three goals and three Phases in the SDLMI intervention for each goal. Baseline data were taken before the participants entered into the first intervention session and baseline data were taken on each goal before implementing educational supports. The SDS used percentile data to compare mean pre and post-test scores. The SIS was administered by the researcher during semi-structured interviews with the assistant, support staff, parents, and the participant themselves. Results indicated percentile changes. Autism challenges observations helped to describe participant characteristics.

## **Results**

Similar results were obtained with the increase in percentage data following the introduction of the SDLMI Phases. There is evidence of a functional relationship between the SDLMI and increased goal attainment measured. The more replications, the more convincing the demonstration. The results were replicated across 4 participants demonstrated in baseline, intervention, and maintenance sessions.

Table 7

*Baseline and Intervention mean and median scores for 3 goals*

	Mean	Median
<u>Baseline</u>		
Participant 1	14.5	15
Participant 2	15.8	15
Participant 3	12.8	10
Participant 4	14.48	8
<u>Intervention</u>		
Participant 1	80	77
Participant 2	72.7	80.5
Participant 3	62.3	68
Participant 4	71.8	80

The relative level change between baseline and intervention sessions are described for each vocational or academic goal in the sections below. The task lists percentages did not develop during the baseline data collection point for each goal, but an accelerating trend were observed during Phase 2 of the SDLMI. The effects remained relatively consistent between the intervention and maintenance sessions. PND is described for each goal for each participant between baseline and intervention sessions. The researcher left out the first data point for each goal when calculating PND because it was a baseline data collection point. A PND percentage indicates the following: below 50%: ineffective, 50-70%: minimally effective, 71-90: moderately effective, and 91-100%: highly effective (Banda & Therrien, 2008). Most PND percentages for the goals were in the moderately effective range. Maintenance session mean, Median, and range results for the participants were as follows: 1 ( $\bar{x}$  =60, Med =55, Range= 20-100), participant 2 ( $\bar{x}$  = 62.8, Med = 60, Range=20-100), participant 3 ( $\bar{x}$  = 80%, Med = 80%, Range=80-80), and participant 4 ( $\bar{x}$  = 80%, Med = 80%, Range=80-80).

## Participant 1 Results

**Vocational Goal 1: Construct and send e-mails.** Goal 1 for participant 1 required the student to independently construct and send emails for information and a social purpose, using the appropriate format provided in ENG 101, and then respond to the return emails using the correct format and sentence structure with a 10-step task list.

*Phase 1.* Participant 1 began goal 1 on Week 3 of the spring semester of 2019 in a community college setting. During Phase 1 of the SDLMI intervention and implementation of the corresponding educational supports, the participant did not increase the number of steps performed correctly and did not show an immediacy of effect.

*Phase 2.* With implementation of the SDLMI Phase 2 teacher objectives and educational supports, the participant correctly completed 4/10 steps in the task list in constructing the emails. Data were collected again and completed 4/10 (40%) of the steps correctly but were not able to determine how to complete step 5 including all the necessary components of the email to respond. Step 5 involved responding to the email in the appropriate format, and the participant did not correctly respond (did not have correct punctuation in the email) and did not know how to fix the incorrectness on the email task list. He was directed to use the email checklist provided from ENG 101 (educational support: antecedent cue) to determine what was missing, and then accessed an earlier sent email to check using a step by step format guided by the researcher (educational support: problem solving). The participant then completed 5/10 (50%) of the steps correctly and independently. With continuation of SDLMI Phase 2 educational supports, when data were collected again, the participant correctly completed all the required steps for the task list and reach 100% criterion.

**Phase 3.** During SDLMI Phase 3, educational supports, the participant self-evaluated, and identified goal attainment (100%) of vocational goal 1 with agreement from the researcher and research assistant. Phase 3 required the participant to evaluate if they achieved the goal. The correctly completed task list and GAS provided the participant the visual supports to self-evaluate achievement and determine that adequate progress and desired outcome were achieved.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 1, baseline ( $\bar{x} = 15.85\%$ , Med = 18%) and intervention ( $\bar{x} = 51\%$ , Med = 40%) using the split middle method, baseline (15%) and intervention (71.6%). To calculate relative level change, the median value of the first half of the data series for goal 1 were calculated (10) and calculating the median value of the second half (100%), ignoring the middle data point (40%). Then the smallest median value (10) were subtracted from the largest median value (100), indicating a difference in values of 90%. To calculate PND, the researcher determined the range of data points for the baseline session (10-18), then counted the number of data points in the intervention session (8), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (6). The researcher divided the number of data points that fall outside the range of the baseline session (6) by the total number of data points of the intervention (8), resulting in a PND percentage of 75%.

**Maintenance session: Goal 1.** During data collection of the maintenance session of the intervention, the participant correctly completed 5/10 steps in the task list because of incorrect sentence structure and punctuation. When the participant used the previous emails to change the sentences structure and use appropriate punctuation, the participant correctly completed the task with 100% because he quickly reproduced two more emails using appropriate structure and content. Because data were taken using the same task list from goal 1, the sent and return emails

were the same as the expectation for goal 1.

**Vocational Goal 2: Career exploration.** Goal 2 for participant 1 required the student to explore possible careers in his area of interests based on his self-assessment and goal 1 choice for employment using decision-making educational supports and the community college online educational resources to establish potential postsecondary education paths to complete the upcoming ENG 101 Portfolio Project assignment. Goal 2 was set by the participant to explore possible careers using the community college online educational resources, and to explore and establish three potential postsecondary education paths before coming to a final decision in an area of interest to focus on for the upcoming assignment in ENG 101. Because participant 1 was undecided about the major for community college, and decision on an area of employment interests is required for the next assignment in his English class, he needed to identify and complete information about a chosen career. This goal aligned with the vocational course, and the self-determined goal chosen by the participant. The task list was created because the participant wanted to explore interest areas for careers, and it was required for his next English assignment that he have an identified career path.

**Phases 1 – 3.** All SDLMI Phase 1 and Phase 2 educational supports were implemented for goal 2. Phase three for goal 2 provided self-evaluation and guidance from the educational supports for the participant to reach criterion of 100% on the vocational goal task list. The participant required continued self-determination instruction using the SDLMI during the intervention Phases to reach criterion for goal 2.

**Data evaluation.** The data indicated an estimated accelerating trend for goal 2 ( $\bar{x}$  = 59.7%, Med = 54%) using the split middle method, baseline median value (15%) and intervention median value (92.5%). To calculate relative level change, the median value of the

first half of the data series for goal 2 were calculated (15%) and calculating the median value of the second half (100%), ignoring the middle data point (54%). Then the smallest median value (15%) were subtracted from the largest median value (100%), indicating a difference in values of 85%. To calculate PND, the researcher determined the range of data points for the baseline session (10-18), then counted the number of data points in the intervention session (9), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (6). The researcher divided the number of data points that fall outside the range of the baseline session (6) by the total number of data points of the intervention (9), which results in a PND percentage of 66%.

***Maintenance session: Goal 2.*** The participant filled in a chart with the final decision for goal 2, indicating the specific requirements for the path he had chosen for his educational determination. The task required him to use educational supports to find the career and fill in the requested information about the employment. The participant required supports to access the job title but needed the use his past support to remember the exact name of multimedia artist.

**Vocational Goal 3: Portfolio project #2.** Goal 3 for participant 1 is the final goal for the participant, then the student began the maintenance session of the study after spring break. The goal required the student to independently complete Portfolio Project #2 in ENG 101 by using the preferred and selected career established during goal 2. The participant used the project sample as a guide, and textbook as a resource, to complete the warnings, instructions, and explanation for the career choice, and make the decision to turn in the assignment using rubrics and checklists for completion. To establish this goal, the researcher made a task list for the participant to complete the goal. The researcher moved through the necessary educational supports detailed in the appendix to support the participant in how to accomplish the goal

independently.

**Data evaluation.** The data indicated an estimated accelerating trend for goal 3 ( $\bar{x}$  = 53.6%, Med = 42%) using the split middle method, baseline median value (15%) and intervention median value (100%). To calculate relative level change, the median value of the first half of the data series for goal 3 were calculated (20.75%) and calculating the median value of the second half (86.5%), ignoring the middle data point (even number data points). Then the smallest median value (20.75%) were subtracted from the largest median value (86.5%), indicating a difference in values of 65.75%. To calculate PND, the researcher determined the range of data points for the baseline session (4-25), then counted the number of data points in the intervention session (8), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (5). The researcher divided the number of data points that fall outside the range of the baseline session (5) by the total number of data points of the intervention (8), resulting in a PND percentage of 62%.

**Maintenance session: Goal 3.** The participant and researcher decided to use an upcoming Portfolio Project to collect data to determine how independently the participant could complete the project using the skills that were taught during the intervention. So far this semester, the participant has been expected to complete Portfolio Projects every two weeks, so the upcoming project was an ideal data collection activity to determine if the participant used their acquired skills from the intervention to complete the project. He chose someone to interview with guidance from the researcher by using the educational supports from Phase 1 of the intervention. To complete the open-ended questions, the participant required additional educational supports from Phase 2. The participant had a lot of anxiety about the interview, so he practiced using the communication skills training and assertiveness training educational supports



(script to apply to the goal), as well as antecedent cue to remember what to do during the interview; were needed tools for implementation of the project. The participant required all phases of the intervention to complete the goal for the maintenance session for goal 3.

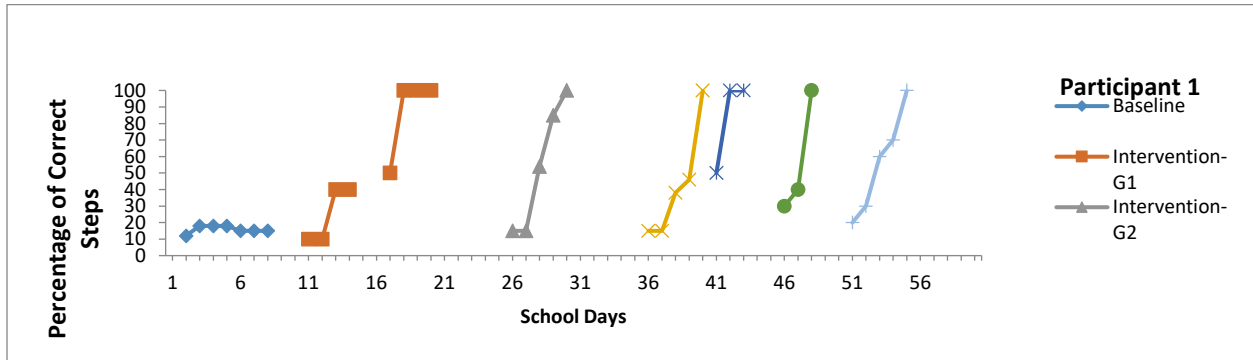


Figure 2. Participant 1 baseline, intervention goal attainment for three goals, and maintenance sessions.

## Participant 2 Results

**Vocational Goal 1: Exploration of majors.** Goal 1 for participant 2 required the student to explore all majors in either the diploma or certificate vocational areas of interest for potential declaration of major (required for his course of study as soon as possible to prepare for the next semester course registration). Declaration of major and decision of employment was needed for written assignments in ENG 111 and COM 120. The goal required the student to proceed through the declared interest classes and determine where they belong in the offered credentials for diplomas and certificates at the community college and make a final decision for major declaration.

**Phases 1 – 3.** After completing phase 1 questions for the SDLMI intervention, the vocational goal based on course requirements were to explore all majors in either the diploma or certificate vocational areas of interest. In the past, the participant had expressed interest in working with computers and information technology, but expanded his interests and wanted to

explore further areas before declaring a major officially with the college. The task list was created to reflect his interest in a class that focused on interactive media design; so, because of the continued interest in the specific class, the list was based on finding out what vocational diploma and certificate majors included the skills of interests as well as any other diploma or certificate that included classes in areas of interest. While exploring interactive media, the participant also identified two other diploma/certificate tracks and became aware of what courses were required to earn each credential from the community college. The participant's list included educational supports built in, based on the SDLMI guide suggestions for how to implement educational supports. The participant did not increase the percentage on the task list until phase 2 of the intervention and reached criterion with the implementation of phase 3 educational supports. Using phase 3 educational supports for self-evaluation and choice-making, the participant determined he did not conclude a final determination of a major, which was the set goal. He further used the Phase 3 educational supports to create a plan for the final decision, which required visual requirements and the participant checking off what he had already earned towards the Information Technology diploma, and ultimately made the final determination of Information Technology as his major declaration decision.

**Data evaluation.** The data indicated an estimated accelerating trend for goal 1 ( $\bar{x}$  = 62.5%, Med = 73%) using the split middle method, baseline median value (18%) and intervention median value (100%). To calculate relative level change, the median value of the first half of the data series for goal 1 were calculated (73%) and calculating the median value of the second half (100%), ignoring the middle data point (even number). Then the smallest median value (18%) were subtracted from the largest median value (100%), indicating a difference in values of 82%. To calculate PND, the researcher determined the range of data points for the

baseline session (4-28), then counted the number of data points in the intervention session (7), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (5). The researcher divided the number of data points that fall outside the range of the baseline session (5) by the total number of data points of the intervention (7), resulting in a PND percentage of 71%.

**Maintenance session: Goal 1.** For probing maintenance of goal 1, the researcher made an empty outline for the participant's degree choice, and had the participant fill in the required classes in the appropriate semesters to show he knew the requirements declaration of a major, and was aware of the follow through to complete the course work. The participant required educational supports to attain the vocational goal, but it was a useful activity because now he knows where to access the course evaluations through the community college website, which indicates which classes he will take for the next three semesters in the order indicated in the program guide for his major area.

**Vocational Goal 2: Declaring a major.** Goal 2 for participant 2 required the student use the information from Goal 1, which required the participant to learn where and how to declare a major at the community college, and then go independently to declare the major (researcher monitored the commute and attended the meeting but did not verbally participate). The goal required the student to independently determine where to go to declare a major and determine how to communicate with the counselor at the college to declare a major and then go and declare the major addressing all questions by the counselor at the college.

When the participant established what he would like to declare as his major, the next goal involved the process of going to the appropriate building and location for declaring a major. The task/goal also involved communicating appropriately with the staff at the college and answering

any questions about interests in the area and courses already taken and enrollment status. Because the participant started the community college as a special credit student, the college will want to know why he did not declare a major upon entry. The participant needed to be able to verbally explain why he is declaring a major now and not earlier. For the participant to communicate this information, extensive intervention was required because the participant has difficulty with verbal communication because it was hard for him to get the words out, but not because he does not have them to say. Written communication at college level was demonstrated by work in ENG 111: composition and rhetoric.

**Data evaluation.** The data indicated an estimated accelerating trend for goal 2 ( $\bar{x}$  = 48.3%, Med = 34.5%) using the split middle method, baseline median value (15%) and intervention median value (46%). To calculate relative level change within the goal, the median value of the first half of the data series for goal 2 were calculated (15%) and calculating the median value of the second half (100%), ignoring the middle data point (100%). Then the smallest median value (15%) were subtracted from the largest median value (100%), indicating a difference in values of 85%. To calculate PND, the researcher determined the range of data points for the baseline session (4-28), then counted the number of data points in the intervention session (9), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (6). The researcher divided the number of data points that fall outside the range of the baseline session (6) by the total number of data points of the intervention (9), resulting in a PND percentage of 66%.

**Maintenance session Goal 2.** Because goal 2 was to go and declare a major at the college, the maintenance goal will also focused on communication based on a vocational goal. The participant was required to have a mock interview about his skills for an upcoming interview

for a short-term job. He used the educational supports for communication and assertiveness training to declare the major at the college with the counselor and was required to use the same skills for maintenance goal 2.

**Vocational Goal 3: Resume.** For participant 2, goal 3, after Phase 1 questions and educational supports, the participant decided that because he wants to apply for jobs, and the upcoming assignment in COM was to construct a resume. He decided his goal was to learn to write the resume using the requirements from the class, then use the template as a tool to apply for short-term jobs as he completes his last year of PSE.

**Data evaluation.** The data indicated an estimated accelerating trend for goal 3 ( $\bar{x}$  = 53%, Med = 56.5%) using the split middle method, baseline median value (9%) and intervention median value (72%). To calculate relative level change, the median value of the first half of the data series for goal 3 were calculated (9%) and then calculating the median value of the second half (100%), ignoring the middle data point (even number). Then the smallest median value (9%) were subtracted from the largest median value (100%), indicating a difference in values of 91%. To calculate PND, the researcher determined the range of data points for the baseline session (4-28), then counted the number of data points in the intervention session (9), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (6). The researcher divided the number of data points that fall outside the range of the baseline session (6) by the total number of data points of the intervention (8), resulting in a PND percentage of 50%.

**Maintenance session: Goal 3.** For goal 3 maintenance session, the participant used the resume from the goal to apply to part-time jobs using the resume and cover letter. He used a task list to find the jobs and will deliver his resume, by email, mail, or by hand to the hiring

employer. The goal was not for the participant to attain a job, but to understand how to apply for employment. The participant started to search for jobs, but data were not taken on the last maintenance goal.

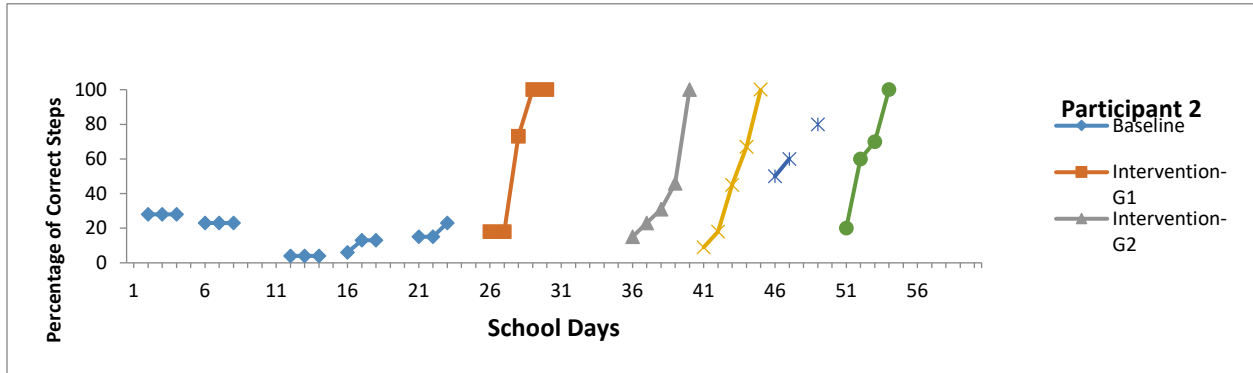


Figure 3. Participant 2 baseline, intervention goal attainment for three goals, and maintenance sessions

### Participant 3 Results

**Academic goal attainment: Requirement for employment.** Participant 3 established academic goal 1 to be focused on the requirements for employment for video game design, an Associate of Art Degree at the community college. It was the participant’s second year at college, and it was time to have direction in the field because he needed to choose classes for the next semesters. The participant’s communication class required he used the information for upcoming assignments based on future employment. Because he was so intensively involved with video games, the participant had his own ideas for games but did not have specific knowledge of the actual expectations for employment or the various roles of people in the industry. With the researcher, and aligning with expectations for COM 120, the participant determined his goal to find out the expectations and employment positions in the field.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 1 ( $\bar{x}$  = 51.1%, Med = 60%) using the split middle method, baseline median value (10%) and intervention median value (80%). To calculate relative level change, the median value of the first

half of the data series for goal 2 were calculated (10%) and calculating the median value of the second half (90%), ignoring the middle data point (60%). Then the smallest median value (10%) were subtracted from the largest median value (90%), indicating a difference in values of 80%. To calculate PND, the researcher determined the range of data points for the baseline session (4-25), then counted the number of data points in the intervention session (8), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (6). The researcher divided the number of data points that fall outside the range of the baseline session (6) by the total number of data points of the intervention (8), resulting in a PND percentage of 75%.

**Maintenance session: Goal 1.** The participant was required to fill in a chart for his chosen area of interest in the video game design area of employment, based on the previous task list requirements for knowledge about the expectations for employment. The participant easily used the previous supports independently to access the resources to fill in the chart and did not require further instructions from the researcher.

**Academic Goal 2: Resume.** For participant 2, goal 2, during phase 1 the participant chose to work on his resume assignment based on his employment in the video game design field of employment, required in one of his college courses. Phase 1 educational supports helped guide the participant's choices for how to accomplish the goal. The participant required all the Phase 2 educational supports and all Phase 3 educational supports to reach the goal. regulation to remember and organize the requirements for the academic goal.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 2 ( $\bar{x}$  = 44.36%, Med = 45%) using the split middle method, baseline median value (9%) and intervention median value (58.5%). To calculate relative level change, the median value of the

first half of the data series for goal 2 were calculated (9%) and calculating the median value of the second half (81%), ignoring the middle data point (45%). Then the smallest median value (9%) were subtracted from the largest median value (81%), indicating a difference in values of 72%. To calculate PND, the researcher determined the range of data points for the baseline session (4-25), then counted the number of data points in the intervention session (10), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (7). The researcher divided the number of data points that fall outside the range of the baseline session (7) by the total number of data points of the intervention (10), resulting in a PND percentage of 70%.

**Maintenance session: Goal 2.** To collect data for goal 2 and determine independent completion, the researcher used the resume assignment task list to conduct an interview with the participant based on what he had included on the resume. He easily told the researcher and assistant what he had included for the areas included on his resume assignment and answered questions pertaining to employment in the area of video game design based on his qualifications and interests. The participant did not require further instruction using educational supports to meet the goal.

**Academic Goal 3: Study materials.** Goal 3 for participant 3 required the creation of study materials for American History and subsequent passing of the exam. The participant has not passed a History test this semester and wanted to focus his attention on how to learn the material and be successful on an examination. The book had been hard for the participant to use, but all exam material came from the book and could not be accessed by Google because of inaccuracies on the internet sites. The participant had chosen to create Quizlet flashcards on the material and organize the actual study guide using Cornell style set-up for notes with the topic on



the left side and answer on the right. If the student received 80% or above on the test, the goal was achieved. The criterion of the test score would be the final step in the task list. The final step which was the participant taking the test and receiving 80% or higher. Table 8 represents academic goal attainment using the SDLMI intervention for participant 3. The participant received a 73 but were able to reach 80% on the task list.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 3 ( $\bar{x}$  = 44.9%, Med = 50%) using the split middle method, baseline median value (6%) and intervention median value (66%). To calculate relative level change, the median value of the first half of the data series for goal 2 were calculated (6%) and calculating the median value of the second half (80%), ignoring the middle data point (even number). Then the smallest median value (6%) were subtracted from the largest median value (80%), indicating a difference in values of 74%. To calculate PND, the researcher determined the range of data points for the baseline session (4-25), then counted the number of data points in the intervention session (9), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (6). The researcher divided the number of data points that fall outside the range of the baseline session (6) by the total number of data points of the intervention (9), resulting in a PND percentage of 66%.

**Maintenance session: Goal 3.** During the maintenance Phase for goal 3, the participant prepared for the next History test. Because the researcher used the 80% criterion for the test, the same expectations applied to this goal for achievement on the test. The participant used Quizlet and the same Cornell style notes for goal 3. The participant independently made a study guide for History for the next test using Quizlet for vocabulary and a template for Cornell notes to fill in the study guide

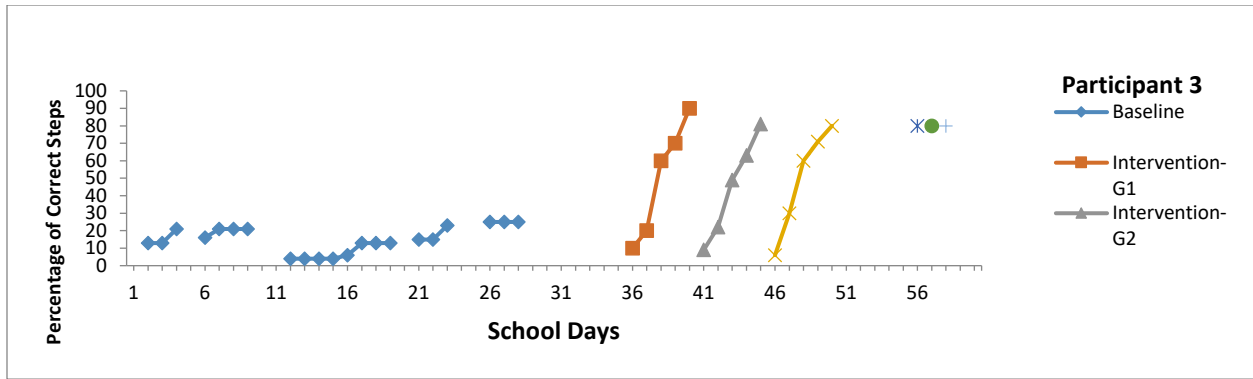


Figure 4. Participant 3 baseline, intervention goal attainment for three goals, and maintenance sessions

### Participant 4 Results

**Academic goal attainment: Measurement.** Goal 1 for participant 4 required learning measurement for BIO labs completion. Over the past semester, it had become an issue that participant 4 was not able to correctly measure, and her first goal was focused on learning basic measurement to be able to complete the remainder of the labs for BIO accurately and independently. Because of issues with measurement, participant 4 has continuously had to access extra chemicals and materials because of using too much or too little. When measurement is incorrect, the participant had difficulty completing the assignments correctly for the BIO labs.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 1 ( $\bar{x}$  = 57.5%, Med = 65%) using the split middle method, baseline median value (20%) and intervention median value (90%). To calculate relative level change, the median value of the first half of the data series for goal 1 were calculated (20%) and calculating the median value of the second half (90%), ignoring the middle data point (even number). Then the smallest median value (20%) were subtracted from the largest median value (90%), indicating a difference in values of 70%. To calculate PND, the researcher determined the range of data points for the baseline session (6-20), then counted the number of data points in the intervention session (7),

then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (5). The researcher divided the number of data points that fall outside the range of the baseline session (5) by the total number of data points of the intervention (7), results in a PND 71%.

**Maintenance session: Goal 1.** The participant easily answered the measurement questions from her learning on the ruler, and quarters on the measuring cups and graduated cylinders. She required further instruction to access the answers to the measurement questions and used the visuals she made for measurement with her BIO lab materials to answer. The researcher also needed to walk her through the procedure for measuring specifically for the lab, which is educational support: self-instruction., then the participant easily self-talked her way through the measurement used for the Bio lab on DNA.

**Academic goal 2: Exploration of degrees.** Goal 2 for participant 4 required exploration of the different Associate of Arts degrees at UNCW by researching the options and contacting an advisor at the school to ensure she is applying for the correct program, and then completing the application process for the fall semester. The researcher and participant made a task list together and the goal required meeting all the requirements on the task list. The adviser contacted the participant and she has implemented problem-solving and decision-making skills to determine her course of study for the application to the college as a transfer student. All educational supports for all three phases of the SDLMI were used to attain this goal.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 2 ( $\bar{x}$  = 48.7%, Med = 45%) using the split middle method, baseline median value (20%) and intervention median value (80%). To calculate relative level change, the median value of the first half of the data series for goal 2 were calculated (20%) and calculating the median value of the

second half (80%), ignoring the middle data point (even number). Then the smallest median value (20%) were subtracted from the largest median value (80%), indicating a difference in values of 60%. To calculate PND, the researcher determined the range of data points for the baseline session (6-20), then counted the number of data points in the intervention session (7), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (5). The researcher divided the number of data points that fall outside the range of the baseline session (5) by the total number of data points of the intervention (7), results in a PND 71%.

**Maintenance session: Goal 2.** Because goal 2 required the participant to apply to UNCW, the maintenance session requires her to follow up on the submission of her materials and complete a chart that details how she will complete the degree by courses and semester so she will be prepared for registration and upcoming semesters and requirements. The participant checked on the materials and used the program description to plan her course of study.

**Academic goal 3: Study guide.** Goal 3 for participant 4 required the participant to create a study guide for BIO using a program called Quizlet and use Cornell style note-taking for an upcoming test. The test also required measurement knowledge as it included material from the lab assignments. The participant knew how to access the program from sets other people have made on the online flashcard site but had never used it to make her own set for studying purposes. The participant wanted to work on study skills to prepare for more rigorous examinations at the university and wanted to work on note-taking so she will also learn Cornell style notetaking to organize the material and study guides.

**Data evaluation.** The data indicates an estimated accelerating trend for goal 3 ( $\bar{x}$  = 54.6%, Med = 55%) using the split middle method, baseline median value (25%) and

intervention median value (84%). To calculate relative level change, the median value of the first half of the data series for goal 2 were calculated (25%) and calculating the median value of the second half (84%), ignoring the middle data point (even number). Then the smallest median value (25%) were subtracted from the largest median value (84%), indicating a difference in values of 59%. To calculate PND, the researcher determined the range of data points for the baseline session (6-20), then counted the number of data points in the intervention session (7), then counted the number of data points of the intervention session that fall outside the range of values in the baseline session (7). The researcher divided the number of data points that fall outside the range of the baseline session (7) by the total number of data points of the intervention (7), resulting in a PND 100%.

**Maintenance session: Goal 3.** The participant independently created a study guide for Art History using the online flashcards she used to create the guide for goal 3. The strategy was assessed by the grade received on the assessment after using the preparation techniques in the task lists for the participant to use to achieve the goal.

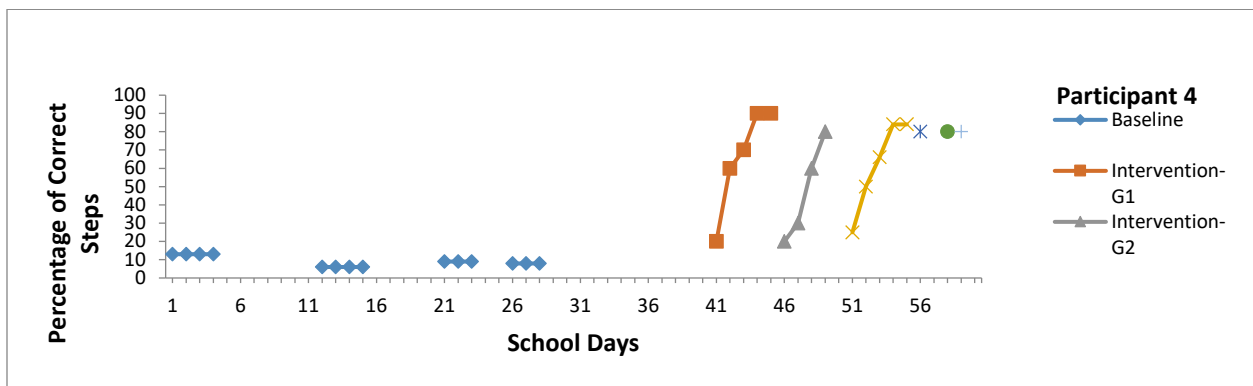


Figure 5. Participant 4 baseline, intervention goal attainment for three goals, and maintenance sessions.

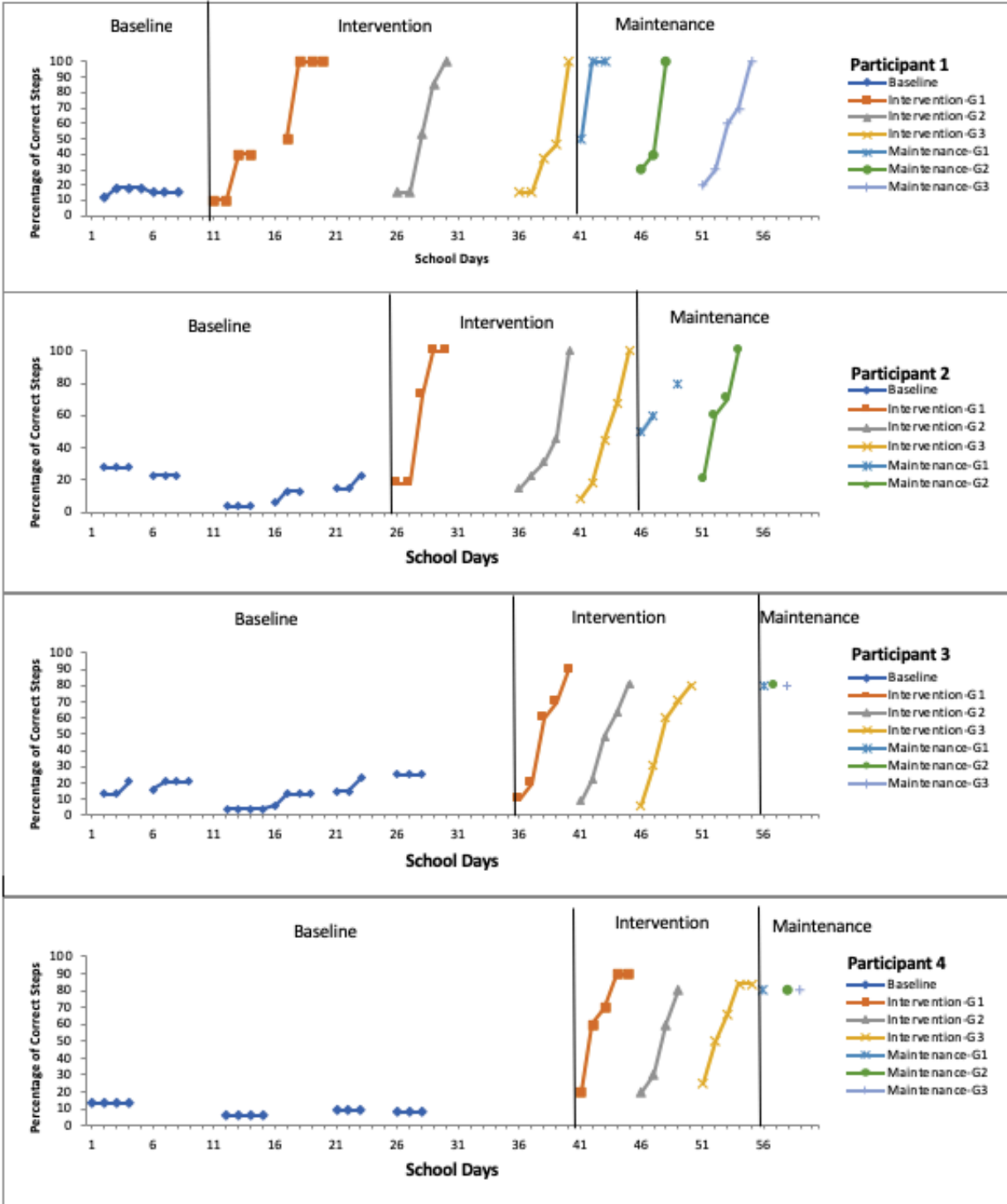


Figure 6. Goal attainment with participants staggered in each goal. Comparison of baseline, intervention, and maintenance sessions for three goals and four participants. The baseline session is before the intervention began, and a baseline data point were taken for each goal before implementing the intervention components.

## **Interobserver Agreement**

The researcher instructed the participants through the student questions, teacher objectives phases of the intervention, and both the researcher and researcher assistant observed and collected data. IOA data were collected for each participants' goals during at least 80% of the baseline and intervention sessions. After training using the SDLMI Guide, the researcher and assistant gained an average of at least 80% across three intervention trials and three baseline sessions before collecting recorded IOA data. IOA were monitored for baseline, intervention, and maintenance Phases of study based on percentages correct on the task list and goal attainment scaling. The researcher and assistant maintained above 80% agreement each Week on each task list for all four participants. The researcher did not observe or look at the assistant's data sheet before scoring, and vice versa.

## **Treatment Fidelity**

Treatment fidelity for the SDLMI is reported using detailed descriptions of how each educational support were implemented by the participant and researcher to reach the vocational or academic goal. Each Phase of the intervention in the *Teacher's Guide* (Shogren et al., 2017) were followed for student questions, teacher objectives, and educational supports. The educational supports are detailed in the appendix for how each participant reached each goal. To develop a pattern of self-determined behavior, repetition of strategies for each educational support were implemented for each support for each of the three goals. The educational supports are applied to the goal but also to the participant's overall course requirements.

## Research Question 2

The *ARC-SDS* was administered pre- and post-intervention to determine if there were changes in the areas of autonomy, self-regulation, psychological empowerment, and self-realization. The scale identifies student strengths and limitations in self-determination, and the relationship between features that encourage or obstruct self-determination outcomes. Raw scores were converted to normed percentile scores using the ARC's Self-Determination Procedural Guidelines (Wehmeyer, 1995). Table 8 represents the pre- and post-intervention percentile scores for the measure.

Table 8

*Participants ARC-SDS pre and post intervention percentile scores*

	<u>Participant 1</u>		<u>Participant 2</u>		<u>Participant 3</u>		<u>Participant 4</u>	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Autonomy	5	13	4	18	28	32	85	55
Self-regulation	16	19	60	54	67	54	90	98
Psychological	11	23	11	44	44	100	44	88
Self-realization	14	55	8	24	37	55	8	37
Self-determination	3	5	4	17	27	35	79	67

## ARC-SDS Results

The researcher recorded the raw scores from each section. Then using the tables in the manual, converted raw scores into percentile scores for comparison with the sample norms. The researcher filled in the graph for the percentile scores from the norming sample. Participants 3 and 4 began with much high overall self-determination scores and did not have as much change in the areas of self-determination as participants 1 and 2. Participants 1, 2, and 3 all fell below



the 30<sup>th</sup> percentile for overall self-determination scores, while participant 4 were almost in the 80<sup>th</sup> percentile for pre-test scores; however, she decreased in overall self-determination to the 67<sup>th</sup> percentile. Participants 1, 2, and 3 fell below the 55<sup>th</sup> percentile for all post-test areas of the measure, except for participant 3 who scored 100% for Psychological Empowerment. The accuracy of the self-report for this area is questionable and may have been more accurate if the researcher had read the questions to the participate or discussed them beforehand. Participant 3 was the only student who appeared to answer the questions for what he knew was the right answer, as opposed to choosing the best option to represent his own behavior. The scores all indicated increased self-determined behavior except participant 4. Participant 4 began the study with the highest self-determination scores (79<sup>th</sup> percentile) and ended with a lower self-determination score (67<sup>th</sup> percentile). However, the participant increased in self-regulation from the 90<sup>th</sup> to the 98<sup>th</sup> percentile and confidently filled in her answers to the section, whereas participants 1 and 2 had difficulty with the format of the section.

**Autonomy.** There were increases in autonomy for participants 1 (5<sup>th</sup> to 13<sup>th</sup> percentile), 2 (4<sup>th</sup> to 18<sup>th</sup> percentile), and 3 (28<sup>th</sup> to 30<sup>th</sup> percentile). Participant 4 decreased in autonomy from the 85<sup>th</sup> percentile to the 55<sup>th</sup> percentile. The autonomy questions measured independence in personal care and family-oriented functions, independence interacting with the environment, acting on the basis of preferences, beliefs, interests, and abilities: in the community, for post school directions, and for personal expression (Wehmeyer & Kelchner, 1995).

**Self-Regulation.** Participants 1 and 2 had difficulty with the layout of the self-regulation section. The questions tell the beginning of a story and how the story ends. The participant must fill in the middle of the story to connect the beginning and ending (Wehmeyer & Kelchner, 1995). The questions were about interpersonal problem solving and goal setting and task

performance. The goal setting and task performance section asked three questions about the participant's plans for the future, and for each question the participant must tell if they have made plans for that outcome and, if so, what those plans are and how to meet them. This section of the measure would have more accurately portrayed participants abilities if given in a task and answer format with the researcher. In the self-regulation section of the measure, Participant 1 increased very little from the 16<sup>th</sup> to the 19<sup>th</sup> percentile Participants 2 and 3 decreased in self-regulation from 60<sup>th</sup> percentile to the 54<sup>th</sup> percentile and from the 67<sup>th</sup> percentile to the 54<sup>th</sup> percentile. Participant 4 also decreased in self-regulation from the 85<sup>th</sup> percentile to the 55<sup>th</sup> percentile.

**Psychological empowerment.** The psychological empowerment section of the self-report measure asks for the participant to choose the answer that best describes themselves. All participants increased in this section; however, if the questions would have been discussed with the participant, answers may have been different. Participant 3 scored a 100% on the Psychological Empowerment section but does not accurately depict his behavior based on observations and others perceived interactions with the participant. The participant chose the answer he knew was correct because it was positively worded. All participants doubled their scores in this section: participant 1(11-23 percentile), participant 2 (11-44 percentile), participant 3 (44-100 percentile), and participant 4 (44-88 percentile).

**Deliverance of the measure.** The measure would produce more accurate results if given in a different format to participants with ASD. The researcher read the directions for each section to participants but did not read each item in the section aloud. In future studies, administration would be delivered verbally in a discussion-style format, as opposed to independent self-report of the questions.

### Research Question 3

The Support Intensity Scale (SIS) is a standardized measure to determine the intensity of support needs, and to assess adaptive behavior for students with disabilities. The Lifelong Learning Activities Subtest measured frequency, amount of time, and type of supports in the areas of interacting with others in a learning environment, participating in training and educational decisions, using technology for learning, accessing educational settings, learning self-determination skills, and self-management strategies. The score provides a percentile support needs index (SNI) and classification system based on the measurement approach (Thompson et al., 2004).

Table 9

#### *Participants SIS: Lifelong Learning Activities*

	Participant 1		Participant 2		Participant 3		Participant 4	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Interacting Learning (11)	7	5	7	3	8	6	7	3
Participate decisions (10)	7	4	8	3	8	3	8	4
Learning/PS (12)	10	5	8	4	9	6	8	4
Technology (12)	10	3	8	3	4	3	6	3
Access Training (12)	10	3	8	3	8	6	8	3
Functional (12)	10	3	8	3	8	4	3	3
Health/Physical (12)	6	3	8	3	8	3	7	3
Self-determination (12)	9	4	8	4	8	5	9	4
Self-management (12)	8	4	8	3	8	6	6	4
Standard Score	11	7	11	7	11	9	11	7
Percentile	63	16	63	16	63	37	63	37

*Note.* Total amount of points allotted indicated in parentheses next to area of SIS Learning Activity.

To gather data for the post SIS scores, the researcher and assistant asked the other teacher at the non-profit organization about her thoughts on support she provides the participants, and also asked interview style questions to parents in a “business as usual” style discussion over the

phone, about their thoughts in some of the areas on the scale to inform the researcher and assistant in data collection. The study took almost a whole college semester, so the learning and decreased support intensity demonstrated by participants was influenced by any factors throughout the semester.

**Participant 1: SIS.** Data taken before the baseline sessions indicated participant 1 had a standard score of 11 (63 percentile) at the start of the study, and standard score of 7 (16 percentile) for post data collection, with decreases from 10-3 for support intensity in the areas of using technology for learning, accessing training and educational decisions, and learning functional academics. The participant's goals required him to use Blackboard and Webadvisor to access coursework for three class, and he now can identify the correct assignments and communicates the requirements using independently constructed tasks lists. The accessing training and educational settings section for the SIS specified supports related to getting to and from educational setting and locating the classroom; the researcher and assistant may provide the support a couple times a month, but not for typical daily activities. Participant 1 traveled from the non-profit to the college several times a day independently, when at the beginning of the semester, the participant required someone to walk him everywhere because of his unawareness of crossing the downtown streets and lack of communication to find out information if he was lost or unsure. He has learned strategies for communicating when unsure; he texts and communicates where he is and what he is doing if he is not with the researcher or assistant. The independence the participant demonstrated in traveling around town to go get ice-cream or view the battleship with binoculars while out on his own, was reflected in the learning functional academics support intensity score. The participant independently reads signs and applies

functional academics to navigate management of money to purchase food, keeps a schedule of his day and classes, and follows simple instructions to apply the skills around the community. The participant started at Level IV support and ended the study at Level II, indicating a decrease in support of two categories from pervasive support to limited support based on evaluation of the participant's support needs on the respective activity of the measure (Thompson et al., 2004).

**Participant 2: SIS.** Data taken before the baseline sessions indicated Participant 2 scored in the 63<sup>rd</sup> percentile for pre-intervention measurement and the 16<sup>th</sup> percentile for post data collection. Participants 1 and 2 scored the same standard scores and percentile scores for pre and post measurement. The participant decreased support intensity for all areas of the lifelong learning activities subscale. The participant started at Level IV (pervasive) support and ended the study at Level II (limited support), indicating decreased support of two categories based on evaluation of the participant's support needs on the respective activity (Thompson et al., 2004). Participant 2 uses the bus to get to and from school, organizes his responsibilities for the week, and completes most work independently. The participant advocates for his needs by requesting help when needed, and communicates with his teacher in class when unsure of expectations. He presented his ENG 111 paper using notecards and followed the directions to present based on his teacher's expectations. The participant has declared a major and planned a course of study, expressing choices and participating fully in the planning process. Because verbal communication is at times difficult for the participant, he communicates through text and follows through independently when he is asked to be somewhere. For example, the researcher texted the participant to remind him to be at the writing center at 9:00am Monday morning and the participant independently arrived on time with his paper materials and worked with his English teacher in the writing center to prepare for the final draft.

**Participant 3: SIS.** Data taken before the baseline sessions indicated Participant 3 had a standard score of 11 (63<sup>rd</sup> percentile) and post data standard score of 9 (37<sup>th</sup> percentile).

Participant 3 decreased support intensity in participating in training/educational decisions, using technology for learning, and learning health and physical education skills. The participant's goals focused on understanding and expressing choices regarding his learning track for video game design and fully participated in the planning process to plan his academic course of study to meet the goal. The participant independently uses technology to access his courses and creates a task list to plan his course requirements.

**Participant 4: SIS.** Data taken before the baseline sessions indicated Participant 4 began at the 63<sup>rd</sup> percentile and post data measurement indicated the 37<sup>th</sup> percentile. The participant decreased support intensity interacting with others in learning activities, using technology for learning, accessing training and educational settings, but had the same score in learning functional academics. The participant had difficulty with appropriate interactions with teachers; however, has learned to reflect with the researcher or assistant before sending emails to teachers. She communicates her need for assistant now through texts and plans for completion of Biology labs, where before would just guess and hope her guess was correct. The participant locates and independently get to places. For example, there was an autism walk and the participant located the walk, drove there, and met with the researcher and assistant for the event. The participant has a new awareness how health and fitness effect attitude and well-being and has joined a gym and attends it regularly.

**Goal Attainment Scaling (GAS).** Progress was self-monitored by participants using a modified version of GAS (Kiresuk & Sherman, 1968). GAS was used as part of the educational supports for the SDLMI. The self-monitoring system served as a guide for achievement for the

participant while moving through the goals, but the participants had difficulty using it in the original form because of the negative numbering of the scale. Student self-monitoring involved the use of goal attainment scaling to identify present level, benchmark progress, and goal attainment as operationally defined steps to reach the academic or vocational goal. The participants had difficulty with GAS used in the original form, so the researcher modified the monitoring system to coordinate with the task list. The task list was divided into 4 sections and goal attainment for each section was marked for the participant to identify progress.

### **Autism Challenges**

The participants were measured pre- and post-intervention to determine autism characteristics and how often the behavior is a challenge for the student. Areas of measurement for autism challenges included: social interaction, communication, learning characteristics, environmental and internal confusion, relationships, social skill (personal management/self-control), reciprocal interactions, reciprocal social interactions appropriately, manner of interaction, learning specific behaviors, and group behaviors. The scale used indicates a 1-5 scale of overall how often the behavior is a challenge for the participant. The scores were added up for each section and recorded out of how many out of the total score for the section if the participant scored a 5 for every answer (the behavior is always is a challenge) for each section. If the numerator is close to the denominator, the behavior is a challenge for the participant almost always. The entire scale is in the appendix. The researcher and assistant scored the measured pre and post intervention.

Table 10

*Participants Autism Challenges*

	<u>Participant 1</u>		<u>Participant 2</u>		<u>Participant 3</u>		<u>Participant 4</u>	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Social interact. (35)	35	24	29	19	24	23	18	22
Restricted (45)	43	27	38	26	42	32	26	26
Communication (40)	40	25	35	23	27	25	32	27
Learning (50)	46	27	41	33	40	31	36	31
Env. Int (35)	31	21	31	21	27	23	25	23
Env. Conf (25)	22	16	21	16	25	20	13	15
Relationships (25)	14	17	21	13	25	19	25	15
Social personal (40)	32	22	30	27	36	25	29	25
Reciprocal (60)	60	27	57	32	53	37	44	34
Rec. Soc (35)	31	19	28	23	31	18	25	23
Manner (35)	23	21	24	21	26	22	16	20
Situation specific (20)	20	12	20	12	20	10	18	8
Group (25)	25	15	23	15	25	16	15	17

*Note.* Total amount of points allotted indicated in parentheses next to area of SIS Learning Activity.

The intervention facilitated the use of assertiveness and communications skills training, and all participants decreased in how often the behavior is a challenge in the areas of communication, reciprocal interactions, and reciprocal social interactions. The communication section of the measure included questions such as problems answering and responding to questions, low spontaneously initiated communication, and reciprocal conversations. The most notable difference was reflected in participant 1 with an initial score of 40 and post score of 25.



The reciprocal interactions section includes sitting and participating in a group, asking for help, inviting others to join, getting attention in a specific way, and asking someone to do an activity. Each participant decreased at least 10 points on the measure.

Results indicated in the Learning Characteristics sections, all participants decreased in how often the behavior is a challenge for the participant. The section addressed profile of skills, visual skills, over and under generalization of learning, problems organizing, and how often help to solve problems is a challenge for students with ASD. In the section of social skills: personal management/self-control, all participants decreased in how often the behavior is a challenge. This area of the measure included finishing work, working independently, being prepared and organized for activities and lessons, accepting correction, and accepting mistakes can be fixed.

#### **Research Question 4**

The IMI allowed students to assess their learning post-intervention and was intended to assess an experience related to an activity, intrinsic motivation, and self-regulation (Deci, Eghrari, Patrick, & Leone, 1994). The tool measured participants interest and enjoyment, perceived competence, effort, value/usefulness, felt pressure and tension, and perceived choice during an experience. The measure is self-reported, and the interests/enjoyment subscale measures intrinsic motivation, and is an important concept in the theoretical framework. The value/usefulness subscale emphasizes that people become self-regulating performing activities that they experience as useful or valuable for themselves (Deci et al., 1994). Pressure and tension was a negative predictor of intrinsic motivation on the scale. The participant indicated how true statements are using a scale, and scored using reverse scoring of items indicated with an R. For each of the areas below, the participants self-reported on a scale using the following scale: 1 (not at all), 4 (somewhat true), and 7 (very true). The measure was used post-intervention.

Table 11

*Participants mean post-intervention IMI Scores for 3 goals*

	<u>Post-Intervention Mean Scores</u>			
	<u>Participant 1</u>	<u>Participant 2</u>	<u>Participant 3</u>	<u>Participant 4</u>
Interest and enjoy	5.09	3.55	5.85	4.14
Perceived comp	6.4	4.05	6.83	6.26
Effort	3.7	4.93	6.6	4.13
Pressure	1	2.46	5.2	4.8
Choice	3.6	4.23	2.85	5.19

Mean scores for the three goals were calculated. Scores closer to 7 signify the participant believes the area to be very true. Participant 1 experienced interest and enjoyment (5.09) in learning the vocational goals and perceived competence (6.4) in completing the goals. The participant also experienced little pressure to learn to achieve the vocational goals as indicated by a score of 1 (not at all) on the scale. Participant 2 perceived somewhat competence with the three vocational goals (4.05) as indicated by the IMI, and identified effort and importance as above somewhat true (4.93), and also perceived he somewhat had a choice in the goal (4.23). Participant 3 scored near very true (7) for perceived competence (6.83) for the three academic goals, and very true for effort and importance (6.6) but did not perceive having a choice about performing the goals (2.85). Participants 1 and 3 perceived little choice in completing the goals (3.6, 2.85).

## **Social Validity**

Questions were asked to parents of the participants informally in a “business as usual” conversation to determine changes in their child in relation to school work and independence over the course of the semester. Parents reported increased communication talking about school and plans for future employment. There was an increase reported in knowledge of college coursework and the association with future plans for working. All participants have a plan for earning a college credential and the grades on the assignments helped to establish goal attainment. All participants maintained at least a 70% average in all courses. Goal attainment criterion in the study was higher (either 80 or 100%) and because of an 8-point grading scale, a 70% is a D at this college when it would typically be a C.

## Chapter V

### DISCUSSION

This chapter identifies the limitations of the investigation, discusses the major findings of the study, and describes the key implications of the findings for educational services and supports provided to students with ASD in PSE and future self-determination research.

#### Limitations

The study sample size was small, which makes the findings difficult to generalize to other students with ASD. There was a lot of variability among the study participants. Three of the four individuals possessed comorbid diagnoses that affected their abilities to stay focused on a task, and behaviors that required redirection during activities. Participants worked at different paces to complete steps on the task lists and required a varied number of instructional sessions. A lower criterion for mastery than 100% would have allowed for fewer sessions to meet criterion; an 80% criterion for all participants would have allowed for a more accurate number of sessions between participants. Participants that were required to reach 100% (participants 1 and 2) required more instruction with the intervention components than participants 3 and 4 because of the increased criterion.

The study design required participants to establish goals in three college classes. The researcher would have acquired more information on goal attainment using the SDLMI if the participants had focused all three goals on one course, as opposed to setting goals based on different college courses and transition goals. In future research, the researcher will direct participants to focus on one course. It is possible that the participants may not have reversed their response accuracy back to a similar baseline percentage each time a new course was introduced

if the course goals were from the same class. If the goals would have been more consistent, the study may have determined how many goals for the course were required for the participant to complete the course requirements independently, and how similar procedures for implementation of the intervention relate to the data.

The participants in the study received ASD support from a non-profit organization, so support intensity was affected not only by the intervention, but by the ASD programming. The participants attended three college courses; however, the intervention components only focused on one course goal at a time. The other course goals were supported as needed for the achievement of college coursework. The present study did not explore the effect of the SDLMI intervention on students at the community college with ASD that did not receive autism-based programming.

Future research using the ARC-SDS might benefit from reading each section to the participant and discuss the meanings further to clarify the question being asked. Students with ASD often have difficulty requesting help and may have answered without full knowledge of what the question was asking or rushed through the assessment and did not take the time to be accurately respond. Subjects frequently answered sections of the self-report measure in a way that did not appear to be consistent with professionals' perceptions of the participant's behavior. Finally, evidence-based research indicates that self-determination plays a role in supporting students with disabilities in secondary education (Test, Mazzotti, Mustian, Fowler, Kortering, & Kohler, 2009). The current study demonstrated how students with ASD can benefit from self-determination instruction to facilitate vocational and academic goal attainment in PSE. The SDLMI intervention components were effective in increasing goal attainment for college coursework and transition goals. However, it is unclear if the acquired self-determination skills

generalized to other areas of learning based on the participant's return to baseline level for each new goal, which could have happened because the goals were not consistent by course.

### **Summary of Study Findings**

The study addressed the extent to which a self-determination curriculum could increase the participation of students with ASD in PSE through self-determined behavior, goal setting and achievement. The SDLMI intervention focused on how students with ASD attending PSE can learn to manage educational responsibilities with increased independence and lessened support to improve postsecondary outcomes. Using a multiple probe across participants design, the intervention components were taught in a one-to-one format for approximately 10-15 sessions, conducted two to four times a week in 30-minute intervals. Four participants practiced setting and attaining three vocational or academic goals independently and correctly, guided by the researcher using ASD specific supports during the intervention. For each goal, time to work with the task list and goal attainment varied by participant, making it difficult to determine how much time the intervention takes to implement. All four participants met criterion for three goals and demonstrated attainment in maintenance sessions using the educational supports previously used during the intervention sessions. The percentage data showed a functional relationship between the SDLMI intervention and increased goal attainment using self-directed strategies with high Interrater Agreement based on task list achievement. Task lists using percentage correct were a reliable way to measure goal attainment. There was an accelerated trend seen for goal attainment for four participants and twelve goals. During the maintenance sessions, participants used the educational supports from the intervention sessions to reach maintenance session goals. Goal attainment was measured using percentage data, and a modified version of GAS was used for student self-monitoring. GAS has been used alongside the SDLMI (Agran, Blanchard,

Wehmeyer, 2000; Lee et al., 2008; Shogren et al., 2012; Wehmeyer et al., 2000) and future research should focus on more clearly defining each level of the scale and using the measure in the original form if the task list does not provide sufficient detail to self-monitor.

The ARC-SDS assessment was administered before the baseline sessions to determine self-determination prior to the intervention and then compared to the final assessment results after the maintenance sessions to determine if participants gained skills during the intervention. While the participants did increase goal attainment, it was unclear if the changes in self-determination measurement were socially significant.

Additionally, information was gathered to determine support intensity for completing educationally-based activities compared before and after the study to determine if participants required lessened support to meet goals. The educational supports in the intervention focused on visual reminders, assertiveness training, awareness training, choice making and decision-making instruction, communication skills training, goal setting and attainment instruction and strategies, problem-solving, self-advocacy, self-evaluation, self-instruction, self-scheduling, and self-monitoring. Because the study was 11 weeks long, and the participants received autism support programming in addition to the intervention, support intensity is affected by other factors, not just the intervention. It is difficult to determine the causes in decreased support intensity because of the extraneous variables that also effect the posttest results.

The results of the percentage data and assessments indicated the SDLMI increased the participants' ability to set and attain goals using tasks analysis, including increased self-determination skills for three of the four participants based on percentile data, decreased support needs, learning and applying skills in educational and community settings, and decreased ASD behavior challenges. Results were consistent with findings in using the SDLMI to increase the

ability to break long-term goals into manageable parts, focusing on strengths and needs (Finn et al., 2008).

This was the first study to examine the effect of the SDLMI in PSE on goal attainment. Findings from this study are consistent with other research using the SDLMI for goal attainment (McGlashing- Johnson et al, 2003; Agran et al., 2006; Agran et al., 2010) and transition activities (Agran, Blanchard, & Wehmeyer, 2000; Wehmeyer & Palmer, 2003).

**Use of the SDLMI to increase goal attainment.** Participants used the SDLMI to set and meet academic and vocational goals based on college course requirements using task analysis. The trend for all four participants accelerated as they used educational supports to increase their ability to achieve goals based on the differences in mean and median baseline and intervention phases. Intervention effects were seen across three vocational or academic goals in four participants. Further, during the maintenance phases, all four participants were able to complete the goal using the initial educational supports used for the goal.

The participants accessed previous supports for maintenance goals and continued to use the educational supports to set and meet course goals with decreased support from the researcher and assistant. Participants with goals based on their career choices and requirements for credential at the community college were able to determine, with educational supports in the intervention, where to go to: (1) obtain information on degree requirements and program evaluations; (2) determine the courses to take; and (3) identify the semester to take required classes for the credential. Participants continue to access the supports without direct intervention from the researcher or assistant.

**Use of the SDLMI to increase self-determination.** Initial assessments of the ARC-SDS before the baseline sessions indicated participants had low self-determination skills (below the



30<sup>th</sup> percentile in all areas), except for Participant 4 (79<sup>th</sup> percentile). Participants increased in overall self-determination, except for Participant 4 who decreased overall self-determination from the 79<sup>th</sup> percentile to the 67<sup>th</sup> percentile, and two participants decreased in self-regulation (60<sup>th</sup>-54<sup>th</sup> percentile, 67<sup>th</sup>-54<sup>th</sup> percentile), a main component of the SDLMI intervention. The method of open-ended questions for gathering data on the self-regulation section of the measure may have affected the results. The administrator read the directions for each section to the participants, but did not read each individual question out loud. Administration of the section might be better completed verbally with the participant to determine a clearer picture of that section. Participants may not accurately self-report on the measure if not asked each question. When asked to complete the measure independently without reading aloud, some participants may provide answers that are not well-thought out, and may inaccurately portray the participant's skills.

**Use of the SDLMI to Decrease Support Intensity.** In high school, students with disabilities receive extensive support under the Individuals with Disabilities Education Act (IDEA). In college, many of the supports provided to students in high-school are transferred to the student in PSE. If students have not been directly taught how to manage academic routines and responsibilities when they get to college, it is difficult for them to access the requirements of the college courses and follow through with the coursework by the assigned dates.

Even though there were two level changes using the SIS measurement approach (Thompson et al., 2004) for two participants, at the beginning of the new semester, many of the support needs may increase because the participant will have to learn the routines and expectations for new college courses. From examining the intervention baseline sessions data,

participants will most likely require increased support to learn the expectations and apply newly learned skills with new college courses.

Some students with ASD require more support than can be provided by DSS. The intensity of services provided through DSS may not deliver the specific instructional strategies needed for students with ASD to keep up with college course requirements. Supports are expensive and limited for students with ASD in PSE. In order for more students with ASD to access and interact with college course content, self-determination instruction provided a strategy for teaching students how to make choices and decisions, to problem solve, and use their interests and abilities to achieve in PSE and prepare for employment.

### **Implications**

Conclusions from this research suggest there are benefits from using a model of self-determination to set and attain course goals in college. The educational supports used in repetition within the SDLMI intervention allowed for specific ways to learn the self-determined behaviors, and use them to set goals, maintain routines to meet goals, understand and organize educational responsibilities using reminders, and use of problem-solving skills for goal attainment. The following sections describe how the SDLMI intervention provides a way to facilitate greater responsibility and independence for students with ASD, before and during, college participation.

**Secondary education support.** If teachers learn to understand how the development of self-determination skills such as choice-making and decision making instruction, communication skills training, goal attainment strategies, self-monitoring, and problem solving instruction received in high school, impact performance and achievement in college, more teachers may be willing to build a self-determination curriculum into the routines and responsibilities of helping

students develop independent skills. The participants in this study were not able to independently manage three courses and had never been taught a strategy for successfully accomplishing the coursework.

In high school, students are provided extensive supports, and while it is understandable to provide those supports to facilitate graduation, self-determination skills should be taught so that students so they can learn to manage the responsibilities for themselves. As soon as they get to college, support is minimal, and self-determination skills are key factors in whether the student is successful with the course content and expectations for achievement (i.e. papers, test, quizzes, due dates).

**Autism programming.** All participants in the study received ASD support programming provided by a non-profit organization. Future studies should determine whether self-determination instruction alone, without the ASD supports, would lead to similar goal attainment results in PSE settings. The participants also received autism support not associated with the goals of the intervention, so other strategies used within the programming facilitated decreased support intensity. Because students with ASD use repetition in learning, the strategies helped them maintain their materials, prioritizing of assignments and due dates, awareness of academic expectations, and independent use of supports to manage education. The supports are valuable for students with ASD in PSE. Within the intervention and programming, even less verbal support could be used for participants to complete the educational supports as opposed to providing a template of the supports to the student. Participant-made supports would allow for even more independence and repetition of strategies to problem solve and make decisions.

**College coursework.** The participants only focused on one goal, when in a week, they have three college courses to maintain. The researcher and assistant made lists for the other

courses because the goal only focused on one class. Planning for the goal did not include holding the participant accountable for responsibility of all the courses. Future research should focus on the educational responsibilities in entirety, as opposed to just one class, to more accurately represent the expectations. When creating their own task lists for the week, participants began to include more than one class, but required additional skills to be able to organize three courses. It would be more representative to focus on all coursework for one class at a time, scaffolding the instruction until the student is able to manage the tasks independently.

**Informing programming practices.** The SDLMI demonstrated an effect on goal attainment and there were significant changes in behavior observed during the intervention. The participants developed their skills and continued to use the strategies implemented in the intervention to plan their weekly and long-term education activities. Many of the responsibilities that were prompted by the teacher were transferred to the student. Because the participants are in college, it is a critical time for development of the skills needed to take control of their own responsibilities. The participants enjoyed the intervention and expressed how they liked the structure of setting and meeting goals.

**Conducting SDLMI research.** Percentage data was useful in measuring task completion. Task analysis provided an easy way to determine how much progress the participant had made since teaching the intervention components and provided reliable measurement. The ARC-SDS was more accurate with students who have more significant cognitive disabilities but included sections that were difficult for the participant to understand. For Participants 3 and 4, the self-report style of the measurement did not provide results that were consistent with observational data. The SIS was a valuable measurement tool because it helped to support the percentage data and percentile scores of the ARC-SDS.

**Generalization.** Maintenance session data indicated that the participants met goals that were either the same, or highly similar to, their intervention goals using the educational support strategies learned in the intervention. If the participants did not know what to do, they accessed the necessary supports they used during intervention. Because participants work at different speeds, the actual time for working towards the goal, and goal mastery, varied. Participant 2 took much longer to process information, so a session working with the supports and additional teaching sessions could take a whole day to finish. The researcher kept data notebooks with the educational supports used during the intervention for the participants to easily access throughout the maintenance sessions. All participants used the supports outside of the intervention period during the maintenance sessions of the study. The participants used the supports to plan their educational weekly responsibilities using the planner and create their own task lists for the week with responsibilities, in order of importance based on due dates. The students have learned strategies from the intervention to problem solve a solution and use people around them to communicate their wants and needs.

**Implications for students with ASD in PSE.** When taught self-determination skills, participants were able to manage their educational courses by creating their own tasks lists for the weekly responsibilities and self-scheduling and planning when the work would be done during the week by the expected due date. DSS supports students with disabilities and provides accommodations that do not always meet the specific needs of this population of students with ASD. PSE institutions could put into place self-determination strategies through their tutoring services that help students organize their educational responsibilities, learning choice-making and decision-making skills, effectively communicating what you need, how to problem solve and self-monitor responsibilities.

If students with ASD can learn to complete educational tasks independently, there will be more participation in PSE and subsequent employment after education and training in a community college. Most of the courses are structured the same way, and with repetition, students could learn to independently achieve their own short-term and longer-term educational goals. Learning self-determination skills could affect their persistence to graduate from college. The community college has a graduation rate of 15%, indicating that students without disabilities appear to have difficulty successfully completing the college courses too. The self-determination skills learned in PSE, just as skills learned in secondary education, will be beneficial in the work environment and job when the students enter employment.

**Future research.** Previous literature has demonstrated the effectiveness of using the SDLMI to teach students how to participate in self-directed and self-regulated learning to achieve education and employment goal attainment. It has been implemented with students aged 14-19 with Attention Deficit Hyperactivity Disorder (ADHD), ASD, learning disabilities (LD), emotional-behavior disorders (EBD)(Lee, Wehmeyer, Palmer, Soukup, & Little, 2008), and students with intellectual and developmental disabilities (I/DD) (Agran et al., 2000; Agran et al., 2006; McGlashing-Johnson et al., 2003). In the current study, the intervention was implemented with students with ASD in a PSE setting to set and attain vocational and academic goals based on educational course requirements.

Future research should focus on self-determinations skills for students with ASD that lead to increased independence in accessing, organizing, completing, and prioritizing college coursework based on due date requirements. The SDLMI intervention model lead to increased self-monitoring of daily and weekly educational activities using task lists. Participants in the study were not prepared to complete the requirements for college coursework independently and

required extensive support to set and attain academic and vocational goals. Future research should focus on the effectiveness of using the SDLMI in high school to manage academic responsibilities on the ability in college to manage coursework for multiple classes.

While students are in high school, they need to be directly taught how to problem solve, make decisions, and plan for the requirements of their own academic coursework. Students with ASD should be taught how to support themselves because the expectation in college is that you will already have those skills when they get to the PSE setting. The importance of self-determination instruction in secondary education is relevant in this study.

Students with ASD in this study were unprepared to maintain their own requirements and responsibilities entering PSE and required instruction to learn how to use self-determination skills to learn to self-direct educational activities. The participants in the intervention learned to use the educational supports based on ASD strategies independently. At the beginning of the week, participants in the intervention planned their activities for at least one class independently. They required support to manage courses by breaking down the information into smaller, more understandable parts, but begin tasks without initial questions. Anecdotal data showed differences in support for students who had not received the intervention required from the researcher and assistant to meet the expectations of their courses, compared to the participants who have learned how to organize and complete college coursework using self-directed strategies. Future research could establish specific instructions for each educational support to replicate the procedures using autism-based learning strategies.

## **Conclusion**

Self-determined goal attainment skills need to be directly taught to students with ASD in PSE to access all the responsibilities, requirements, and expectations of college courses. Before

the intervention, the students did not know how to plan their educational responsibilities or find out how to complete an assignment without asking the teacher or support staff to help them. Using the educational supports and student questions from the intervention as a guide to help participants attain goals demonstrated how support professionals can teach students how to take control of their own education.



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## APPENDIX A

### IRB Approval and Consent Forms

On 11/30/2018, the referenced research study was approved by expedited review according to 45 CFR 46.110 by VCU IRB Panel A. This study is approved under:

- **Expedited Category 7.**

The information found in the electronic version of this study's smart form and uploaded documents now represents the currently approved study, documents, informed consent process, and HIPAA pathway (if applicable). You may access this information by clicking the Study Number above.

**This approval expires on 10/31/2019.** Federal Regulations/VCU Policy and Procedures require continuing review prior to continuation of approval past that date. Continuing Review notices will be sent to you prior to the scheduled review.

If you have any questions, please contact the Office of Research Subjects Protection (ORSP) or the IRB reviewer(s) assigned to this study.

The reviewer(s) assigned to your study will be listed in the History tab and on the study workspace. Click on their name to see their contact information.

#### ***Attachment – Conditions of Approval***

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#### **Conditions of Approval:**

In order to comply with federal regulations, industry standards, and the terms of this approval, the investigator must (as applicable):

1. Conduct the research as described in and required by the Protocol.
2. Obtain informed consent from all subjects without coercion or undue influence, and provide the potential subject sufficient opportunity to consider whether or not to participate (unless Waiver of Consent is specifically approved or research is exempt).
3. Document informed consent using only the most recently dated consent form bearing the VCU IRB "APPROVED" stamp (unless Waiver of Consent is specifically approved).
4. Provide non-English speaking patients with a translation of the approved Consent Form in the research participant's first language. The Panel must approve the translated version.

5. Obtain prior approval from VCU IRB before implementing any changes whatsoever in the approved protocol or consent form, unless such changes are necessary to protect the safety of human research participants (e.g., permanent/temporary change of PI, addition of performance/collaborative sites, request to include newly incarcerated participants or participants that are wards of the state, addition/deletion of participant groups, etc.). Any departure from these approved documents must be reported to the VCU IRB immediately as an Unanticipated Problem (see #7).
6. Monitor all problems (anticipated and unanticipated) associated with risk to research participants or others.
7. Report Unanticipated Problems (UPs), including protocol deviations, following the VCU IRB requirements and timelines detailed in [VCU IRB WPP VII-6](#):
8. Obtain prior approval from the VCU IRB before use of any advertisement or other material for recruitment of research participants.
9. Promptly report and/or respond to all inquiries by the VCU IRB concerning the conduct of the approved research when so requested.
10. All protocols that administer acute medical treatment to human research participants must have an emergency preparedness plan. Please refer to VCU guidance on [http://www.research.vcu.edu/human\\_research/guidance.htm](http://www.research.vcu.edu/human_research/guidance.htm).
11. The VCU IRBs operate under the regulatory authorities as described within:
  - a. U.S. Department of Health and Human Services Title 45 CFR 46, Subparts A, B, C, and D (for all research, regardless of source of funding) and related guidance documents.
  - b. U.S. Food and Drug Administration Chapter I of Title 21 CFR 50 and 56 (for FDA regulated research only) and related guidance documents.
  - c. Commonwealth of Virginia Code of Virginia 32.1 Chapter 5.1 Human Research (for all research).

## APPENDIX B

### Participant Consent Form

1. Title of the Research Study: EFFECTS OF THE SELF- DETERMINED LEARNING MODEL OF INSTRUCTION ON GOAL ATTAINMENT AND SELF-DETERMINATION FOR STUDENTS WITH AUTISM SPECTRUM DISORDER.
2. Investigator: Meredith M. Moates
3. Purpose: The purpose of this study is to examine the effects of the Self-Determined Learning Model of Instruction (SDLMI) in college courses for students with ASDs.
4. Procedures: This study will be conducted at your community college and in the community for approximately 2-3 months. Each intervention session will last approximately 2-4 Weeks. You will participate in a daily program while attending postsecondary educational classes with the assistance of the researcher and research assistant. We will observe and track your performance in educational and community settings while evaluating goal attainment, self-determination, and the level of support you require to complete the identified activities.
5. Risks: The risks involved with participation in this study are no more than one would experience in regular daily activities. Self-determined behavior should increase. Vocational goal attainment should increase, and support needs should decrease. However, it is possible that your support needs may not decrease. It is also possible that any improvements might decline if the intervention is withdrawn. Overall, if your support needs do not decrease you might need additional support from your researcher and research assistant and future participation in the programming using the model.
6. Benefits: Potential benefits include increased self-determination, increased vocational skills goal attainment and your educational support needs will likely decrease, your independence in performing activities will increase, and you will be more independent in community settings.
7. Data Collection and Storage: All of the data that is collected will be kept confidential and only the people working with the study will see the data, unless required by law. The data will be kept secured in a locked file in Meredith Moates' office at the off-campus location beside the community college.
8. Contact Information: If you have questions or problems you or your parent/guardian can call the Virginia Commonwealth University School of Education, Professor Dr. John Kregel at (804)828-1872. For other questions about the study, you can call Meredith Moates at (910) 233-2112.

9. Consent Statement (Participant): I have read or had read to me the information describing this study. All my questions have been answered. I am 18 years of age or older and freely consent to participation. I understand that I am free to drop out of the study at any time. I received a copy of this consent form.

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Investigator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX C

The Self-Determined Learning Model of Instruction (SDLMI):

### Student Questions - Phase 1- Set a Goal

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

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

(Date Phase 1 Begin) \_\_\_\_\_

**What is my goal?** What skill do you want to improve?

Vocational

☛ Please answer to below questions

**1. What do I want to learn or improve in ( \_\_\_\_\_ ) class?**

\_\_\_\_\_  
\_\_\_\_\_



**2. What do I know about it now in ( \_\_\_\_\_ ) class?**

\_\_\_\_\_  
\_\_\_\_\_



**3. What must change for me to learn what I don't know in ( \_\_\_\_\_ ) class?**

\_\_\_\_\_  
\_\_\_\_\_

**4. What can I do to make this happen?**



\_\_\_\_\_  
\_\_\_\_\_

☛ I have listed a specific, measurable activity for student question 4. This is my goal in \_\_\_\_\_ class, the activity I will be working on during Phase 2 and Phase3.

End of Phase 1



Go on to Phase 2



**The Self-Determined Learning Model of Instruction (SDLMI):  
Student Questions- Phase 2-Take Action**

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

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

School: \_\_\_\_\_

(Date Phase 2 Began)

**What is my plan?** ☛ *Let's think about how to achieve the goal that you set.*

☛ *Please answer to below questions*

**5. What can I do to learn what I don't know?**

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**6. What could keep me from taking action?**

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**7. What can I do to remove these barriers?**

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**8. When will I take action?**

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☛ *End of Phase 2. I will start working on my Plan and then go on to Phase 3.*

End of Phase 2

Go on to Phase 3

**The Self-Determined Learning Model of Instruction (SDLMI):**

**Student Questions - Phase 3- Adjust Goal or Plan**

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

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

School: \_\_\_\_\_

(Date Phase 3 Began)

**What have I learned?** ☛ *Let's think about whether you achieve the goal or not.*

*Please answer to below questions*

**9: What actions have I taken?**

---

---

---



**10. What barriers have been removed?**

---

---

---



**11. What has changed about what I don't know?**

---

---

---



**12. Do I know what I want to know?**

---

---

---

☛ **Did I finish my goal?** Please mark on the bubble.  Yes  No

**If Yes,** how do I feel about the results? \_\_\_\_\_

Now I will go to **Phase1** and set a new goal.

**If No,** I will look at Phase 1 again. If the goal is still a good one for me, I will move on to **Phase 2** to revise my plan. **Or** I can rewrite my same goal or change it to a new goal.

## APPENDIX D

### Teaching Procedures and Educational Supports

1. Provide students with visual copy of questions for the SDLMI intervention.
2. Read the questions with or to the students.
3. Discuss what the questions mean. Possibly rephrase questions if students struggle with the wording.
4. Direct students to choose a goal they want to work towards. This could be an academic or vocational goal.
5. Direct students to answer the student questions based on what goal they selected to work toward.
6. Once students identify a goal, identify possible goal outcomes for each goal using a 5-point scale ranging from the most unfavorable possible outcome to the most
7. Implement Educational Supports in the following order using the SDLMI Teacher's Guide: (two times weekly)
  - a. Student self-assessment
  - b. Awareness Training
  - c. Choice-making instruction
  - d. Problem-solving instruction
  - e. Decision-making instruction
8. Goal-setting instruction
9. Provide students with visual copy of questions of the SDLMI intervention.
10. Read the questions with or to the students.
11. Discuss what the questions mean. Possibly rephrase questions if students struggle with the wording.
12. Implement Educational Supports in the following order using the SDLMI Teacher's Guide: (two times Weekly)
  - a. Self-scheduling
  - b. Self-instruction
  - c. Antecedent cue regulation: visual reminder
  - d. Choice-making instruction
  - e. Problem-solving instruction
  - f. Goal attainment strategies
  - g. Decision-making instruction
  - h. Self-advocacy and assertiveness training
  - i. Communication skills training
  - j. Self-monitoring; Goal Attainment Scaling (GAS)
13. Direct students to answer the student questions of the SDLMI based on what goal they selected to work toward.
14. Provide students with visual copy of questions for the intervention.

15. Read the questions with or to the students.
  16. Discuss what the questions mean. Possibly rephrase questions if students struggle with the wording.
  17. Implement Educational Supports in the following order using the SDLMI Teacher's Guide: (two times Weekly)
    - a. Self-evaluation strategies
    - b. Choice-making instruction
    - c. Goal setting instruction
    - d. Problem-solving instruction
    - e. Decision-making instruction
    - f. Self-reinforcement strategies
    - g. Self-recording strategies
    - h. Self-monitoring: Goal Attainment Scaling (GAS)
  18. Direct students to answer the student questions for the SDLMI based on how they answered the questions.
  19. When instruction has been completed on all three Phases, continue collecting progress data on the goal students selected to work toward.
  20. Complete the GAS scoring form to determine improvement or attainment of goal
- The Teaching Procedures were adapted from Wehmeyer & Palmer (2000) Promoting causal agency: The self-determined learning model of instruction, and educational supports from the Guide (Shogren et al., 2017) which are added to detail specific procedures for the proposed intervention study.

## APPENDIX E

### Intervention Data

#### Academic and Vocational Goal Task Analysis Data Collection Instructions

Directions	<p>Provide the participant with the task list to complete the goal. Observe and record how many steps they complete accurately and independently.</p> <p>Do not correct the participant while he/she is completing the task. If there are areas/steps missed, please mark the percentage as appropriate for independent task completion.</p>
Agreement Calculation	<p>Calculate the percent of agreement by taking the # of steps agreed upon (ex: 3), divided by the total number of steps (ex: 5) and multiplying by 100. Ex: <math>3/5 = .60 \times 100 = 60\%</math>.</p>
Goal Attainment Scaling	<p>Have the participant rate themselves on the goal using the scale after the task is completed during each data collection period. The observer should also record their rating and record differences between participant and observer</p>
Procedure	<ul style="list-style-type: none"><li>• Provide the participant with the task list for the goal.</li><li>• Record how many steps they complete accurately and independently.</li><li>• Record daily notes for the 30-minute observation period on the back</li><li>• Have participant mark the task list for GAS</li></ul>

Participant	
Goal	
Educational Supports	
Observer	
Date	

Task Analysis Steps (will vary by goal)	Monday	Tuesday	Wednesday	Thursday	Friday
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
10.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					

20.					
Total Correct					
Percent Correct					
Percent Agreement					

## APPENDIX F

### Goal Attainment Scale (GAS)

#### 5-Point Rating Scale

Score	-2	-1	0	1	2
Attainment	Much Less than expected outcome	Less than expected outcome	Expected outcome after intervention	Greater than expected outcome	Much greater than expected outcome

(McDougal & King, 2007)

*Each student's goals for rating will be indicated through the use of the scale for specific measurement for each goal. Each rating will be operational defined for monitoring*

#### Modified to facilitate understanding: 4 Point Rating Scale

Score	20% academic	40% academic)	60% academic	80% academic
Academic Goal =80% criterion				
Vocational Goals= 100% criterion	25% vocational	50% vocational	75% vocational	100% vocational
Goal Attainment	Much Less than expected outcome	Less than expected outcome	3/4 of the goal is attained	Goal Attainment



## APPENDIX G

### Support Intensity Scale: Lifelong Learning Activities Section Only

Frequency-How frequently is support needed for this activity?	Daily Support Time- On a typical day when support in this area is needed, how much time should be devoted?	Type of Support- What kind of support should be provided?
0=none	None	None
1=At least once a month but not once a Week	Less than 30 minutes	Monitoring
2=At least once a Week, but not once a day	30 minutes to less than 2 hours	Verbal/gestural prompting
3= At least once a day, but not once an hour	2 hours to less than 4 hours	Partial physical assistance
4= Hourly or more frequently	4 or more hours	Full physical assistance

Part C. Lifelong Learning Activities	Frequency	Daily Support Time	Type of Support	Total score for the section
Interacting with others in a learning environment	0-3	0-4	0-4	
Participating in training/educational decisions	0-3	0-3	0-4	
Learning and using problem solving strategies	0-4	0-4	0-4	
Using technology for learning	0-4	0-4	0-4	
Accessing training and educational settings	0-4	0-4	0-4	

Learning functional academics	0-4	0-4	0-4	
Learning health and physical education skills	0-4	0-4	0-4	
Learning self-determinations skills	0-3	0-4	0-4	

## APPENDIX H

### Autism Challenges Observation Sheet

1	2	3	4	5
Never	Almost Never	Sometimes	Almost Always	Always

**Record an indication of 1-5 for overall how often the behavior is a challenge for the participant.**

Social Interaction:

- wanting and needing to be left alone
- trouble with back and forth social interactions
- inability to respond to social cues
- inability to understand how someone else might feel
- inappropriate laughing
- engaging in stereotypic questions
- inappropriate use of eye contact, avoidance, or staring

Restricted Repetitive and Stereotyped Patterns of Behavior:

- repeatedly watching videos or video segments
- strong attachment to inanimate objects
- pacing back and forth
- very sensitive to sounds
- insistence on routines, resisting change
- negative reactions to changes in the environment
- problems with correction or making mistakes
- difficulty with unstructured time
- difficulty waiting

Communication:

- problems answering questions
- problems responding to questions
- low spontaneously initiated communication
- difficulty understanding abstract concepts
- difficulty when verbalizations are too fast
- difficulty with long sentences
- problems with reciprocal conversations
- problems with speed, tone, and volume appropriately

Learning Characteristics:

- uneven profile of skills
- over and under generalization of learning
- good visual skills
- hyperactivity
- short attention span to some activities and not others

- \_\_\_ impulsivity
- \_\_\_ delayed response time
- \_\_\_ problems organizing
- \_\_\_ sequential learner
- \_\_\_ needs help to problem solve

Environmental:

Internal:

- \_\_\_ not being understood
- \_\_\_ not understanding
- \_\_\_ not having enough information
- \_\_\_ not having adequate skills for a job
- \_\_\_ not having choices
- \_\_\_ making a mistake
- \_\_\_ being tired

Environmental Confusion:

- \_\_\_ crowds
- \_\_\_ noise
- \_\_\_ surrounded by too much movement
- \_\_\_ surrounded by competing visual stimuli
- \_\_\_ being off the pace of others

Relationships:

- \_\_\_ being corrected
- \_\_\_ being denied
- \_\_\_ being interrupted
- \_\_\_ being late
- \_\_\_ being ignored

Social Skills:

Personal Management/Self-Control

- \_\_\_ waiting
- \_\_\_ finishing work
- \_\_\_ being quiet when required
- \_\_\_ talking when spoken to, especially if asked a questions
- \_\_\_ working independently
- \_\_\_ being prepared and organized for activities and lessons
- \_\_\_ accepting correction
- \_\_\_ accepting that mistakes can be fixed

Reciprocal Interactions:

- \_\_\_ sitting and participating in a group
- \_\_\_ gaining joint attention (look, talk)
- \_\_\_ greeting
- \_\_\_ complimenting
- \_\_\_ offering help or comfort
- \_\_\_ asking for help
- \_\_\_ inviting others to join
- \_\_\_ asking for feedback
- \_\_\_ asking for a favor

- \_\_\_ social chat
- \_\_\_ getting attention in a specific way, raising hand, waiting
- \_\_\_ asking someone to do an activity

Reciprocal Social Interactions Appropriately:

- \_\_\_ listening
- \_\_\_ commenting on a topic
- \_\_\_ giving a reliable yes/no
- \_\_\_ accepting that some things are not possible
- \_\_\_ making a choice
- \_\_\_ sharing other's enjoyment
- \_\_\_ giving appropriate eye contact

Manner of Interaction:

- \_\_\_ being polite
- \_\_\_ being kind
- \_\_\_ being considerate
- \_\_\_ being honest
- \_\_\_ looking at person talking appropriately
- \_\_\_ not walking away when someone is talking
- \_\_\_ keep a specified distance from a person

Learning Situation Specific Behaviors:

- \_\_\_ with peers, no adults
- \_\_\_ in school
- \_\_\_ in the community
- \_\_\_ with strangers

Group Behaviors:

- \_\_\_ stay in certain places
- \_\_\_ participate with a group
- \_\_\_ follow group rules
- \_\_\_ talk one at a time
- \_\_\_ walk, stand still, stay to right

Adapted from (Dalrymple & Ruble, 1995) Behaviors that may be personal challenges for a student with an ASD. Publisher

## APPENDIX I

### Intrinsic Motivation Inventory (IMI)

#### THE POST-EXPERIMENTAL INTRINSIC MOTIVATION INVENTORY

For each of the following statements, please indicate how true it is for you, using the following scale:

1	2	3	4	5	6	7
not at all true			somewhat true			very true

#### Interest/Enjoyment

I enjoyed doing this activity very much

This activity was fun to do.

I thought this was a boring activity.

This activity did not hold my attention at all.

I would describe this activity as very interesting.

I thought this activity was quite enjoyable.

While I was doing this activity, I was thinking about how much I enjoyed it.

#### Perceived Competence

I think I am pretty good at this activity.

I think I did pretty well at this activity, compared to other students.

After working at this activity for awhile, I felt pretty competent.

I am satisfied with my performance at this task.

I was pretty skilled at this activity.

This was an activity that I couldn't do very well.

#### Effort/Importance

I put a lot of effort into this.

I didn't try very hard to do well at this activity.

I tried very hard on this activity.

It was important to me to do well at this task.

I didn't put much energy into this.

#### Pressure/Tension

I did not feel nervous at all while doing this.

I felt very tense while doing this activity.

I was very relaxed in doing these.

I was anxious while working on this task.

I felt pressured while doing these.

#### Perceived Choice

I believe I had some choice about doing this activity.

I felt like it was not my own choice to do this task.

I didn't really have a choice about doing this task.  
I felt like I had to do this.  
I did this activity because I had no choice.  
I did this activity because I wanted to.  
I did this activity because I had to.

## APPENDIX J

### Treatment Fidelity: *SDLMI Teacher's Guide* (Shogren et al., 2017)

As indicated in the *Guide*, students can use the SDLMI to set and work towards goals related to:

- Skills in various academic subject areas
- Study skills or self-management skills
- Vocational outcomes
- Career exploration (transition)
- Social interaction
- Anything else students can think of!

#### How the SDLMI Works

##### **Phase 1: Problem to be solved by student: What is my goal?**

---

“The Student Questions in Phase 1 guide the student in setting a goal. The teacher works with the student to answer the questions, keeping the Teacher Objectives in mind. The teacher may need to provide instruction using one or more of the Educational Supports (e.g., teaching choice-making skills, engaging in preference assessment) to enable the student to answer the question. This Phase may require a number of conversations between the teacher and the student, as well as instruction using the Educational Supports before the student reaches the point of setting his or her goal. During this Phase, the teacher works with the student to answer questions related to: what the student wants to learn, what the student already knows, what needs to change for the student to learn what they don't know, and what actions they need to take to make this happen (see Student Questions 1-4)” (Shogren et al., 2017).

##### **Phase 2: Problem to be solved by student: What is my plan?**

---

“The Student Questions in Phase 2 support the student to develop an action plan to achieve the goal they set in Phase 1 and to identify a self-monitoring process to track their progress toward reaching that goal. The Teacher Objectives guide the teacher to enable the student to develop supports needed to take action. Students may need instruction using one or more of the Educational Supports to develop and implement their action plan (i.e., how to self-instruct, how to self-monitor, etc.). Once the action plan has been developed, the student (with any



needed/requested supports), engages in the actions identified in the action plan and collects data on progress through the self-monitoring process. After the student spends a period of time working toward his or her goal, he or she returns to the SDLMI to complete Phase 3. The time spent on this Phase will depend on the student and the goal they have set” (Shogren et al., 2017).

### **Phase 3: Problem to be solved by student: What have I learned?**

---

“The Student Questions in Phase 3 support the student to evaluate his or her progress toward the goal, again with support as needed from the teacher using the Teacher Objectives as a guide. Working through Student Questions 9-12, the student determines if he or she has met the stated goal. Students might need to learn new skills using the Educational Supports – like self-evaluation. If not, the student must decide if he or she will continue to implement the action plan in place, make adjustments to the action plan, revise/refocus the goal, or select a new goal. If, through the questions in Phase 3, students decide they need to change their action plan, they return to the start of Phase 2, working through that Phase again. If the student decides that he or she needs to revise or change the goal, he or she returns to Phase 1 and works through the sequence again (Shogren et al., 2017).

## APPENDIX K

Implementation of the intervention: *SDLMI Teacher's Guide*  
(Shogren et al., 2017)

What is my Goal? Educational Supports

- Student assessment of interests, abilities, and instructional needs
- Awareness Training
- Choice-making instruction
- Problem-solving instruction
- Decision-making instruction

Student Question 1: What do I want to learn?

Teacher Objectives

- Enable students to identify specific strengths and instructional needs
- Enable students to communicate preferences, interests, beliefs, and values
- Teach students to prioritize needs

Student Question 2: What do I know about it know?

Teacher Objectives

- Enable students to identify their current status in relation to instructional need
- Assist students to gather information about barriers in their environments

Student Question 3: What must change for me to learn what I don't know?

Teacher Objectives

- Enable students to decide if action will be focused toward capacity building, modifying the environment, or both
- Support students to choose a need to address from the prioritized list

Student Question 4: What can I do to make this happen?

Teacher Objectives

- Teach students to state a goal and identify criteria for achieving goal

END PHASE 1

BEGIN PHASE 2

What is my plan? Educational Supports

- Self-scheduling
- Self-instruction
- Antecedent cue regulation
- Choice-making instruction
- Goal-attainment strategies
- Problem-solving instruction
- Decision-making instruction
- Self-advocacy and assertiveness training
- Communication training
- Self-monitoring strategies

Student Question 5: What can I do to learn what I don't know?

Teacher Objectives

- Enable students to self-evaluate current status and self-identified status

Student Question 6: What could keep me from taking actions?

Teacher Objectives

- Enable students to determine plan of action to bridge gap between self-evaluated current status and self-identified goal status

Student Question 7: What can I do to remove these barriers?

Teacher Objectives

- Collaborate with student to identify most appropriate instructional strategies
- Teach student needed student-directed learning strategies
- Support student to implement student-directed learning strategies
- Provide mutually agreed upon teacher-directed instruction

Student Question 8: When will I take action?

Teacher Objectives

- Enable student to determine schedule for action plan
- Enable student to implement action plan
- Enable student to self-monitor progress

END OF PHASE 2

BEGIN PHASE 3

What have I learned? Educational Strategies

- Self-evaluation strategies
- Choice-making instruction

- Goal-setting instruction
- Problem-solving instruction
- Decision making instruction
- Self-reinforcement strategies
- Self-recording strategies
- Self-monitoring strategies

Student Question 9: What actions have I taken?

Teacher Objectives

- Enable students to self-evaluate progress toward goal achievement

Student Question 10: What barriers have been removed?

Teacher Objectives

- Collaborate with student to compare progress with desired outcomes

Student Question 11: What has changed about what I don't know?

Teacher Objectives

- Support student to re-evaluate goal if progress is insufficient
- Assist student to decide if goal remains the same or changes
- Collaborate with student to identify if action is adequate or inadequate given revised or retained goal
- Assist student to change action plan if necessary

Student Question 12: Do I know what I want to know?

Teacher Objectives

- Enable student to decide if progress is adequate, inadequate, or if goal has been achieved

Did you finish the goal?

## APPENDIX L

Essential Characteristics of Self-Determination: *SDLMI Teacher's Guide*  
(Shogren et al., 2017)

### Volitional Action

	Definition
<b>Autonomy</b>	Acting based on preferences, interests, and abilities without unnecessary outside influence.
<b>Self-Initiation</b>	Identifying and starting to work toward a goal while using your past experiences to understand your preferences and interests.

### Agentic Action

	Definition
<b>Self-Regulation</b>	Managing your actions as you work toward a goal – having systems for keeping track of progress and evaluating outcomes.
<b>Self-Direction</b>	Freely choosing your goals and recognizing and responding to challenges and opportunities.
<b>Pathways Thinking</b>	Being able to identify many ways to solve problems and reach your goals.

### Action-Control Beliefs

	Definition
<b>Psychological Empowerment</b>	Believing that you have what it takes to reach your goals and that you can reach your goals when you try.
<b>Self-Realization</b>	Using what you know about your personal strengths and weaknesses to act in the best way for you.
<b>Control Expectancy</b>	Believing that you can use your skills and the people around you to influence your environment and reach a goal.

## Appendix M

Tips for Working through the Phases: *SDLMI Teacher's Guide*

(Shogren et al., 2017)

<b>STUDENT VOICE</b>	Support the student to answer the Student Questions. Keep the focus on the student and his/her part in the process.
<b>DISCUSSION</b>	Remember this process is always a conversation and not simply a matter of responding to a question and writing the answer.
<b>SUPPORTS</b>	Refer to the Teacher Objectives and Educational Supports (see p. 19, 42). When possible, support students to use student-directed educational supports (e.g., self reinforcement, choice making, etc.).
<b>PRACTICE</b>	Students should initially practice moving through the Student Questions with a goal that can be completed in a short period of time (2-4 Weeks). Support students to continue to use the SDLMI to set more complex goals over time.
<b>MOTIVATION</b>	Following the initial “practice” goal, work on one goal in a high-interest area so the student finds it easier to focus, be more productive, and have a more satisfying experience using the model. The goal should be one that the student selects (with guidance from the teacher).
<b>CYCLE</b>	The model supports the student in cycling through goal setting and action planning several times as he or she rethinks strategies and assesses progress. Rather than a straight-line, the journey a student takes may weave back and forth through the stages of the model as he/she determines the desired goal and the best action plan.
<b>ADAPTATION</b>	When the student self-evaluates progress toward the goal (Phase 3), the student may define a more complex or more narrowly focused goal that targets what he/ she really wanted to learn, but was not initially able to pinpoint. This adaptation is a crucial part the process.

## APPENDIX N

### Order of Operations

#### SDLMI: Phase 1 Student Questions and Educational Supports

Educational Support	Definition from the Teacher's Guide	Teaching Tips from Teacher's Guide	Strategy implemented to address the educational support:
Student self-assessment of interests, abilities, and instructional needs	Assisting students to determine what he or she enjoys, does well, and what he or she needs to learn.	This can start with a simple listing of interests and abilities generate by the student. Next, the student can identify areas they need more experience with, and revise their list after gaining these experiences	Students make chart of interests, abilities, and instructional needs
Awareness training	To be self-aware, a student learns to identify basic physical and psychological needs, interests, and abilities. He or she knows which of these interests are common and which are unique. A student also knows how their behavior affects others. To become self-aware, the student develops a broader sense of themselves, learning to apply that knowledge to building a positive self-image and gaining self-confidence.	Given the broad nature of self-awareness, teachers can include positive self-image and self-confidence building into conversations with students during the SDLMI.	Based on post PSE employment goals and responsibilities/expectations for college courses
Choice-making instruction	Teaching a student to choose from two or more alternatives, based on individual preference. Choice making can be as simple as indicating	Shevin and Klein (1984) outline five keys promoting student choice: 1) incorporate student choice early into the instructional process, 2) increase the number of decisions related	The participant decides what requirements to perform in the chosen order for the goal based on individual preference and due dates (planner) OR



	preferences, as being a part of the decision-making process, and ultimately as an expression of autonomy and dignity.	to a given activity that a student makes, 3) increase the number of domains in which decisions are made, 4) raise the significance in terms of risk and long-term consequences of the choices the student makes, and 5) have clear communication with the student concerning areas of possible choice, and the limits within which choices must be made.	Based on post-employment goals and responsibility/expectations for college courses
Problem-solving instruction	The teaching of strategies to assist a student with problems they encounter. In problem solving, a solution is not previously known and must be identified. Problems may be simple to complex, depending on the instance. Social problem solving involving interpersonal communication is one of the most difficult problems to attempt to solve.	Problem solving would include the process of helping the student: 1) define the problem and determine the need for a solution, 2) identify one or more solutions, 3) implement solution(s), and 4) evaluate the effectiveness of the solution(s).	Based on course goals in the intervention to determine how to complete the goal OR Based on post-employment goals and responsibility/expectations for college courses
Decision-making instruction	Decision-making is a process of identifying various options and weighing the adequacy of various options. Decision-making is broader than choice-making as it involves weighing different outcomes and picking the best one.	A decision-making model includes the following steps: 1) listing relevant action alternatives, 2) identifying possible consequences of those actions, 3) asserting the probability of each consequence occurring (if actions were undertaken), 4) establishing the relative importance (value or utility) of each consequence, 5) integrating these values and probabilities to identify the most attractive course of	What steps to include on the task list for the goal based on due dates for assignments and how to complete them/set them up OR Based on post-employment goals and responsibility/expectations for college courses

		action (ByethMarom et al., 1991).	
Goal-setting instruction	Goal setting instruction involves teaching the skills to create plan for what one wants to accomplish or achieve (Sands & Doll, 2000).	Goal setting instruction will guide students through a series of steps which might include most of the following, depending on the situation: 1) have a student self-identify a goal, 2) identify the discrepancies between where student is and what they want to achieve with their goal, 3) identify a solution, 4) identify positive outcomes of meeting the goal, 5) develop a monitoring plan, and 6) evaluate progress toward the goal (Agran, 1997).	SDLMI

#### SDLMI: Phase 2 Student Questions and Educational Supports

Educational Support	Definition from the Teacher's Guide	Teaching Tips from the Teacher's Guide	Strategy implemented to address the educational support:
Self-scheduling	The student learns to scheduling times with a teacher or mentor to discuss goal-setting activities using a system of written scheduling in a day planner or using technology. The strategy of scheduling will focus on a target (the goal), but be of general use in the life of the student to maintain assignments and class requirements.	Self-scheduling involves: 1) understanding the activities that need to be conducted or that the student wants to accomplish that are relevant for the task, 2) scheduling when they are to be done, 3) remembering when they are scheduled (using a permanent prompt such as a planner or photo album with picture prompts), and 4) having some sort of monitoring system so that the student can	1.Using the planner and creating task lists  2.Plan the Weekly/scheduled activities

		check off when each of these activities has been conducted. Embedded in self-scheduling are time management skills, such as prioritizing things that need to be done.	
Self-instruction	A specific type of “self-talk” related to a task that a student verbalizes while completing the task.	Meichenbaum and Goodman (1971) have a five-step teaching model which includes the following: 1) teacher performs task, instructing aloud while student observes, 2) student performs task while teacher instructs aloud, 3) student performs task while self-instructing aloud, 4) student performs task while whispering, 5) student performs task while self-instructing “covertly”.	Researcher teaches the participant how to perform the task related to the academic or vocational goal using the suggested five-step teaching model
Antecedent cue regulation	An action taken to alter conditions before a target behavior so as to influence the probability of its occurrence. This can be a picture, symbol, or word that reminds individuals to engage in a target behavior. A variety of prompts are used in this way by people in everyday life.	The prompt must be meaningful to the student and should be decided upon by the student and teacher, not just assigned.	Reminder of requirements of the steps to complete the task in one-word direction steps (use small white boards/notecards)
Choice-making instruction	Teaching a student to choose from two or more alternatives, based on individual preference. Choice	Shevin and Klein (1984) outline five keys promoting student choice: 1) incorporate student	1. Working with the task list for the college course Weekly assignments, determining the steps for the Week in order of importance and preference

	making can be as simple as indicating preferences, as being a part of the decision-making process, and ultimately as an expression of autonomy and dignity.	choice early into the instructional process, 2) increase the number of decisions related to a given activity that a student makes, 3) increase the number of domains in which decisions are made, 4) raise the significance in terms of risk and long-term consequences of the choices the student makes, and 5) have clear communication with the student concerning areas of possible choice, and the limits within which choices must be made.	2.Using the planner to determine assignments and prioritizing using the task list
Problem solving instruction	The teaching of strategies to assist a student with problems they encounter. In problem solving, a solution is not previously known and must be identified. Problems may be simple to complex, depending on the instance. Social problem solving involving interpersonal communication is one of the most difficult problems to attempt to solve.	Problem solving would include the process of helping the student: 1) define the problem and determine the need for a solution, 2) identify one or more solutions, 3) implement solution(s), and 4) evaluate the effectiveness of the solution(s).	Determine how to proceed or correct the steps in the task list using information from courses of steps that were not completed correctly with the researcher
Goal attainment strategies	Instruction in methods to attain particular goals or outcomes that the student self-identifies. Goal attainment is another way to state the	See goal-setting instruction.	<i>Goal Attainment Scaling (GAS)</i>

	concept of goal-setting instruction.		
Decision-making instruction	Decision-making is a process of identifying various options and weighing the adequacy of various options. Decision-making is broader than choice-making as it involves weighing different outcomes and picking the best one.	A decision-making model includes the following steps: 1) listing relevant action alternatives, 2) identifying possible consequences of those actions, 3) asserting the probability of each consequence occurring (if actions were undertaken), 4) establishing the relative importance (value or utility) of each consequence, 5) integrating these values and probabilities to identify the most attractive course of action (ByethMarom et al., 1991).	How to make educational decisions for individual goals, and if goal is accomplished correctly and prepared to be turned in on time Pros and cons
Self-advocacy and assertiveness training	Self-advocacy instruction involves a variety of skills to promote leadership, and teamwork including assertive behavior, communication, decision-making skills, goal setting and attainment, leadership skills, legal and citizenship rights and responsibilities, problem-resolution skills, public speaking skills, transition planning, and use of community resources. This concept of assertiveness is between	Creating opportunities for students to express their needs, and communicate those needs to others  From the Teacher's Guide, Powers and colleagues (1996) suggest a three-step strategy that a student might employ: 1) look others in the eye, 2) speak calmly and firmly, and 3) if they disagree, repeat what you want and explain your reasoning.	Self-advocacy: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email)  Use the strategy:  1) look others in the eye,  2) speak calmly and firmly, and  3) if they disagree, repeat what you want and explain your reasoning.

	<p>aggressiveness and neutrality or passivity. It is supporting students to express their positive and negative feelings appropriately, to initiate and terminate conversations when needed, and to say “no” if that is what they truly wish to say.</p>		
<p>Communication skills training</p>	<p>Communication skills involve non-verbal components (e.g., looking a person in the eye) of conversations and responding to a conversational partner’s question or statement with a relevant statement or answer, initiating conversations at appropriate times, appropriate turn taking, and showing continued interest in a conversation by employing brief speech acknowledgements.</p>	<p>Direct training could include optimizing a student’s self-identified strengths in communication and suggesting possible areas for improvement would be a direct way to address these communication skills related to identified goals.</p>	<p>Questions and comments with researcher and research assistant</p>
<p>Self-monitoring</p>	<p>Self-monitoring involves systematic observation and recoding of a target behavior. In other words, a student must acknowledge his or her own behavior and monitor it. The monitored behavior should be thoroughly understood by the student in terms of how it relates to the larger goal. In behavioral terms, self-monitoring</p>	<p>It is recommended that self monitoring be made concrete for students by creating self monitoring sheets, technology (such as a vibrating watch) or simple tools such as putting pennies in a jar when an action is complete.</p>	<p>Task list, <i>Goal Attainment Scaling (GAS)</i></p>

	affects change because it is thought to function as a discriminative stimulus to desired cure, responding prior to and during task performance.		
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### SDLMI: Phase 3 Student Questions and Educational Supports

Educational Supports	Definition from the Teacher's Guide	Teaching Tips from the Teaching Guide	Strategy implemented to address the educational support:
Self-evaluation strategies	Self-evaluation involves the comparison of a behavior being self-monitored (observed and recorded) and the performance goal. Students can learn to provide themselves with immediate feedback using self-monitoring and evaluate to determine if the appropriate response was given.	After a goal is set, then a method of self-evaluation would be mutually determined. A format for self-evaluation should be developed in conjunction with student input and agreement. The method of evaluation might be pictorial, a verbal checklist, or in written form, depending on the student's needs and choice. The student should be capable of understanding and completing the needed behavior, and realize when this has been done. Assistance can be given to help the student understand the steps that might be taken to achieve the targeted outcome.	Task List/Goal Attainment Scaling (GAS)
Choice-making instruction	Teaching a student to choose from two or more alternatives, based on individual preference. Choice making can be as	Shevin and Klein (1984) outline five keys promoting student choice: 1) incorporate student	Using the planner to determine assignments completed, and prioritizing using the task list

	<p>simple as indicating preferences, as being a part of the decision-making process, and ultimately as an expression of autonomy and dignity.</p>	<p>choice early into the instructional process, 2) increase the number of decisions related to a given activity that a student makes, 3) increase the number of domains in which decisions are made, 4) raise the significance in terms of risk and long-term consequences of the choices the student makes, and 5) have clear communication with the student concerning areas of possible choice, and the limits within which choices must be made.</p>	
Goal-setting instruction	<p>Goal setting instruction involves teaching the skills to create plan for what one wants to accomplish or achieve (Sands &amp; Doll, 2000).</p>	<p>Goal setting instruction will guide students through a series of steps which might include most of the following, depending on the situation: 1) have a student self-identify a goal, 2) identify the discrepancies between where student is and what they want to achieve with their goal, 3) identify a solution, 4) identify positive outcomes of meeting the goal, 5) develop a monitoring plan, and 6) evaluate progress toward the goal (Agran, 1997).</p>	<p>SDLMI Student Questions/Phases</p>



Problem-solving instruction	The teaching of strategies to assist a student with problems they encounter. In problem solving, a solution is not previously known and must be identified. Problems may be simple to complex, depending on the instance. Social problem solving involving interpersonal communication is one of the most difficult problems to attempt to solve.	Problem solving would include the process of helping the student: 1) define the problem and determine the need for a solution, 2) identify one or more solutions, 3) implement solution(s), and 4) evaluate the effectiveness of the solution(s).	How to find out how to accomplish the task if not completed correctly
Decision-making instruction	Decision-making is a process of identifying various options and weighing the adequacy of various options. Decision-making is broader than choice-making as it involves weighing different outcomes and picking the best one.	A decision-making model includes the following steps: 1) listing relevant action alternatives, 2) identifying possible consequences of those actions, 3) asserting the probability of each consequence occurring (if actions were undertaken), 4) establishing the relative importance (value or utility) or each consequence, 5) integrating these values and probabilities to identify the most attractive course of action (Byeth Marom et al., 1991).	Decide the outcome of the goal based on meeting the required steps to achievement.
Self-reinforcement strategies	Not specified in SDLMI Teacher's Guide		Preferred item after completion of the academic or vocational goal (go for ice-cream etc...)
Self-recording strategies	Not specified in SDLMI Teacher's Guide		Task list, GAS

Self-monitoring	Self-monitoring involves systematic observation and recoding of a target behavior. In other words, a student must acknowledge his or her own behavior and monitor it. The monitored behavior should be thoroughly understood by the student in terms of how it relates to the larger goal. In behavioral terms, self-monitoring affects change because it is thought to function as a discriminative stimulus to desired cure, responding prior to and during task performance.	It is recommended that self-monitoring be made concrete for students by creating self-monitoring sheets, technology (such as a vibrating watch) or simple tools such as putting pennies in a jar when an action is complete.	Task list, GAS
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## APPENDIX O

### Case Notes by Week of the Study

#### Week 3-Week 4: Participant 1 begins SDLMI Goal 1

Goal 1: Independently construct and send emails for information and social purposes using the appropriate format provided in ENG 101 and respond to the return email using the correct formatting and sentences structure using a 10-step task list

Participant 1 began Goal 1 on Week 3 of the spring semester of 2019 in a community college setting. During Phase 1 of the SDLMI intervention and implementation of the corresponding Educational Supports, the participant did not increase the number of steps performed correctly.

With implementation of the SDLMI Phase 2 Educational Supports, the participant correctly completed 4/10 steps in the task list in constructing the emails. Data was collected again and completed 4/10 steps correctly, but was not able to determine how to complete step 5 including all the necessary components of the email to respond. Step 5 involved responding to the email in the appropriate format, and the participant did not correctly respond (did not have correct punctuation in the email) and did not know how to fix the mistakes on the email task list. He was directed to use the email checklist provided from ENG 101 (Educational Support: antecedent cue) to determine what was missing, and the participant also used an earlier sent email to check in a step by step format guided by the researcher (Educational Support: problem solving). The participant completed 5/10 steps correctly and independently. With continuation of SDLMI Phase 2 Educational Supports when data was taken again, the participant correctly completed all of the required steps for the task list, and reached 100% criterion. During SDLMI Phase 3 Educational Supports, the participant self-evaluated, and identified goal attainment of vocational goal 1 with agreement from the researcher and research assistant. Phase 3 Educational Supports require the participant to evaluate if they achieved the goal. The correctly completed task list and GAS provide the visual supports for the participant to evaluate achievement and determine if adequate progress and desired outcome are achieved.

#### SDLMI Phase 1: Educational Supports

- a. Student self-assessment: chart (see Guide) completed at beginning of intervention, review and expand during each goal
- b. Awareness training: learn to identify interest and abilities related to communication for information
- c. Choice-making: careers related to interest areas to complete the email requirement based on the email assignment from ENG 101, and to expand the communication to less formal correspondence using the learned email format

- d. Problem-solving instruction: identify how to begin to complete the task after initial data using sources provided during email instruction during ENG 101 and past example from the participant's email
- e. Decision-making instruction: careers pros and cons (used this teaching technique because email for the course was based on email to an employer, and information was unknown for the participant) This information is essential for completion of the goal because the goal was created from the unknown during the email assignment for the ENG course
- f. Goal-setting instruction: SDLMI Phase 1

#### SDLMI Phase 2: Educational Supports

- a. Self-scheduling: the participant creates their own task list and records in the planner for completion of the assignment and steps by the due date
- b. Self-instruction: 1) teacher performs task, instructing aloud while student observes, 2) student performs task while teacher instructs aloud, 3) student performs task while self-instructing aloud, 4) Student performs task while whispering, 5) student performs task while self-instructing "covertly". To instruct participant in how to complete the assignment using the correct wording, and to follow the guidelines learned for email correspondence
- c. Antecedent cue: Professional email correspondence: organization of an email (cue words are subject, greeting, introduction, body, closing, salutation, signature) listed on white board
- d. Choice-making: what to include in the emails
- e. Problem-solving: how to correct the task list to accurately complete the assignment
- f. Goal attainment: Goal Attainment Scaling (GAS)
- g. decision-making: if all the requirements are included in the emails and responses based on sample or rubric
- h. Self-advocacy and assertiveness training: choice of communication purpose for email correspondence for information and chosen social activity in the social email
- i. Communication skills training: questions, and comments related to options career information and socially how to communicate in an email format
- j. Self-monitoring: task list and Goal Attainment Scaling

#### SDLMI Phase 3: Educational Supports

- a. Self-evaluation instruction: if the task list completed correctly (email sent to teacher and responded to correctly)
- b. Choice-making instruction: the participant identifies, and receives conformation from the researcher if the assignment ready to be turned in or assessed as completed (use a rubric or list from previous assignment)
- c. Goal setting instruction: SDLMI
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list using the necessary components
- e. Decision-making instruction: is the goal completed?
- f. Self-reinforcement strategies: varies
- g. Self-recording strategies: task list
- h. Self-monitoring strategies: task list, GAS

## **Week 5-Week 6: Participant 1 Goal 2**

Explore possible careers using community college online educational resources

Establish potential postsecondary education paths

Use to complete the upcoming ENG 101 Portfolio Project assignment

Goal 2 was set by the participant to explore possible careers using the community college online educational resources, and to explore and establish three potential postsecondary education paths before coming to a final decision in an area of interest to focus on for the upcoming assignment in ENG 101. Because participant 1 is undecided about the major for community college, and decision on an area of employment interests is required for the next assignment in his English class, he needs to identify and complete information about a chosen career. This goal aligns with the vocational course and the self-determined goal chosen by the participant. The task list was created because the participant wanted to explore interest areas for careers, and it was required for his next English assignment that he have an identified career path. The student questions for the first Phase of the intervention were asked to the participant, and then educational supports for Phase 1 were implemented.

All Phase 1 and 2 Educational Supports were implemented for goal 2. Phase three for goal 2 provided self-evaluation and guidance from the educational supports for the participant to reach criterion of 100% on the vocational goal task list. The participant required continued self-determination instruction during the intervention Phases to reach criterion for goal 2.

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review with participant and expand if necessary
- b. Awareness training: a course of study is required to be established, interest and ability taken into consideration
- c. Choice-making: search and list three programs of interest
- d. Problem-solving instruction: how to complete the task list (using keywords to complete online assessments)
- e. Decision-making instruction: pros and cons of each type of job
- f. Goal-setting instruction: SDLMI

### Phase 2: Educational Supports

- a. Self-scheduling: creating own task list for determining a major
- b. Self-instruction: how to explore areas of interest guided by researcher
- c. Antecedent cue: list of keywords to put into designated sites for exploration
- d. Choice-making: based on occupation and employability information
- e. Problem-solving: how to complete the expectations for the task list to determine career
- f. Goal attainment: GAS
- g. Decision-making: deciding from choice of three (final decision for Portfolio Project use)

- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email), communicating preferences
- i. Communication skills training: questions, and comments about the interest areas and decision for choice
- j. Self-monitoring: task list and GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: GAS
- b. Choice-making instruction: goal completion
- c. Goal setting instruction: SDLMI
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: the chosen employment choice is the final decision, and consistently used for upcoming assignments in ENG 101 (vocational), the goal is accomplished, and decision informally finalized (not finalized through college yet)
- f. Self-reinforcement strategies vary by participant
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 6-Week 7: Participant 1 Goal 3**

This is the final goal for the participant, then the participant will begin the maintenance Phase of the study after spring break

Independently complete Portfolio Project #2 in ENG 101 by using the preferred selected chosen career established during goal 2

Using the project sample as a guide, and textbook as a resource, complete the warnings, instructions, and explanation for the career choice and make the decision to turn in the assignment using rubrics/checklists for completion

Participant 1 was asked the student questions for SDLMI Phase 1 and established Goal 3 as identifying and completing the Portfolio Project #2 based on the participant's chosen career. To establish this goal, the researcher made a task list for the participant to complete the goal. The researcher moved through the necessary educational supports detailed below to support the participant in how to accomplish the goal independently.

### Phase 1: Educational Supports

- a. Student self-assessment: chart made during goal 1, review and expand
- b. Awareness training: requirements of a task of the job to have the basis for assignment, interest and ability
- c. Choice-making: what to include for the assignment, use provided instructions from ENG 101 teacher

- d. Problem-solving instruction: how to find the expected requirement for the chosen employment, and what to include on the assignment using the appropriate resources (internet, textbook, etc.)
- e. Decision-making instruction: deciding on the task for the project (the project requires the participant to choose a specific task within the chosen employment field and list how to complete the task).
- f. This task was particularly difficult for the participant to establish because of confusion with expectations for what is involved in the actual tasks for employment in the field. The ideas are conceptual for the participant and he required guidance in how the career can be applied to his skill sets.
- g. Goal-setting instruction: SDLMI intervention

### Phase 2: Educational Supports

- a. Self-scheduling: creating own task list for completion of the assignment, and when (of day, of the Week) the assignment is completed
- b. Self-instruction: how to complete Project #2 from direct instruction by the researcher, then participant follows instruction using their own self-task
- c. Antecedent cue: reminder words on white board about what to include (headings and keyword)
- d. The participant needs this support with each goal after being taught.
- e. Choice-making: what to include on the lists for warnings, instruction, and explanation for the project and where to find them
- f. Problem-solving: how to complete the list for the requirements of the project (for this assignment, the list was provided by the teacher so the participant did not create new task list)
- g. Goal attainment: GAS
- h. Decision-making: are all the components included correctly, using the sample and rubric
- i. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email), communicating preferences for the required career task and hazards associated with the career (based on ENG 101 course)
- j. Communication skills training: questions, and comments about the task requirement for the career and discussion about other tasks associated with the employment choice
- k. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: GAS
- b. Choice-making instruction: is it ready to be turned in? Using rubric to compare the assignment to expectations for the assignment
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: to turn it in based on rubric or checklist, is the goal completed correctly and completely?
- f. Self-reinforcement strategies varies by participant

- g. Self-recording strategies: task list completion, GAS
- h. Self-monitoring strategies: task list, GAS

## **Week 8: SPRING BREAK**

### **Week 9: Maintenance Session**

Goal 1: Send email for information and social purpose. Respond to the email correctly. The participant was able to complete the emails but had difficulty with sentence structure and punctuation. He used the past examples and his past email to determine what was wrong and how to fix it. He completed the task initially at 50% attainment and then 100% with the educational supports.

### **Week 10: Maintenance Session**

Goal 2: Determine educational path/future employment decision  
Complete the chart based on the chosen employment including required education, job requirements, and tasks within the field. He will need to find the job description just as he did for the goal, and fill in the template.

### **Week 11: Maintenance Session**

Goal 3: Portfolio Project  
The participant will complete another portfolio project based on interview questions to prepare for the upcoming Portfolio Project.

### **Week 5- Week 6: Participant 2 Goal 1**

Explore all majors in either the diploma or certificate vocational areas of interest for potential declaration of major (required for his course of study as soon as possible to prepare for the next semester course registration).

Declaration of major and decision of employment is required for written assignments in ENG 111 and COM 120

Proceed through the declared interest classes and determine where they belong in the offered credentials for diplomas and certificates at the community college

Make a final decision for major declaration

After completing Phase 1 questions for the SDLMI intervention, the vocational goal based on course requirements was to explore all majors in either the diploma or certificate vocational areas of interest. In the past, the participant has expressed interest in working with computers, but now has expanded his interests and wants to explore further areas before declaring a major. The task list is created to reflect his interest in a class that focuses on interactive media design, so because of the continued interest in the specific class, the list was based on finding out what vocational diploma and certificate majors included the skills the participant was so interested in for the class. While exploring interactive media, the participant also identified two other diploma/certificate tracks of interest and became aware of what courses are required to earn each credential from the community college. The participant's list included educational supports built in, based on the SDLMI Manual suggestions for how to implement educational supports. The participant did not increase percentage on the task list until Phase 2 of the intervention and reached criterion with the implementation of Phase 3 educational supports. Using the Phase 3 Educational Supports for self-evaluation and choice-making, the participant determined he did



not come to a conclusion for final determination of a major, which was the set goal. He further used the Phase 3 educational supports to create a plan for the final decision, which required visual requirements and the participant checking off what he had already earned towards the Information Technology diploma and determined that was his major declaration decision.

#### Phase 1: Educational Supports

- a. Student self-assessment: make chart as referenced in the SDLMI manual
- b. awareness training: that the participant is required to make a decision about postsecondary education track and credential, interest and ability
- c. Choice-making: career exploration and expectation for final decision
- d. Problem-solving instruction: evaluating the requirements/courses that need to be passed and what courses apply to the credential
- e. Decision-making instruction: deciding on what is important to you in a long-term career, and finalizing the major credential decision (changes can be made but due to course decision for the next semester, credential needs to be finalized)
- f. Goal-setting instruction: SDLMI intervention

#### Phase 2: Educational Supports

- a. Self-scheduling: using the task list to prioritize the goal and other academic responsibilities
- b. Self-instruction: teacher instructs how to explore the options at the community college using the task list as a guide
- c. Antecedent cue: reminder words for the steps to the goal made by student/researcher
- d. Choice-making: what to include on task list by prioritizing
- e. Problem-solving: how to complete task list
- f. Goal attainment: GAS
- g. Decision-making: is the list completed and preferences determined?
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email), communicating preferences
- i. Communication skills training: questions and comments about the decision
- j. Self-monitoring: task list, GAS

#### Phase 3: Educational Supports

- a. Self-evaluation instruction: did I meet the goal, or do I need to revise? Task list, GAS
- b. Choice-making instruction: what needs to be changed or completed to accomplish the goal?
- c. Needed a visual of the breakdown of requirements for the credential compared to his already taken courses at the community college that are required to the credential
- d. Goal setting instruction: SDLMI
- e. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- f. Decision-making instruction: is it ready to be determined? Finalized? Did I use all the information, am I satisfied with the choice?
- g. Self-reinforcement strategies varies
- h. Self-recording strategies: task list, GAS
- i. Self-monitoring strategies: task list, GAS

## **Week 6-Week 7: Participant 2 Goal 2**

Using the information from Goal 1, learn where and how to declare a major at the community college and then go independently to declare the major (researcher will monitor the commute and attend the meeting but not verbally participate)

Independently determine where to go to declare a major

Independently determine how to communicate with the counselor at the college to declare a major

Go and declare the major addressing all questions by the counselor at the college

Now that the participant has established what he would like to declare as his major, the next goal involves the process of going to the appropriate building and location for declaring a major. The task/goal also involves communicating appropriately with the staff at the college and answering any expected questions about interests in the area and courses already taken and enrollment status. Because the participant started the community college as a special credit student, the college will want to know why he did not declare a major upon entry. The participant needs to be able to verbally explain why he is declaring a major now and not earlier. For the participant to communicate this information, extensive intervention is required because the participant has difficulty with verbal communication because it is hard for him to get the words out, not because he does not have them to say. Written communication is at college level demonstrated by work in ENG 111: composition and rhetoric.

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. Awareness training: I have to formally register a declaration of major and need to meet with someone to complete the task, understand how this leads to employment decisions
- c. Choice-making: when to go and declare the major before spring break
- d. Problem-solving instruction: what to say at the meeting
- e. Decision-making instruction: appointment, walk in, who to call
- f. Goal-setting instruction: SDLMI intervention Phase 1

### Phase 2: Educational Supports

- a. Self-scheduling: schedule the meeting
- b. Self-instruction: learn what to say
- c. Antecedent cue: use a notecard to remember
- d. Choice-making: why you declared the major when asked
- e. Problem-solving: If an unexpected question asked, how to answer
- f. Goal attainment: GAS
- g. Decision-making: where to go and who to ask for
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email), before going to the meeting
- i. Communication skills training: questions, and comments about the major

- j. Self-monitoring: GAS

#### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction
- f. Self-reinforcement strategies
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 8: SPRING BREAK**

#### **Week 9-Week 10: Participant 2, SDLMI Goal 3**

After Phase 1 questions and educational supports, the participant decided that to apply for jobs and the upcoming assignment in COM is to construct a resume. He decided that for goal 3, he wants to learn to write the resume using the requirements from the class, then use the template as a tool to apply for short-term jobs as he completes PSE

#### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. Awareness training: choosing employment options based on student self-assessment
- c. Choice-making: deciding what job to apply for on the resume
- d. Problem-solving instruction: exploring options based on interests and preferences
- e. Decision-making instruction: make a decision to be able to move forward to the next step of the task list
- f. Goal-setting instruction: SDLMI intervention Phase 1

#### Phase 2: Educational Supports

- a. Self-scheduling: task list and planner
- b. Self-instruction: how to set up the document
- c. Antecedent cue: using a sample with key words based on the required parts of the resume
- d. Choice-making: what to include for each heading based on Phase 1 educational supports
- e. Problem-solving: how to find what to include on the essay and formatting using Blackboard
- f. Goal attainment: GAS
- g. Decision-making: what to put under each heading
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email), to communicate preferences
- i. Communication skills training: questions and comments about the major
- j. Self-monitoring: GAS

#### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: what to correct and is it ready to be turned in
- f. Self-reinforcement strategies
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 13-Week 14: Participant 2 Maintenance sessions for three goals**

Goal 1: Determine a major

Fill I chart with the major requirements and semesters to take the courses

Goal 2: Go to the location and declare the major using appropriate preparation for what to communicate to the counselor (will substitute another task for communicating to someone unfamiliar)

Goal 3: Determining employment and resume

Will go and use the resume to apply for part-time jobs at local grocery stores and pharmacies while he is finishing up college. The participant should be finished with school in a bout a year and needs some work experience.

### **Week 6- Week 7: Participant 3 Goal 1**

Participant 3 has established his PSE to be focused on the requirements for employment for video game design, an associate of art degree at the community college. It is the participant's second year at college. Because he is so intensively involved with video games, the participant has his own ideas for games but does not have specific knowledge of the actual expectations for employment or the various roles of people in the industry. With the researcher, and aligning with expectations for COM 120, the participant determined his goal to find out the expectations and employment potions in the field, and use them for an upcoming assignment in COM course.

#### Phase 1: Educational Supports

- a. Student self-assessment: student self-assessment: make chart as referenced in the SDLMI manual
- b. Awareness training: ONET for expectations of employment in the field of Video Game Design
- c. Choice-making: how to determine where the best fit based on interests and abilities
- d. Problem-solving instruction: determination of which route to explore and how to find job opportunities in out area
- e. Decision-making instruction: what the position of the field he would like to focus on for employment
- f. Goal-setting instruction: SDLMI intervention Phase 1

#### Phase 2: Educational Supports

- a. Self-scheduling: Task List, planner
- b. Self-instruction: Teach where to find resources and employment
- c. Antecedent cue: use a checklist for remembering

- d. Choice-making: make a decision and record
- e. Problem-solving: if there is not your preferences or employment opportunities included the what comes next for exploration in this career
- f. Goal attainment: GAS
- g. Decision-making: make a choice based on resource information
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email) to the communicate the part of the video game design industry
- i. Communication skills training: questions, and comments about the major
- j. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: final choice based on information collected
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: employment in the field
- f. Self-reinforcement strategies: ice-cream for task completion (paid for by participant, facilitated by researcher)
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 8: No school**

### **Week 9- Week 10: Participant 3 Goal 2**

During Phase 1 the participant determined to work on his resume assignment required in one of his college courses. Phase 1 educational supports helped guide the participant's choices for how to accomplish the goal.

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. Awareness training: how to identify the components of the job and skills for the resume
- c. Choice-making: chart based on dream job
- d. Problem-solving instruction: how do I look for employment potential possibilities
- e. Decision-making instruction: chart based on dream job
- f. Goal-setting instruction: SDLMI intervention Phase 1

### Phase 2: Educational Supports

- a. Self-scheduling: task list and planner
- b. Self-instruction: how to format the resume using provided documents from class and teacher direction
- c. Antecedent cue: use the charts to complete the resume
- d. choice-making: what to include

- e. Problem-solving: how to accomplish the goal, and where to find the resources
- f. Goal attainment: GAS
- g. Decision-making: choosing between options based on interests, abilities, and preferences
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email)
- i. Communication skills training: questions and comments about the major
- j. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: if not completed correctly, how to complete
- f. Self-reinforcement strategies: varies by participant
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 11-Week 12: Participant 3 Goal 3**

Based on the participant's grades on history tests this semester and completion of the study guides to prepare for testing, participant 3 decided to make the goal a plan for passing his next test through completion of activities to be better prepared using study strategies. If the student receives 80% or above on the test, the goal is achieved. The criterion of the test score will be the final step in the task list. The final step indicates participant takes the test and receives 80% or higher. The participant scored a 73 on the examination, but reached the academic goal for study guide completion and use for preparation.

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. Awareness training: current grade and achievement on assessments
- c. Choice-making: what do I need to do to prepare for the test
- d. problem-solving instruction: where do I find the what I am supposed to study and how to answer the questions
- e. Decision-making instruction: do I have all the material that will be on the test
- f. Goal-setting instruction: SDLMI intervention Phase 1

### Phase 2: Educational Supports

- a. Self-scheduling: task list for completion of study guide and planner to organize time wisely
- b. Self-instruction: task list instruction
- c. Antecedent cue: visual of how to set up Cornell notes
- d. Choice-making: task list
- e. Problem-solving: how to accomplish the goal

- f. Goal attainment: GAS
- g. decision-making: study guide requirements
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email)
- i. Communication skills training: questions, and comments about the major
- j. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: course requirements
- f. Self-reinforcement strategies: reward for good grade (80%) if used study materials
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 13-Week 14: Participant 3, Maintenance Sessions for three goals**

Goal 1: Determination of specific opportunities in the employment of choice

Fill out chart based on the chosen employment

Goal 2: Resume writing

Verbally communicate the specifics of the resume to researcher and assistant

Goal 3: History Test, 80% criterion mastery (made a 73%)

Make a study guide for American History using Cornell notes to complete the study guide and Quizlet for the vocabulary and study guide components independently

### **Week 9-Week 10: Participant 4 Goal 1**

Goal: Measurement for BIO lab

Over the past semester it has become an issue that participant 4 is not able to correctly measure and will focus the first goal on learning basic measurement to be able to complete the remainder of the labs for BIO accurately and independently without having to access more materials because of inaccuracies in measurement

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. awareness training: that measurement has been consistently hindering her progress on BIO labs
- c. Choice-making: what to learn
- d. Problem-solving instruction: how to learn to measure
- e. Decision-making instruction: course requirements for BIO lab, what to focus on for the goal
- f. Goal-setting instruction: SDLMI intervention Phase 1

### Phase 2: Educational Supports

- g. Self-scheduling: planner and scheduling the measurement instruction using the strategy
- h. Self-instruction: task list on how to complete the measurement activities
- i. Antecedent cue: visuals of ruler, cups, and cylinder with parts marked
- j. Choice-making: what is the most important learn first (ruler because used most often in labs)
- k. Problem-solving: based on how to accomplish the goal; how to learn to measure using the visuals
- l. Goal attainment: GAS
- m. Decision-making: based on course requirements, learning what has been asked in past
- n. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email)
- o. Communication skills training: questions, and comments about the measurement and lab
- p. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: did I complete the task correctly and completely
- f. Self-reinforcement strategies: reward of increased lab grades
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

## **Week 10-Week 11: Participant 4 Goal 2**

Goal: Explore the different Arts degrees at UNCW and apply for the fall semester.

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. Awareness training: based on interest, abilities, and needs in the degree program
- c. Choice-making: chart what are the possible choices for BA at UNCW
- d. Problem-solving instruction: how to accomplish applying the UNCW, make the task list together with researcher
- e. Decision-making instruction: chart of pros and cons of different degrees
- f. Goal-setting instruction: SDLMI intervention Phase 1

### Phase 2: Educational Supports

- a. Self-scheduling: Plan how to request the materials and when to turn in the materials
- b. Self-instruction: how to complete the task list (essay, transcripts, submission of money, degree choice)
- c. Antecedent cue: Visual reminder of the steps to complete



- d. Choice-making: what do I need to do first, second...
- e. Problem-solving: how to complete the different parts (essay, degree establishment)
- f. Goal attainment: GAS
- g. Decision-making: course requirements for the degree, what has been accomplished and what still needs to be taken since she has an associates degree
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email)
- i. Communication skills training: questions, and comments about the major
- j. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction: have I turned everything in, requested everything, paid everything, submitted essay
- f. Self-reinforcement strategies:
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

### **Week 12-Week 13: Participant 4 Goal 3**

Goal: Learn how to use, and apply Quizlet (study technique) to make study guide flashcards and study materials for Art History and Biology to prepare for upcoming tests.

### Phase 1: Educational Supports

- a. Student self-assessment: chart completed during goal 1, review and expand if necessary
- b. Awareness training: expectations for the study strategies
- c. Choice-making: which class to focus on, task list for the guide using Cornell style notes and Quizlet
- d. Problem-solving instruction: how to create the notes and online flashcards
- e. Decision-making instruction: pros and cons of making study materials
- f. Goal-setting instruction: SDLMI intervention Phase 1

### Phase 2: Educational Supports

- a. Self-scheduling: Planner based on due dates for the chosen assessment, and chunking to make sure materials are ready for the test
- b. Self-instruction: Quizlet/Cornell- style notes for study guide
- c. Antecedent cue: Visual for bother Quizlet set up and Cornell notes set up on whiteboards
- d. Choice-making: based on the study guide requirements, what to include

- e. Problem-solving: how to answer each question for the guides and apply them to Quizlet or notes pages
- f. Goal attainment: GAS
- g. Decision-making:
- h. Self-advocacy and assertiveness training: direct instruction in how to ask for help on college coursework either to researcher or to teacher of the course using appropriate communication (verbal, email)
- i. Communication skills training: questions, and comments about the material (BIO/Art History)
- j. Self-monitoring: GAS

### Phase 3: Educational Supports

- a. Self-evaluation instruction: participant determines if the goal was met
- b. Choice-making instruction: finalize what to say to communicate the major
- c. Goal setting instruction: SDLMI Phase 3
- d. Problem-solving instruction: If not completed correctly, how to accomplish the task list
- e. Decision-making instruction
- f. Self-reinforcement strategies
- g. Self-recording strategies: task list, GAS
- h. Self-monitoring strategies: task list, GAS

Maintenance Session: Goal 1  
Measurement

Maintenance Session: Goal 2  
Chart of the course requirements and semesters planned for coursework at UNCW

Maintenance Session: Goal 3  
Study guides using Cornell style notes and Quizlet for BIO or ART history, whichever was not completed during goal 3