

Self-Directed Learning in the GED Classroom: Barriers and Retention

by

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A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
December 14, 2024

Keywords: GED, self-directed learning, retention, demographic barriers

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Abstract

Adult education often serves older individuals seeking continued intellectual engagement beyond traditional educational settings. Defined by Houle (1972) as a process whereby individuals seek personal or societal improvement through skill and knowledge acquisition, adult education faces challenges in supporting GED students navigating demographic barriers independently through the learning process. This study addressed the gap in recent research on GED students engaged in classroom self-directed learning. Specifically, it examined the progress of GED students, and their demographic factors such as employment status, participation in government assistance, and incarceration history, in relation to persistence and self-directed learning preferences.

Data from a convenience sample of 876 GED students from a southern state's community college 2021 program year were analyzed. Findings for the study included being male is associated with having 1.43 greater odds of being in a higher persistence category, and those that identified as being unemployed have 1.99 greater odds for being in a higher persistence category. The study also found that being male provided 1.76 greater odds of participating in in-person learning, and being unemployed provided 1.33 greater odds of choosing digital instruction. Additionally, receiving government assistance did not significantly influence the likelihood of determining self-directed learning method. Previous incarceration status was a significant predictor suggesting that individuals with no history of incarceration have 2.29 greater odds of in-person learning.

This study highlights significant relationships between gender dynamics, incarceration history, persistence patterns, and instructional preferences, emphasizing the complex interplay between demographic barriers and educational outcomes.

Acknowledgements

First, to my best friend, confidant, and husband, Matt Luna, thank you for seeing my vision and being willing to be whatever I needed when I needed it. I cannot begin to express my gratitude for your patience and understanding. As always, thank you and I love you!

Second, to my parents, Maryann and Daniel Grigsby – thank you for your encouraging words and the follow-through with your actions. Especially to my mom, thank you for never limiting my ambition and by always giving 110% of yourself to my future and my plan. I can honestly say, the educational climbing is over and we never need to fill out another FAFSA form! I love you both very much and I hope you both know it would not have been possible without your dedication.

I would like to acknowledge my incredible dissertation committee, Dr. William Murrah, Dr. Jonathan Taylor, and Dr. Jane Teel. Each of you played a major role in my development during coursework, so I am thankful that you were willing to stick with me for the writing process. I do not think I can accurately describe how incredible my committee chair, Dr. Leslie Cordie, has been since the first day of my time at Auburn University. She has been an excellent professor, advisor, mentor, committee chair, and friend. Dr. Cordie, thank you for being so supportive of my goals and advocating for your students when necessary. You have made this entire experience so exciting and memorable.

Finally, I would not have been able to complete this study without support from the Northwest Shoals Community College Adult Education department. I am appreciative of the time spent within the department and the friends I have made. I am thankful for you all always pouring into me during these crucial developmental years. Go Patriots!

Table of Contents

| | |
|---------------------------------------|----|
| Abstract..... | 2 |
| Acknowledgements..... | 4 |
| List of Tables..... | 6 |
| List of Figures..... | 7 |
| Chapter 1..... | 8 |
| Statement of the Problem..... | 10 |
| Purpose of the Study..... | 10 |
| Chapter 2..... | 16 |
| GED Classroom and Curriculum..... | 19 |
| Theoretical Framework..... | 22 |
| Chapter 3..... | 42 |
| Research Questions..... | 42 |
| Identification of Variables..... | 44 |
| Chapter 4..... | 53 |
| Participant Demographic Findings..... | 53 |
| Results..... | 55 |
| Chapter 5..... | 66 |
| Method..... | 68 |
| Discussion of Findings..... | 69 |
| References..... | 79 |
| Appendix A..... | 88 |

List of Tables

| | |
|--|----|
| Table 1 Defining MSG Types..... | 46 |
| Table 2 Concepts and Indicators..... | 47 |
| Table 3 Variable Analysis..... | 48 |
| Table 4 Descriptive Statistics..... | 54 |
| Table 5 Model Summary for Research Question 1..... | 58 |
| Table 6 Model Summary for Research Question 2..... | 61 |
| Table 7 Model Summary for Research Question 3..... | 63 |
| Table 8 Model Summary for Research Question 4..... | 65 |

List of Figures

| | |
|--|----|
| Figure 1 Multiple Linear Regression – Distribution of Residuals..... | 57 |
| Figure 2 Predicted Probabilities of Persistence Graphic..... | 60 |
| Figure 3 Predicted Probabilities of Employment Graphic..... | 62 |
| Figure 4 Predicted Probabilities of Assistance Graphic..... | 64 |
| Figure 5 Predicted Probabilities of Incarceration Graphic..... | 66 |

CHAPTER 1

Introduction and Background of the Study

A common misconception of Adult Education is that it primarily serves older adults seeking intellectual stimulation and to fill their time as they age beyond the typical student years. According to Ross-Gordon et al. (2017), there have been many definitions for adult education, but one that has been built on by other theorists in the field comes from Houle (1972). Although his definition is brief, it provides the foundation for adult learners in any learning setting. Houle (1972) stated, “Adult education is the process by which men and women (alone, in groups, or in institutional settings) seek to improve themselves or their society by increasing their skill, knowledge, or sensitiveness; or it is any process by which individuals, groups, or institutions try to help men and women improve in those ways” (p. 32). Macias (2021) extended the concept of adult education programs in that it creates opportunity for participants to explore and develop socio-political identities, learn about social issues that influence their lives and communities, and ultimately become civically engaged in their communities.

Adult education programs generally provide opportunities for learners to acquire skills necessary for survival and advancement, such as employment training, financial management, and academic enhancement. In adult education programs (over 4,000 in the United States), there are specific courses that aim to provide necessary skills for all participants, no matter age or status (Rose, 2013). Participants in adult education can also work toward personal goals such as obtaining a high school equivalency while working on developing workforce skills to aid in future employment (Macias, 2021). By offering courses in job skills, financial literacy, and academic fundamentals, adult education empowers individuals to achieve self-sufficiency and pursue further education. Thus, the field of adult education covers a range of programs,

initiatives, and methodologies aimed at providing learning opportunities for individuals beyond a traditional schooling age.

Adult education programs can accommodate an array of individuals from diverse backgrounds, experiences, and learning styles, recognizing the importance of flexible and accessible learning formats (Bierema & Merriam, 2013). Thus, with technological advancements, the landscape of adult education has changed drastically to include online learning platforms, distance education programs, and digital learning initiatives (Olesen-Tracey, 2010). Most programs provide adult basic education (elementary literacy and mathematics skills), and adult secondary education, which typically focuses on General Educational Development (GED) preparation or the high school diploma itself (Rose, 2013). Courses for the GED and high school diploma programs are normally test driven, meaning that student assessment is measured by examination. These GED students are of varying level competencies and typically focus on English and math through independent study, which involves access to computers, books, and other materials needed to prepare for the testing (Rose, 2013).

Existing research (Bierema & Merriam, 2013; Olesen-Tracey, 2010; & Rose, 2013) on self-directed learning among GED students facing demographic barriers is scarce. A review of the literature reveals a significant gap, with most studies conducted either in the 1990s or early 2000s, and few in the past decade. This dearth of recent research hinders the development of effective curricula and support systems for GED students seeking to advance their education through independent learning. A lack of focus on evolving education for GED students has resulted in a critical shortage of learning materials and plans to support their educational goals (Rutschow & Cary-Ross, 2014). This gap not only hinders self-directed learning opportunities but also contributes to lower retention rates in higher education and the workforce (Rutschow &

Cary-Ross, 2014). Furthermore, it limits the development of effective solutions to address demographic barriers, perpetuating challenges for GED students in lifelong learning and opportunities.

Statement of the Problem

GED students encounter significant demographic obstacles as they strive for educational goals. This research explored the extent to which these barriers, coupled with insufficient support from adult education programs, hinder students' academic progress. There is a dearth of recent research examining GED students actively engaged in self-directed learning within classroom settings. Additionally, limited research exists on community college adult education programs that offer diverse learning modalities to students facing self-reported demographic challenges.

Purpose of the Study

This study seeks to understand the academic persistence and influence of demographics challenges of GED students engaged in self-directed learning. Specifically, the research will examine the demographic factors impacting these students' retention rates in postsecondary education or the workforce. Knowles (1975) stated that self-directed learning is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. Since all GED students in the dataset were taking the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying material resources for learning, choosing and implementing appropriate learning strategies, and evaluating their outcomes, they were considered to be actively participating in self-directed learning for this research study.

The research questions for this study were as follows:

Research Question #1: Is there a relationship between a GED students' employment status and persistence? Does this relationship differ in regard to sex?

Research Question #2: Is there a relationship between a GED students' employment status and self-directed learning method preference? Does this relationship differ in regard to sex?

Research Question #3: Is there a relationship between a GED students' participation in government assistance programs (TANF, SNAP) and self-directed learning method preference? Does this relationship differ in regard to sex?

Research Question #4: Is there a relationship between a GED students' previous incarceration status and the self-directed learning method preference? Does this relationship differ in regard to sex?

Methods

This quantitative research study will focus on GED participants in a southern state's community college program and the relationship between demographic barriers, retention, and self-directed learning. Access to a secondary dataset allowed for convenience sampling on a GED population. The GED students in this study self-reported demographic barriers, sex, and self-directed learning preferences. Barrier factors analyzed for this study included incarceration status, government assistance programs including Temporary Assistance for Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP) recipients, and employment status (unemployed or underemployed) (see Appendix A). The analysis for the research questions varied based on the types of variables used. For RQ 1, ordinal logistic regression was used because the variable, persistence, held more than two categories. For RQs 2-4, binary

logistic regression was used because each variable analyzed contained only two categories. Students that identified these specific demographic barriers receive food assistance and monetary assistance from a location close to the community college location. In addition, students that identify previous incarceration were held at facilities close to the researcher's community college location. Regression analyses were used to look at student retention (class enrollments and attendance), and measurable skills gains by program (see Appendix A) in relation to the above-mentioned demographics.

Significance of the Study

While Hutt and Stevens (2017) focused on the development of the GED testing and how it has evolved throughout the years, other research (Adenuga, 1989; Brockett, 1985.; Doren, 2013; Leong, 2020; Martin et al., 2015; Owen, 2002; Rutland & Guglielmino, 1995; Rutland, 1987) focused on the demographic barriers of GED students. Limited research, though, exists on the self-directed learning experiences of GED students who encounter these demographic barriers. This study aimed to make a contribution to the understanding of adult basic education in the targeted southern state and neighboring regions. Thus, this study intended to fill this research gap by examining self-directed learning practices within GED classrooms and developing recommendations to enhance student success, particularly for those facing these demographic challenges. By analyzing archival data, the research hoped to identify the critical demographic barriers impacting students' self-directed learning experiences, which may provide valuable insights for educational policy and practice in adult learning.

Limitations and Delimitations

Delimitations: This study was confined to a dataset encompassing the 2021 program year (June 2021 to July 2022), which was the year after the COVID pandemic was declared.

During this program year, many potential students were returning to work and unemployment benefits were ending across the state and country. This sample was selected due to the completed status of the data, meaning that it has been recorded by the state’s Adult Education Department and labeled as completed and useful.

Limitations: The study's scope is limited by the use of convenience sampling from a single community college in a southern state and reliance on self-reported participant data (source).

Definition of Key Terms

- Adult Education – consists of adult learners that are seen as autonomous, independent decision makers. Adult learners participate in training and use previous life experiences to connect with study materials. Adult learners communicate efficiently and have an understanding of what he/she would like to learn (Machynska & Boiko, 2020).
- Demographic Barriers – unique circumstances that may impact experience inside and outside of the classroom (Rabourn et al., 2015). These circumstances could be homelessness, issues with childcare or care of dependents, receiving government assistance, etc.
 - Employment/Unemployment – the direct impact of the GED can be found first in wage effects. Nationally, the average increase in weekly wages for those who attain the GED is \$115, and the average increase in annual household income is \$3,500 (Bowen & Nantz, 2014).
 - Government Assistance Programs – in regard to this study, known previously as “food stamps,” the Supplemental Nutrition Assistance Program (SNAP) can help individuals pay for food if they are experiencing low-income issues; Temporary

Assistance for Needy Families (TANF) is a federally funded, state-run program – also known as welfare, TANF helps families financially after experiencing hardship (U.S. General Services Administration, n.d.).

- Incarceration Status – any individual involuntarily confined or detained in a penal institution – individuals sentenced to an institution under a criminal or civil statute, individuals detained in other facilities by virtue of statutes or commitment procedures which provide alternatives to criminal prosecution or incarceration in a penal institution, and individuals detained pending arraignment, trial, or sentencing (National Center for Biotechnology Information, 2005).
- General Educational Development (GED) – created in 1942 by the American Council on Education, this exam assisted returning veterans find suitable employment. The exam has expanded to involve non-veterans who need a high school credit equivalency (Brinkley-Etzkorn & Skolits, 2014).
- Self-Directed Learning – In his book, Knowles (1975) noted that self-directed learning is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resource for learning,

Organization of the Study

There are five chapters in this study. Chapter I is used to provide context on specific ideas and concepts, as well as provide some background and terminology about the GED, GED students, demographic barriers, and self-directed learning. The purpose of the study, significance of the problem, and research questions are introduced in this chapter, as well. Chapter II gives an in-depth review of the past and current literature for topics in this study. Chapter III provides the

details of the methodology used, as well as the research design for the study. In Chapter IV, the data will be analyzed, and the results will be shared to answer the research questions from Chapter I. The details of Chapter V deal with the summary, implications, conclusion, discussion, and future research recommendations.

CHAPTER 2: LITERATURE REVIEW

Overview

This chapter presents a concise overview of the GI Bill, the evolution of the GED test, self-directed learning theory, self-directed learning strategies for GED students, GED student retention rates, and demographic challenges faced by GED students. The synthesized literature provides a robust foundation for the current study, aiming to elucidate the interplay among self-directed learning preferences, retention, and demographic factors among GED students.

The History of the GI Bill

Signed into law in June of 1944, the GI Bill in the United States (US) offered benefits to returning veterans of World War II, such as unemployment benefits, low interest mortgages, college and vocational training tuition, and a monthly living stipend (Hutt & Stevens, 2017). Although the GI Bill provided millions of veterans with the option to reintegrate into society, their lack of a high school diploma presented a serious problem by limiting their life opportunities. After WWII, the statistics on returning veterans found that 59% of white veterans and 55% of black veterans had never even attended high school (Hutt, 2014). Eventually, an assessment that required individuals to obtain a certain score, as well as use prior military knowledge, was formed so that veterans could use the GI Bill benefits more effectively and gain their General Educational Diploma (GED) or high school diploma equivalent.

Between 1942-1944, with the passage of The Servicemen's Readjustment Act (GI Bill of Rights), the GED test was normalized as a way for returning veterans to seek further educational opportunities (Quinn, 2002). E.F. Lindquist of the University of Iowa was consulted for his expertise in multiple-choice questions to develop the equivalency assessment that mimicked that of a high school equivalency education (Hutt & Stevens, 2017). Lindquist created the test to

encompass experiences that returning veterans possessed – exposure to foreign languages, job experiences, social customs, and physical and economic geography of places soldiers were stationed during WWII. By utilizing a testing curriculum and structure that Lindquist previously used for his own institution, a five subject test was created. The subject areas were correctness and effectiveness of expression, interpretation of reading materials in social studies, interpretation of reading materials in the natural sciences, interpretation of literary materials, and general mathematical ability – and this test would eventually become the General Educational Diploma (GED) test (Hutt & Stevens, 2017).

Generation History of the GED

The first generation of the GED test provided testing focused results on the measurement of the major outcomes of a traditional high school academic program (English, math, social studies, science, etc.) (Boesel et al., 1998). The second GED generation of testing, introduced in 1978, provided changes to reading in the science and social studies test areas, as well as providing more emphasis on conceptual knowledge and evaluating information. This second generation of GED testing reduced the testing time from ten hours to roughly six hours (Boesel et al., 1998; Tyler, 2005). The third generation of GED testing created in 1988 introduced an essay or written portion for the examination. Test takers were provided with a prompt to write a response to an essay question during the forty-five-minute timeframe (Boesel et al., 1998; Tyler, 2005).

The fourth generation of GED testing, briefly outlined by Ryder and Hagedorn (2012), was introduced in January 2002. This generation of testing was the first to align relevant questions that represented the typical content that high school graduates were learning, as well as

preparation for life, job skills and postsecondary education upon completion of high school (Boesel et al., 1998; Ryder & Hagedorn, 2012).

Ryder and Hagedorn (2012) examined Iowa-based adult learners in non-credit GED preparation programs. Their study tracked student progression from non-credit to credit courses, revealing that GED attainment facilitated transitions to employment or higher education. The authors also noted that GED passing standards were aligned with traditional high school graduation requirements. Importantly, their data indicated a declining number of students progressing from GED completion to college enrollment and credential attainment, highlighting challenges in GED student retention.

McLendon (2017) argued for the necessity of a fifth-generation GED test to accurately assess adult skills for workforce, family, and community engagement. The article criticizes a lack of clear communication surrounding the transition from paper-based to computerized testing, which had significant unintended consequences for adult learners. Indeed, the shift to computer-based testing imposed financial burdens on states, alienated test-takers due to logistical challenges, and prompted the development of competing high school equivalency exams. More specifically, the computerized format restricted test accessibility by requiring in-person testing at limited locations, and often inconvenient times for working adults. Financial barriers for learners also emerged with increased test costs. Moreover, the transition exacerbated disparities for incarcerated individuals, who lacked access to both the test and preparation materials. In response to these challenges and the overall inaccessibility of the computerized GED, alternative assessments like the High School Equivalency Test (HiSET) and Test Assessing Secondary Completion (TASC) emerged.

McLendon (2017) also highlighted the challenges faced by adult education programs nationwide due to the implementation of the new GED test, including the need for curriculum development, teacher training, and test content analysis. This study further explored the instructional challenges arising from a predominantly part-time teaching staff (80%), which limited educators' capacity to create specialized GED materials. Most of the time was spent monitoring test taking rather than developing materials to support the adult learners success.

The transition to the fifth-generation GED test prompted widespread calls for increased national and state-level support to address heightened student demand and teacher preparedness. Brinkley-Etzkorn and Skolits (2014) employed qualitative research methods, including interviews and observations, to examine the impact of the new test on an adult education program. Their findings identified three primary challenges: the need for enhanced teacher professional development, curriculum adaptation, and technology integration. Moreover, the study revealed a prevailing atmosphere of uncertainty surrounding the new test, with negative sentiment expressed by administrators, staff, and students alike. These negative opinions affected the adult learning environment.

GED Classroom and Curriculum

The fifth generation of the GED test left adult educators and adult learners with several questions and academic requests for the state and national levels. According to an article by Martin and Broadus (2013), when it comes to teaching the GED curriculum, adult education programs do not have a consistent standard for GED test preparation. This is based on the different state requirements and the variety of classes offered by individual adult education programs. As stated previously, most of the adult education teachers work part-time and may not

have full training in adult education methods or theory. Often, there is not a particular instruction; rather there is teaching to pass the test.

In the techniques guide from Olesen-Tracey (2010), an instructional designer and GED Coordinator, noted that online learning opportunities to study for the GED test have combined a use of daily technology and content specific learning materials that is important in lifelong learning. Her guide offered a blueprint for effective strategies for online learning in regard to the GED. Olesen-Tracey noted that students take responsibility for creating realistic goals and functional benchmarks for their learning progress. The adult education program faculty and staff should be responsible for decision methods on delivery of learning materials with the individual adult learners' needs in mind. Online platforms should be selected based on their alignment with learners' knowledge levels, the breadth of content coverage, and the depth of learning opportunities provided. Olesen-Tracey emphasized the importance of clearly communicating program policies and procedures to students. Adult education programs should outline expectations and goal-setting processes to ensure student understanding and engagement. This means that students should understand how to utilize the learning platform and to study effectively. The blueprint also recommends providing comprehensive instructor training and designating a staff member as an online learning specialist. Finally, Olesen-Tracey (2010) highlighted the importance of fostering a positive attitude toward online learning among both students and staff to increase participation and attract potential beneficiaries.

In the Prins et al. (2012) study, the focus was on rural residents of Pennsylvania that needed and wanted to pursue the GED certificate. These students had less opportunity and access to adult education programs because of the geographic location and transportation issues. This mixed-methods study looked at the educational status of GED graduates and found that they

were more likely to pursue an associate degree. Specifically, GED holders (40% rural/ 15% urban) were more than twice as likely as non-GED students (19% rural/15% urban) to pursue an occupational/technical associate degree. Interestingly, the demographic barriers were made up of 61% female students. In addition, GED holders were considerably less likely to be single (54%) than non-GED students. The study continues to dissect the results in financial characteristics. On every financial measure, rural and urban GED holders had more need more than their non-GED peers had. Prins et al. (2012) stated that non-GED students' mean family income was about 2.4 times that of GED students. The GED recipients' poverty rate was twice that of non-GED students. Concluding the results for the study, only 16% of GED graduates were financially independent on their parents, compared to 68% and 63% of rural and urban non-GED students. Prins et al. (2012) concluded through the mixed-methods study that although there was a small population of rural GED students participating in distance learning online preparatory classes, the GED pass rate was 74.6%.

Regardless of the chosen GED preparatory class, the curriculum and passing requirements are standardized. Rutschow and Cary-Ross (2014) highlighted the alignment of the fifth-generation GED with the Common Core State Standards, emphasizing the assessment of foundational skills for college and career readiness. Their study examined the integration of critical thinking, complex text analysis, and real-world problem-solving into the GED that is needed for adult learning. Beyond test content, the researchers noted the proliferation of updated study materials from major publishers such as Kaplan, Houghton Mifflin, and Peterson's in response to the evolving test format. The evolving test format can be viewed from the theoretical framework that is often referred to when considering adult learning.

Theoretical Framework

Knowles (1975) discusses the idea that adult learners take responsibility for their own learning, the setting of their own goals, and directing their own learning process. However, the students are not alone in the process; there are teachers or facilitators available to provide direction and resources. Self-directed learning places an importance on learner's motivation, self-management, and self-control (Garrison, 1997). In the context and practice of the GED classroom, self-directed learning theory suggests that students should be encouraged to take ownership of their learning and to develop the skills and attitudes necessary for self-directed learning.

It is important to note that self-directed learning theory stems from andragogy. Andragogy is a theory of adult learning that emphasizes the importance of self-directed learning and the unique characteristics and needs of adult learners. Knowles (1980) released six assumptions about andragogy:

1. **Self-concept:** adult learners have a self-concept that is independent and self-directed.
2. **Experience:** adult learners have a reservoir of experience that serves as a resource for learning.
3. **Readiness to Learn:** adult learners are ready to learn when they perceive a need to know something.
4. **Orientation to Learning:** adult learners are problem-centered and interested in immediate application of new knowledge.
5. **Motivation:** adult learners are motivated by internal factors such as self-esteem and self-actualization.

6. Learning Style: adult learners have a preferred learning style that emphasizes self-directed learning and problem solving.

These six assumptions can be linked to self-directed learning due to the importance of adult learners taking responsibility for their own learning and being actively engaged in learning. Knowles (1975) emphasizes that self-directed learning is at the core of adult education, suggesting that adults naturally tend to take control of their learning experiences. This aligns with the assumptions of andragogy, where the learner's autonomy and motivation are pivotal. The six assumptions, mentioned previously, offer a framework that highlights the need for adult learners to be self-directed, utilizing their life experiences as valuable resources in the learning process. These assumptions stress that adult learners are internally motivated, problem-oriented, and seek immediate application of knowledge. This intrinsic motivation is crucial in the GED context, where students often return to education with specific, practical goals in mind, such as career advancement or personal fulfillment. As previously mentioned, self-directed learning involves adult learners setting goals, choosing learning strategies, and reflecting on progress (Knowles, 1975).

In a later article from Taylor et al. (2012), the importance of andragogy is discussed in corroboration with the article from Knowles (1980), as well as others. However, from the research by Taylor et al. (2012), there is a call for educators to adopt a balanced and adaptive teaching approach that caters to the needs of adult learners. The Taylor et al. (2012) article mentions mesagogy and pedagogy in relation to community colleges and the approach of instruction. These two frameworks describe different approaches to teaching and learning. Taylor et al. (2012) suggests that mesagogy serves as a middle ground between the highly structured nature of pedagogy and the self-directed nature of andragogy, providing a flexible

framework that can be adjusted based on the learner's needs. These approaches are useful in the adult education field for learners that may need more guidance but want to still benefit from the more active role in their learning process (Taylor et al., 2012).

While self-directed learning emphasizes the learner's role, the presence of a facilitator is crucial, particularly in environments like GED programs where students may require additional support. Educators can play a significant role in guiding students by providing the necessary resources, offering feedback, and creating a supportive learning environment that encourages risk-taking and experimentation. This is where the concept of mesagogy becomes particularly relevant. As discussed by Taylor et al. (2012), mesagogy serves as a middle ground, where educators balance the need for structure (pedagogy) with the promotion of learner autonomy (andragogy). This balanced approach is essential in GED classrooms, where students may have varying degrees of readiness for self-directed learning. The authors give readers much to consider, but they still revert back to andragogy as a way to enhance pedagogical practice and student outcomes. In the GED classroom, these theoretical insights suggest that educators should adopt practices that empower students to take charge of their learning. For instance, teachers could implement project-based learning, where students select projects that are relevant to their personal or professional lives, thereby aligning with Knowles' (1975) assumption of orientation to learning. Additionally, goal-setting activities could help learners articulate their objectives, fostering a sense of ownership and self-direction. Garrison (1997) further reinforces this by highlighting the importance of self-management and self-control, suggesting that students should be encouraged to develop these skills through reflective practices and self-assessment.

When considering GED students, and retention of those students, self-directed learning has been found to be an effective approach. A study by Sternberg and Williams (2022) found

that GED students who received self-directed learning instruction had higher retention rates than those who did not. Additionally, a study by Durrington and Zvoch (2010) found that self-directed learning strategies were effective in increasing the pass rate of GED students. Similar to Durrington and Zvoch (2010), a study by Colvin and Ashman (2010) explored the relationship between self-directed learning and retention among adult learners. The study found that self-directed learning was positively correlated with retention, suggesting that individuals who are more self-directed in their learning are more likely to persist in their educational journey. The studies by Sternberg and Williams (2022), Durrington and Zvoch (2010), and Colvin and Ashman (2010) all focus on the positive impact of self-directed learning on student retention and success in GED programs. These findings suggest that GED educators should prioritize self-directed learning strategies to enhance student outcomes. Practical approaches might include creating individualized learning plans, integrating technology to support autonomous learning, and fostering a classroom culture that values and nurtures independence. Brockett and Hiemstra (1994) challenged one misconception about self-directed learning and student demographics – self-directed learning is primarily limited to white, middle-class adults. The authors discuss studies where individuals from various backgrounds are capable of engaging in self-directed learning. They cite research involving many marginalized groups, showing diversity of individuals actively involved in self-directed learning projects. Brockett and Hiemstra's (1994) work is particularly relevant in challenging misconceptions about the demographic limitations of self-directed learning. Their research suggests that self-directed learning is not exclusive to a particular demographic but is accessible and beneficial to a diverse range of learners, including those from marginalized communities. This is a crucial point for GED programs, which often serve students from varied backgrounds, including those who may have faced educational and

socioeconomic barriers. Recognizing the capacity for self-directed learning across diverse populations can lead to more inclusive educational practices that cater to the unique needs of each learner.

According to Merriam et al. (2007), there are key trends that make-up self-directed learning. Self-directed learning is defined as being the most common and frequent way that adult learners choose to learn, and there is a connection between self-directed learning and self-concept. The first and second trends track with the ideas expressed from Knowles (1975) and his six assumptions about adult learners. Adult learners need the flexibility offered from self-directed learning, they need to be able to pull from lived experiences, and their motivations come from within.

History of Self-Directed Learning Theory

Knowles (1975) provided three reasons and three implications for self-directed learning because of the fact that most adult learners only know how to be taught instead of how to learn. His reasons for self-directed learning were (1) there is convincing evidence that people who take the initiative in learning learn more things and learn better than people who sit and wait to be taught, (2) self-directed learning is more in tune with natural processes of psychological development, and (3) many of the new developments in education put a heavy responsibility on the learners to take a good deal of initiative in their own learning. His implications for self-directed learning were (1) the main purpose of education must now be to develop the skills of inquiry, (2) there must be a different way of thinking about learning, and (3) it is no longer appropriate to equate education with youth.

In his book, Knowles (1975) continues that self-directed learning is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning

needs, formulating learning goals, identifying human and material resource for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. Traditionally, the term “self” implies that something is done in an isolated fashion. However, self-directed learning is not isolating and includes many different individuals that assist with an educational journey. According to Brockett and Hiemstra (1994), self-directed learning does not necessarily mean learning in isolation. Instead, self-directed learning signifies that the student bears the responsibility as the primary decision maker. The student is responsible for decisions of planning, implementing, and evaluating the learning experience. Similarly to these ideas, Tough (1971) defined self-directed learning as a process that requires adult learners to take initiative, with or without the help of others, is deciding their learning needs and formulating learning goals (Merriam & Baumgartner, 2020). Comparable to Knowles (1975), Tough identified phases of self-directed learning. Those phases are: (1) identifying a learning needs, (2) setting learning goals, (3) choosing resources, (4) implementing learning strategies, and (5) evaluating learning outcomes. The researcher of this study would like to point out that this is self-directed learning theory at its core, and for this study, these same reasons, implications, and definitions are relied on to show the nature of the GED classroom being studied.

Much like Knowles (1975), Garrison (1997) took self-directed learning in adult education a step further and incorporated self-management, self-monitoring, and motivation. He built his view of self-directed learning in adult education by building off other theorists and considering the concepts that they already incorporated. As described in the study, self-management focuses on social and behavioral implementation of learning intentions (what is external for the learning process). Self-management is the concept that includes learning goals and management of learning resources and support. When incorporating self-management into the self-directed

learning theory, it is important that material resources are available to learners, certain approaches are suggested, flexible pacing is available, and questioning and feedback is presented as needed (Garrison, 1997). Learner self-direction is a key concept for adult education that acknowledges that adults bring unique experiences, motivations, and learning styles to the education setting, and encourages them to engage in self-directed learning activities that are meaningful to their lives (Bierema & Merriam, 2013).

Garrison (1997) describes self-monitoring as cognitive and metacognitive processes, which allow for monitoring learning strategies, as well as providing an awareness of and an ability to think about thinking (plan and modify thinking according to the learning task/goal). It is essential that self-management and self-monitoring coincide together, but there is an issue of learner control versus institutional control, which may lead to the learner losing motivation and pursuing goals. Garrison (1997) deems motivation as having a significant role in the initiation and maintenance of effort toward learning and the achievement of cognitive goals. The motivation that Garrison (1997) discusses, the researcher of this study has decided, is similar to persistence, which leads to retention of adult learners – one of the main focal points of this study.

In his study, Garrison (1997) looks at self-directed learning through a collaborative constructivist view, and his findings support that view. Self-directed learning is a collaborative relationship between adult learners and institutional teachers/instructors. During the study, the challenge for teachers is discussed as being able to create educational conditions that will facilitate self-direction. This portion of the Garrison (1997) study is relevant to this study because of the different learning options that are presented to adult learners in the GED program being studied. There is a challenge for instructors and teachers to provide an adequate variety of study materials to students, as well as provide the option to work online and participate in

distance learning. Similarly, Brockett and Hiemstra (1994) challenged the misconception indicating that self-direction and self-directed learning is an easy way out for teachers. The authors argued that successful facilitation of self-directed learning required teachers to be active and engaged with a student's learning. Actively being engaged with the student's learning could include negotiation, exchanging views, securing resources, and validating outcomes. The concept of learner self-direction ties into this theory because instructors are required to adopt a facilitator role to provide guidance, support, and resources that empower learners to take control of their learning journey (Hiemstra & Brockett, 2012).

Self-Directed Learning for GED Students

In the article from Aud et al. (2011), there were seven objectives added to curriculum to enhance the self-directed learning characteristics for students. These objectives were formed to provide control for students when determining if they were actively participating in self-directed learning: (Aud et al., 2011)

- a. Identify and solve problems as well as to make decisions by developing critical and creative thinking;
- b. Cooperate effectively as an individual in a team;
- c. Organize and manage his/her activities and to personally take responsibility for activities;
- d. Collect information, to analyze, to organize, and the evaluate critically;
- e. Be capable of communicating effectively in different forms through visual or symbolic skills and/or language skills;
- f. Apply science and technology effectively and to fulfill responsibilities towards the environment and the health of others; and

- g. Demonstrate an understanding of the fact that the world is seen as a set of related systems and the problem-solving contexts do not exist in isolation.

Interestingly, many of the objectives from Aud et al. (2011) are also test objectives for adult education students studying to take the GED test. The Rutschow and Cary-Ross (2014) article specifically referenced the fifth generation of GED testing objectives: the adoption of the Common Core State Standards, and the addition of demonstrating critical thinking and reasoning skills, analyzing and evaluating complex texts presenting opposing perspectives, and demonstrating real-world mathematical problem-solving skills.

Retention for GED Students

As early as the Quigley (1992) study, retaining students in adult education programs has been a hard problem to solve, but that does not mean that studies have not tried multiple methods of retention. In this study, the first way, quantitative way, of retaining students revolves around the attrition rate being elevated – more than 60% for most standard GED classes, and over 70% for some programs. The second way, qualitative way, is asking why the students are dropping out of the programs. While the Quigley (1992) study found the point that retention has been a factor for decades, even prior to the study, it does not provide any data or statistics to point toward retention of GED students to postsecondary education or the workforce, which is what this researcher aims to do.

Kefallinou (2009) studied a persistence and retention program in a community college in Massachusetts that served nearly 400 adult education students. The persistence and retention program was formed because many students would leave the program before the end of the year or before finishing their goals. It was reported that the programs learning gains increased 13% in 2007 (the year before the implementation of the persistence and retention program) to 44% in

2008 (the year of the implementation of the persistence and retention program). The testing plan featured in the Kefallinou (2009) study provided an increase to 48% in 2008 versus the 26% in 2007, but the interpretation was cautious because the testing plan differed from 2007 to 2008. There was a higher percentage of students that were allowed to participate in 2008, so the numbers are skewed from 2007. The plan consisted of a hands-on approach from program counselors, administrative assistants, and program managers. Meetings were held every week for the first two months and every other week after that. There were plans made for activities with a timeline, active communication with teachers and students, as well as monitored work and data collection. The outcome presented in the study was the completion rate. Kefallinou (2009) defines completion as attending classes until the end of June and/or achieving a set goal (i.e., attain a GED or get a job). The completion rate improvement was 46% from 2007 to 65% in 2008. Similarly, to the Quigley (1992) study, the Kefallinou (2009) study focused on retaining students for the GED program and not retaining those students into a postsecondary education program or the workforce.

The Nix and Michalak (2012) study looked at GED holders seeking involvement in higher education but experiencing barriers that may limit them in entering the next phase of their educational journey – causing issues with persistence and retention. The need to eliminate the barriers causing issues with persistence and retention caused Nix and Michalak (2012) to begin a two-year pilot project called Successful Transitions and Retention Track (START). While the study was not completed, there are some early successes reported such as a 70% persistence rate for students and maintaining a 3.5 GPA. In this pilot study, there is a focus on classroom instruction, career and personal counseling, and tutoring.

Although the previous article by Nix and Michalak (2012) was brief, there is a follow-up research study presented by the same group, Nix et al. (2015). Ultimately, throughout the two-year pilot program, there were 141 students admitted. Data analysis revealed that 82% of START students passed their first college-writing course, and 68% passed their first math course. In the Nix et al. (2015) study, there were total of 24 START participants that dropped out of the pilot program, and 30 students that “stopped out” for at least one semester but returned to a different cohort and eventually moved to the next phase. While this study provides evidence of retention rates for GED students progressing into a postsecondary education, it does not provide any detail for the workforce. As stated before, the researcher of this study would like to see the retention information for both the postsecondary education and the workforce.

According to McDermott et al. (2019), self-control and persistence are good identifiers for what outcomes students may endure, but they do not consider the last implications of demographic barriers that adult learners may experience. The McDermott et al. (2019) study utilized a sociocultural self-model which highlights that individuals and structural conditions are mutually constitutive and situated within macro-level contexts that are informed by varying ecologies, policies, economies, and histories. The study focused on self-control and persistence as individual factors, and supportive social relationships, dropout status, and educational attainment as structural factors. They aimed to compare the individual factors and the structural factors to employment outcomes among three different groups of individuals – those with a high school diploma (64% of the sample population), those with a GED credential (16.1% of the sample population), and those without any credential (19.7% of the sample population).

The data from McDermott et al. (2019) found that GED holders were not significantly different from those without any credentials when it came to self-control, persistence, and social

support. However, GED holders did rank lower than individuals with a high school diploma did in the same categories. There was 17.2% of GED holder participants that were employed full-time, and there was 23.2% of GED holder participants that were employed part-time. In regard to employment and unemployment for GED students, the combined part-time and full-time status is still less than 50% employed. Ultimately, the McDermott et al. (2019) study did find a strong correlation between self-control and persistence and full-time employment, but not a strong correlation between self-control and persistence and part-time employment. This would indicate that those working full-time were disciplined and prepared to study and persist in the program. Other factors can contribute to these correlations. Unlike the Nix et al. (2015) study, McDermott et al. (2019) study focuses on retention into the workforce depending on the self-control and resistance of students. However, it is the aim of the study's researcher to analyze both postsecondary education and the workforce when it comes to retention.

Uretsky and Henneberger (2023) noted that few studies have examined long-term college and career outcomes associated with nontraditional pathways of high school completion. This study used twelve years of de-identified linked administrative education and labor market data from Maryland. The results for this study were not favorable for GED students. Statistically, 35% of GED earners attended college, but only 4% completed college. This study showed that 58% of GED earners worked during the study period. While this study was performed to reiterate the four-year high school graduation timeline, it was helpful in understanding how GED earners perform and where they rank amongst peers when they enter a postsecondary education institution and the workforce. The annual earnings throughout the study for GED earners ranged significantly lower than on-time graduates range but was higher than late graduates and non-completers. In 2014, a GED earner's annual earnings ranged from \$6,460 - \$8, 279. In 2015, a

GED earner's median annual earnings ranged from \$8,007 - \$10,100. In 2016, a GED earner's median annual earnings ranged from \$9,887 - \$12, 123. In 2017, a GED earner's median annual earnings ranged from \$13,430 - \$13,644. In 2018, a GED earner's median annual earnings ranged from \$14,394 - \$16,338. In 2019, a GED earner's median annual earnings ranged from \$16,272 - \$18,552 (Uretsky & Henneberger, 2023).

While the Uretsky and Henneberger (2023) study goes into deep detail about late graduates, GED earners, non-completers, and on-time graduates, the researcher for this study would like to see how a specific group of GED program participants performs when considering retention into postsecondary education and the workforce. There will be no need for a control group to compare results to, or to check performance against. This study will focus on how well student retention is going at a specific program, and there will be future research ideas included based on the findings.

Demographic Barriers for GED Students

Demographic barriers exist to varying degrees and to multitudes of adult learners. Some students have multiple barriers that make completing a high school equivalency credential difficult. In the study from McDonnell et al. (2014), demographic barriers experienced by adult education students were recognized as working in low-wage jobs with nonstandard work hours, skills training gap, lack of career and college awareness, unstable childcare arrangements, inadequate health insurance and/or access to healthcare, financial and personal challenges, and undependable transportation. The study is a call to action for community colleges, trying to improve retention rates, to understand the barriers that the adult learners experience and provide solutions. Statistics from McDonnell et al. (2014) study range from enrollment status, to retention, and earning credentials. According to the study, half of the adult learners that enroll

into classes drop out before they reach 35 study hours, or 10 weeks of participation. The study goes on to mention that less than 3% of the adult learners who start in adult education classes progress into a credit course and complete an associate degree from a community college. The final statistic from McDonnell et al. (2014) is that only 5% of GED earners get a postsecondary credential or degree.

The McDonnell et al. (2014) study focuses on developing different student supports for adult learners, such as, a plan for academic advising, nonacademic advising, career services, financial services, counseling, and workforce investment boards and career centers. The journal article ends with recommendations to community colleges that offer adult education programs and services to those with demographic barriers. Although community colleges have a plan or can create a plan for student services, it is not always easy. There is a need for coordination and collaboration from departments across the college campus and the community. There needs to be a flexible structure that allows ease of participation for adult learners. McDonnell et al. (2014) mentions the following as a final push for a comprehensive student support model: providing established supports to underprepared and nontraditional students, make student support part of the entire program, develop partnerships that will complement the student support services, communicate with all individuals involved in the student support services, and provide easy access to services so barriers are reduced.

The change in GED format has led to the privatization of the high school equivalency credential, which made access and success more difficult for those that experience demographic barriers such as unemployment, seasonal work, low income, and government assistance stipends (Page-Reeves, 2015). In 2014, not only was the GED trademark sold to a for-profit organization, but also the test format and the pricing changed drastically – the format went to computer-based

testing only and the price doubled (Page-Reeves, 2015). In the article by Page-Reeves (2015), the reality of obtaining a GED is analyzed as an opportunity to improve someone's life chance. However, obtaining the GED credential is not easy since there have been many economic crises and many tax cuts that have reduced revenue streams of support for adult education programs.

Page-Reeves (2015) discusses that many people taking the GED are struggling with the computer-based testing format because many do not have access to computers, and many adult education programs that assist adult learners do not have the number of computers to service all students. This study points out that the new computer-based format has become a barrier because people must become computer-literate before they are prepared to handle the test content. Statistically, the change in testing format and cost resulted in the following data: in 2013, 743,000 people completed the GED test and 560,000 passed, while in 2014 only 248,000 individuals took the GED test and only 86,000 passed (Page-Reeves, 2015). While the author does not provide much information toward a solution, it is evident from Page-Reeves (2015) that prices are likely to continue to increase, which would result in fewer individuals taking and passing the GED test. There is a call to action for citizens and reformers to push for demand of increasing funds for adult education programs, which would provide a better life for students, their families, and entire communities.

In the research study from Liu (2020), understanding GED students based on their employment status in a community college/city college presented data stating that 60% of newly enrolled students claimed they were unemployed. Similarly, in the study from Prins et al. (2012), in Pennsylvania there were 56% of GED students that were unemployed and 38% received some type of government assistance. Although both of these studies focused on other major conflicts in adult education (i.e., online GED preparatory classes for rural students and students' learning

levels and learning about GED classes), they provide further insight into the different demographic barriers that students experience. The authors also discuss the need for resources to overcome barriers. The researcher of this study notes that the 60% and 56% of unemployment for participants is very similar, which asks the question does unemployment status affect participation in GED programs notes it? This was not a question featured in either of the previously mentioned studies, but it is a question that the researcher will pose for this study.

As previously mentioned, adult education GED preparatory classes are offered in-person and online, and one of the more frequently used versions of an in-person class is available in correctional facilities. In the study from Berridge and Goebel (2013), a modified case study was performed to collect data from interviews and a survey pertaining to the realities of a group of participants – inmates, a GED supervisor, teachers, and a jail official – that could give insight on motivation and participation. This study presented the following research questions: (1) how stakeholders view participation in a GED program in a county jail. (2) What are the perceived obstacles to inmate participation in a GED program in a county jail? (3) What are the reasons inmates cited for their participation? The Berridge and Goebel (2013) study found the following themes from the research, (1) increased self-esteem and a positive change in behavior of the inmates were directly linked to participation in the program, even though low inmate participation was a concern; (2) lack of cooperation from the officers was perceived as an obstacle to the program; and (3) achievement of goals, greater sense of self-worth, and encouragement from the teacher were reasons the inmates participated.

Not only is incarceration status a barrier (formerly incarcerated/ex-offender), but there are sub-barriers that incarcerated individuals must face. Berridge and Goebel (2013) discovered that inmates were not the best with time management, but it was not because of disinterest or

lack of trying. The time management issue was attributed to facility lockdowns, class cancellations, and students being pulled from class for various legal reasons or kept from class because of infractions in their pods. Another sub-barrier for incarcerated individuals was the uncooperativeness expressed by officers in the facilities – this appeared in the form of issuance or non-issuance of request forms to participate in the GED class. The ideas of “wasting time” and “never changing” were brought up due to many guards participating in the Berridge and Goebel (2013) study were interviewed and recorded using these phrases. The reasoning for student participation was the same as the barriers outlined by other studies in this section. Most students were going to be released at some point and wanted to obtain a living-wage paying job, as well as attend a community college and earn a degree. Berridge and Goebel (2013) mention a few other reasons for participating in the GED program, which were providing for dependents and being financially stable. Based on the research from Berridge and Goebel (2013), it is understood how GED preparatory classes are functional inside of a correctional facility, but the researcher of this study would like to understand if previous incarceration status effects retention and persistence of GED students when not incarcerated.

In another study by Darolia et al. (2021), data were reported to reflect that over 10% of the GED credentials issued each year are from correctional facilities, and nearly 30% of the formerly incarcerated population have a GED credential as their highest educational attainment. Overall, the Darolia et al. (2021) study aims to understand post-release versus pre-entry labor market outcomes for those who passed the GED and those who did not earn a GED certification. In this study, it is found that the GED leads to short-term higher quarterly earnings and employment rate increases of as much as 25-30%. Throughout the Darolia et al. (2021) study, a common theme arises – educational programs have become one of the more popular approaches

to help prisoners develop skills and improve their future employment and economic prospects. While the study provides sufficient data to prove that the GED has more promise for those with lower academic levels that have been incarcerated, the study does not discuss how previous incarceration status effects those that are earning a GED credential outside of a correctional facility and inside of an adult education program. This study will feature those enrolled in GED programs that have self-reported a previous incarceration status or an ex-offender status.

Connections

The literature sections provide a comprehensive exploration of self-directed learning within the context of adult education, with a particular focus on GED preparation programs. By starting with the foundational works from Knowles (1975), the importance of learners taking initiative in diagnosing learning needs, goals, and managing their learning processes is revealed by an exploration of self-directed learning. The foundational works are built on by Garrison (1997), with the introduction of concepts like self-management, self-monitoring, and motivation within the realm of self-directed learning. These works are expanded on by a brief discussion of Bierema and Merriam (2013) and the emphasis on learner self-direction.

The inclusion of self-directed learning in GED preparation programs introduced specific objectives from Aud et al (2011) when thinking of fostering self-directed learning characteristics among GED students, such as problem-solving skills and effective communication skills. These objectives reflect the broader shift in GED testing objectives towards assessing critical thinking and real-world problem-solving skills, as noted by Rutschow and Cary-Ross (2014).

However, despite efforts to promote self-directed learning among GED students, demographic barriers continue to pose significant challenges. Studies by McDonnell et al. (2014) and Page-Reeves (2015) highlight the socioeconomic and structural obstacles faced by adult

learners, including unemployment, financial constraints, and limited access to resources. The unique challenges faced by incarcerated individuals seeking to obtain a GED credential, as illustrated by Berridge and Goebel (2013) and Darolia et al. (2021), further accentuate the need for tailored support and interventions within GED preparation programs.

Summary

In this chapter, the discussion provides a brief history of the GI Bill, the GED test generations, and self-directed learning theory. When considering the Self-Directed Learning in the GED Classroom section, the researcher of this study would like to point out that the sample population, despite which form of learning method preference they choose, are responsible for communication, being cooperative in any location that they are participating in (i.e., following in-person classroom rules, online learning classroom rules, rules set by the learning management platforms, etc.), and successfully using all knowledge learned to pass the GED test. This portion of the study is not about proving that the southern state's community college adult education classes participate in self-directed learning, but instead is about how well they are progressing while participating in self-directed learning.

The section about Retention in the GED Classroom provided satisfactory statistics, but only for retention in the workforce, or only retention into postsecondary education. The researcher for this study would only like to see how a specific group of GED program participants performs when considering retention into postsecondary education and the workforce. There will be no need for a control group to compare results to, or the check performance against. This study will focus on how well student retention is going at a specific program, and there will be future research ideas included based on the finding.

While the literature in the Demographic Barriers for GED Students section provides sufficient data to prove that the GED has more promise for those with lower academic levels that have been incarcerated, the studies do not discuss how previous incarceration status effects those that are earning a GED credential outside of a correctional facility and inside of an adult education program. This study will feature those enrolled in GED programs that have self-reported a previous incarceration status or an ex-offender status. Not only will previous incarceration status be considered in this study, but also unemployment and underemployment, and government assistance programs will be viewed in relation to persistence and retention.

In Chapter 3, the research design and study will be outlined and explained further. The variables mentioned above, as well as the gaps provided by available literature will be tested and filled with the data and statistics provided by this study.

CHAPTER 3: METHODOLOGY

Introduction

This quantitative research study was conducted in order to explore specific variable relationships pertinent to General Educational Development (GED) participants and adult learning . This chapter describes the research design, the population and sample, the data collection process, the research questions, and the data analyses.

This quantitative research study utilized a secondary dataset that looked at GED participants and the relationships between demographic barriers, retention, and self-directed learning. The GED students in this study self-reported demographic barriers and other demographic characteristics (age, sex, ethnicity), along with self-directed learning preferences. Demographic barrier factors analyzed for this study included incarceration status, government assistance programs including Temporary Assistance for Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP) recipients, and employment status (unemployed or underemployed) (see Appendix A).

Research Questions

Research Question #1: Is there a relationship between a GED student's employment status and persistence? Does this relationship differ with sex?

Research Question #2: Is there a relationship between a GED student's employment status and self-directed learning method preference? Does this relationship differ with sex?

Research Question #3: Is there a relationship between GED students' participation in government assistance programs (TANF, SNAP) and self-directed learning method preference? Does this relationship differ with sex?

Research Question #4: Is there a relationship between a GED student's previous incarceration status and the self-directed learning method preference? Does this relationship differ with sex?

Sample and Population

For this research study, secondary data, or archival data, was sourced from a large state database that houses student information. The database is specific to a southern state's Adult Education department within the state's system office. Any individual who has enrolled in an adult education program across the state (at any community college, location, institution, or GED program) seeking a high school equivalency (GED) has submitted the required information to participate in the program without cost or fees. Thus, GED participants voluntarily self-report data to each adult education department when showing interest in the adult education program in the state. The assumption for this secondary dataset is that there may be response bias based on the self-reported portion of the data as participants been asked to self-report demographic barriers when enrolling into a GED program.

Access to the southern state's secondary dataset allowed for convenience sampling on a large GED population. The data represented the GED students' self-reported demographic barriers, as well as student attendance rates, class enrollments, student age ranges, student ethnicities, and measurable skills gains (MSGs) by specific programs (see Appendix A). These categories are determined by the southern state's system office, specifically the Adult Education Department, and were coded in the database and matched with student progress.

The sample retrieved for this study was from a specific southern state community college's GED program during the 2021 program year (July 1, 2021 – June 30, 2022). This sample was selected due to the completed status of the data, meaning that it has been recorded by

the state's Adult Education Department and labeled as completed and useful for research and study. The administrator responsible for accessing and downloading the data removed confidential information including the student's name and the identification number (provided to students at enrollment). The sample size was $n = 867$. This study followed all processes and procedures set by the IRB at Auburn University (see Appendix X).

Identification of Variables

The data represented the GED students' self-reported demographic barriers, as well as student attendance rates, class enrollments, student age ranges, student ethnicities, and measurable skills gains (MSGs) by specific programs. The GED programs and adult education classes offer multiple self-directed learning methods that GED students can choose from to participate in the programs (in-person instruction or independent digital instruction). The sample population, despite which form of learning method preference they chose, were responsible for communication, being cooperative in any location that they were participating in (i.e., following in-person classroom rules, online learning classroom rules, rules set by the learning management platforms, etc.), and successfully using all knowledge learned to pass the GED test. These expectations conform to self-directed learning research and standards (Aud et. al. (2011; Garrison; 1997; Knowles, 1975), and thus, can be identified as the learning preferences for this research study.

The data retrieval tool allowed access to the datasets that were used for this research. The first dataset was "Class Enrollment," which provided the total of participants in the convenience sample. This data set included the class type, which determined the self-directed learning method preference students chose. The second dataset was "MSG by Program" (measurable skills gains). The results also have a section that is dedicated to the MSG rate for the adult education program;

i.e., the percentage of success for those that earned an MSG with the marked specific demographic barrier on the enrollment form. The third dataset is the “Student Attendance Rate.” This report has three main categories for student attendance – class hours, attendance hours, and attendance rate. Adult education faculty and staff report student attendance and enter study hours on a department-mandated weekly basis.

The measurable skills gains (MSGs), as defined for this research study, are ways of showing study progression and success in adult education classes. MSGs were divided into several categories based on the path that a GED student chooses; either postsecondary education or workforce pathways (see Table 1).

Table 1*Measure Skills Gains (MSG) Types*

| Measurable Skill Gain | Details |
|---|--|
| Postsecondary Enrollment | Documented Post-Exit enrollment in postsecondary education or training during the same program year that contains the date of exit. |
| High School Diploma/Equivalency Achievement | Documented attainment of a high school diploma/equivalency (only applicable to those who did not have diploma/equivalency at date of participation). |
| Postsecondary Transcript or Report Card | Documented postsecondary transcript or report card that shows a participant is meeting academic standards as defined by the policy of the State. |
| Progress Milestones | Satisfactory or better progress report towards established milestones, such as completion of OJT or completion of one year of an apprenticeship program or similar milestone, from an employer or training provider who is providing training. |
| Skills Progression | Successful passage of an exam that is required for a particular occupation or progress in attaining technical or occupational skills as evidenced by trade-related benchmarks, such as knowledge-based exams. |

Measures of Variables

Variable measurements are particularly important when considering research questions. The variables in the research study determine which analysis to use for the study, as well as which are considered independent, dependent, or control. Table 2 highlights the variables and their respective measurements to provide further context on the data analyses.

Table 2*Variable Concepts and Indicators*

| Variable | Measurement Criteria |
|--|---|
| Employment Status | Employed or unemployed during 2021 while enrolled in the adult education program. |
| Retention (workforce and/or postsecondary) | MSG types: postsecondary enrollment, high school diploma/equivalency achievement, postsecondary transcript or report card, progress milestones, and skills progression. |
| GED Students' Persistence | Categories by hours: (0-40, 41-80, 81-120, 121-160, 161-200, 201-300, 301-400, 400+).* |
| Self-Directed Learning Method Preference | In-person instruction or independent digital instruction |
| Government Assistance Participation | SNAP recipient and/or TANF recipient. Students either mark one or both on the enrollment form, or unmarked. |
| Previous Incarceration Status | Previously incarcerated or not previously incarcerated. |

Note. * These categories were formed based on the array of study hours spent in the adult education program. The categories were selected to make it easier when running data in coding program to view results. These categories were not selected by the researcher, but were selected by the state's system office over Adult Education.

Variable Analysis

In order to explain the analysis process, Table 3 provides the research question, the respective variables, and the statistical methods utilized to answer the question. A longer list of all demographic barriers collected from the dataset, as well as an example GED student enrollment form, are provided in Appendix A.

Table 3

Research Questions with Variable and Analysis

| Research Question | Variables | Analysis |
|--|--|--|
| <p>#1: Is there a relationship between GED students' employment status and persistence? Does the relationship differ for sex?</p> | <p>Employment status – 2 levels – self-reported or not reported.</p> <p>Student's persistence – multiple levels</p> | <p>Logistic Regression Analysis x is the input value y is the predicted output</p> $y = \frac{e^{\beta_0 + \beta_1 \times x}}{1 + e^{\beta_0 + \beta_1 \times x}}$ <p>β_0 is the bias or intercept term β_1 is the coefficient for the single input value (x)</p> <p>Multiple Linear Regression</p> $\hat{Y} = b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p$ <p>\hat{Y} is the predicted or expected value of the dependent variable X_1 through X_p are independent variables b_0 is the value of Y when all of the independent variables are equal to zero b_1 through b_p are the estimated regression coefficients</p> |
| <p>#2: Is there a relationship between GED students' employment status and self-directed learning method preference? Does the relationship differ for sex?</p> | <p>Self-Directed Learning Method Preference – 2 levels – in-person or independent digital</p> <p>Employment Status – 2 levels – employed or not employed</p> | <p>x is the input value y is the predicted output β_0 is the bias or intercept term β_1 is the coefficient for the single input value (x)</p> |

| Research Question | Variables | Analysis |
|--|--|---|
| #3: Is there a relationship between GED students' participation in government assistance programs (TANF, SNAP) and self-directed learning method preference? Does the relationship differ for sex? | Self-Directed Learning Method Preference – 2 levels – in-person or independent digital Government assistance programs – 2 levels - self-reported or not reported | x is the input value y is the predicted output β_0 is the bias or intercept term β_1 is the coefficient for the single input value (x) |
| #4: Is there a relationship between GED students' previous incarceration status and the self-directed learning method preference? Does the relationship differ for sex? | Self-Directed Learning Method Preference – 2 levels – in-person or independent digital Incarceration Status – 2 levels – previously incarcerated or not previously incarcerated | x is the input value y is the predicted output β_0 is the bias or intercept term β_1 is the coefficient for the single input value (x) |

Research Design

This study involved secondary data, or archival data, sourced from the specific southern state’s database for GED students participating in adult education programs. Logistic regression analysis was used to establish an acceptable model that helped define the relationship between the predictor (independent) variables and the predicted (dependent) variables (Field, 2018). Logistic regression ensures the establishment of a regression model without assumptions such as normality, continuity, and co-variance (Field, 2018).

Each research question was tested with a separate logistic regression to determine the various predictors for the variables used. All analyses utilized R software for statistical analysis

and interpretation. Due to the categorical variables in the first research question, an ordinal logistic regression analysis was used to model the relationship between the dependent variable (persistence) and the independent variables (employment and sex). When the dependent variable is a categorical variable with at least three choices, and is ordinally scaled, ordinal regression analysis is used (Field, 2018). The dependent variable *persistence* was also observed as a continuous variable. Thus, a multiple regression analysis was also tested for model fit for research question 1. For research questions 2, 3 and 4, binary logistic regression analysis was used to model the relationship between a dependent variable and one or more independent variables that were categorical (Spitzig, 2021).

To understand the fit of the models and the data provided, the researcher used odds and log (odds) to find an appropriate s-shaped curve (Field, 2018). Parameters were needed to maximize the likelihood that the model is a good reference for data observed in the real world. Therefore, the analysis used maximum likelihood estimation (MLE) (source).

Data Analysis

Research Question #1: Is there a relationship between a GED student's employment status and persistence? Does the relationship differ for sex?

The researcher observed the variables persistence with employment status and sex (female/ male). The categories for the persistence variable ranged from 0 – 400 hours of study time that students completed while enrolled during the 2021 program year. Thus, persistence was divided into eight categories by hours (0-40, 41-80, 81-120, 121-160, 161-200, 201-300, 301-400, 400+). Persistence was analyzed based on employment status and sex. The analysis could be completed using either an ordinal logistic regression analysis or a standard multiple regression analysis, depending on the use of either a categorical or continuous variable for persistence.

Much like Spitzig (2021), persistence for this research question referred to continued student progress and study time. For ordinal regression analysis, the odds for the categories were observed for GED students, either employed or unemployed, and the likelihood of the study time, or persistence in the adult education program. As the persistence variable could also be observed as a continuous variable, a multiple linear regression analysis was also completed. The final analysis used for this question was dependent on the statistical evidence (results) and which approach proved the best fit and model for answering the research question.

Research Question #2: Is there a relationship between a GED student's employment status and self-directed learning method preference? Does the relationship differ for sex?

This question allowed analysis of the GED students who are either employed or unemployed to see if there is a relationship with the type of self-directed learning method preference (independent digital or in-person instruction). This question also looked for a relationship between sex. A logistic regression was the best approach to make variable observations because of the categorical nature of the variables. Self-directed learning was the dependent variable for this research question, while employment status and gender were independent variables. The students of this current study were already enrolled in the GED program and were either employed or unemployed.

Research Question #3: Is there a relationship between GED students' participation in government assistance programs (TANF, SNAP) and self-directed learning method preference? Does the relationship differ for sex?

This question allowed the researcher to analyze if there was a relationship for GED students that were participating in government assistance programs and type of self-directed learning method preference (independent digital or in-person instruction). This question also

looked for a relationship between sex. Income level (government assistance) and education level have been shown to affect digital literacy skills (Daniels (2021; Urbancikova et al., 2017), which affect digital literacy skills and may affect the choice of learning methods in GED programs. Thus, this may imply that those on government assistance may be only able to participate in person in the educational programs. A logistic regression was the best approach due to the categorical nature of the variables. Self-directed learning was the dependent variable for this research question, with the government assistance program status and sex as the independent variables.

Research Question #4: Is there a relationship between a GED student's previous incarceration status and the self-directed learning method preference? Does the relationship differ for sex?

This question analyzed GED students that indicated a previous incarceration status to see if there is a relationship with the type of self-directed learning method preference (independent digital or in-person instruction). A logistic regression was the best approach to make variable observations using self-directed learning as the dependent variable, and the previous incarceration status and gender as the independent variables.

Chapter 4: Findings

In this chapter, demographic and statistical findings from the data, as well as descriptive findings and assumptions between measures will be presented. Along with a discussion of findings for each research question, tables and figures from the data analyses will be provided.

Purpose of the Study

This study seeks to understand the academic persistence and influence of demographic challenges of GED students engaged in self-directed learning. Specifically, the research examined the demographic factors impacting these students' retention rates in postsecondary education or the workforce.

Research Questions

1. Is there a relationship between a GED students' employment status and persistence? Does this relationship differ in regard to sex?
2. Is there a relationship between a GED students' employment status and self-directed learning method preference? Does this relationship differ in regard to sex?
3. Is there a relationship between a GED students' participation in government assistance programs (TANF, SNAP) and self-directed learning method preference? Does this relationship differ in regard to sex?
4. Is there a relationship between a GED students' previous incarceration status and the self-directed learning method preference? Does this relationship differ in regard to sex?

Participant Demographic Findings

This study population included $n = 867$ GED students from a southern state community college. The participant data was recorded during the 2021 Program Year (July 1, 2021 – June 30, 2022). Table 4 provides the demographic characteristics of the participants, including sex,

incarceration (previously incarcerated), assistance (government participation in SNAP and TANF), employment, SDLR (self-directed learning readiness method – in person or digital instruction), persistence (hours studied), and MSG (measurable skills gains). When downloading and cleaning the data, ID was assigned for students in place of “Student Identification Number” since that information is confidential.

Statistics that were relevant to the research questions included that slightly over 50% of the students were male ($n = 440$) and over 49% of students were female ($n = 427$). This particular community college is one of the larger community colleges in the state, so this sample may be larger than most from the same state. Participants not being previously incarcerated was 93.54% ($n = 811$). According to the data, more students were employed at 75.55% ($n = 655$). Also, according to the data, more students did not receive assistance from government programs at 83.85% ($n = 727$). As for self-directed learning method preference, the dataset descriptives reveals that digital instruction and in-person instruction were within a few percentage points of each other – with digital instruction participation at 58.48% ($n = 507$) and in-person instruction at 41.52% ($n = 360$). More than half of the students did not earn an MSG, 52.83% ($n = 458$). There was 50.87% of students ($n = 441$) that studied 0-40. The 0-40 level for persistence was the most participated level.

Table 4

Descriptive Statistics

| Demographic | Levels | Frequency | Percentage |
|---|--------|-----------|------------|
| ID (Gender) | Female | 427 | 49.25% |
| | Male | 440 | 50.75% |
| Incarceration (Previously Incarcerated) | Yes | 56 | 6.46% |
| | No | 811 | 93.54% |

| | | | |
|---|-------------|-------|--------|
| Assistance (Government Participation in SNAP & TANF) | Yes | 140 | 16.15% |
| | No | 727 | 83.85% |
| Employment | Employed | 655 | 75.55% |
| | Unemployed | 212 | 24.45% |
| SDLR | Digital | 507 | 58.48% |
| | In-Person | 360 | 41.52% |
| Persistence | 0-40 | 441 | 50.87% |
| | 41-80 | 234 | 26.99% |
| | 81-120 | 89 | 10.27% |
| | 121-160 | 33 | 3.81% |
| | 161-200 | 27 | 3.11% |
| | 201-300 | 26 | 2.99% |
| | 301-400 | 12 | 1.38% |
| 400+ | 5 | 0.58% | |
| MSG | Enrollment | 41 | 4.73% |
| | Equivalency | 59 | 6.81% |
| | Milestone | 139 | 16.03% |
| | Progression | 101 | 11.65% |
| | Transcript | 69 | 7.96% |
| | None | 458 | 52.83% |

Note. $N = 867$. The “Assistance” variable is for SNAP and TANF participants. The “Persistence” variable is total hours that students have studied throughout the duration of participation in the adult education program. The variable “MSG” stands for Measurable Skills Gains, which is the credential students earned while participating in the adult education program (see Appendix A).

Results

Research Question 1: Is there a relationship between a GED students’ employment status and persistence? Does this relationship differ in regard to sex?

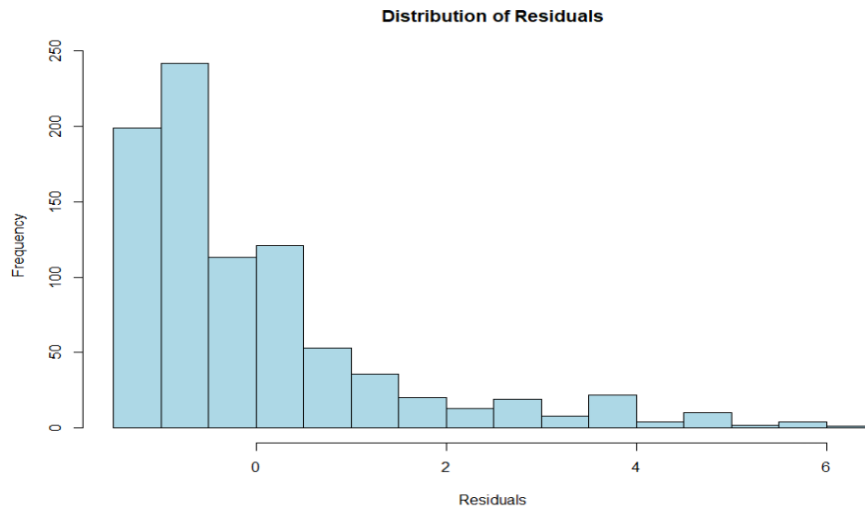
The primary examination for this question was to view the likelihood of persistence (study hours) of GED students (male and female) who were either unemployed or employed.

This research question was first tested by using ordinal logistic regression and then using multiple linear regression as the variable for persistence could be either categorical or continuous. Ordinal logistic regression was used when using more than two categories for the persistence variable (see Table 4). Ordinal regression facilitated interpretation of the results by examining how the predictor variables (employment and sex) influenced the likelihood of an individual transitioning between categories of the outcome variable (persistence) (Agresti, 2007). Multiple linear regression used the variable persistence as a continuous variable to examine if there were any linear relationships according to the sample size and distribution of the data.

Based on the distribution of the residuals in Figure 1 for the multiple linear regression model, it can be assumed that this form of analysis was not the best possible approach as the skewness of the distribution was negative due to the number of residuals left of 0. As shown in Figure 1, there was not a Bell-shaped Curve or a normal distribution. This skewness led to the assumption that normality had been violated and the reliability of the statistical test was low. Therefore, persistence should not be treated as a continuous variable and thus, an ordinal linear regression would be used for analysis of the research question.

Figure 1

Multiple Linear Regression – Distribution of Residuals



Ordinal logistic regression facilitated clear interpretation of coefficients and the underlying relationships between variables and outcome categories. As shown in Table 5, A positive coefficient of 0.36 for sex indicated that males had higher odds of being in a higher persistence category (Bozpolat, 2016). Simply stated, this coefficient signaled that being male may mean studying for more hours in an adult education program. The employment status coefficient (employment = employed) was 0.69 (see Table 5), indicating that being unemployed may lead to higher odds of persistence; that being unemployed may lead to studying for more hours in an adult education program. It is suggested by the researcher that the two variables, employment and sex, hold statistical significance for persistence.

Table 5*Model Summary for Research Question 1*

| | Value std. | Error | T value | P value |
|-----------------|------------|-------|---------|----------|
| Sex | 0.36 | 0.15 | 2.40 | 0.02 |
| Employment | 0.69 | 0.21 | 3.31 | 9.33e-04 |
| Employment:Sex | 0.01 | 0.29 | 0.04 | 0.97 |
| Intercepts | | | | |
| 0-40 121-160 | 0.39 | 0.11 | 3.43 | 6.04e-04 |
| 121-160 161-200 | 0.55 | 0.11 | 4.77 | 1.84e-06 |
| 161-200 201-300 | 0.68 | 0.12 | 5.87 | 4.36e-09 |
| 201-300 301-400 | 0.81 | 0.12 | 6.91 | 4.85e-12 |
| 301-400 400+ | 0.87 | 0.12 | 7.40 | 1.36e-13 |
| 400+ 41-80 | 0.89 | 0.12 | 7.60 | 2.95e-14 |
| 41-80 81-120 | 2.57 | 0.15 | 17.19 | 0.00 |

Note. *** significance at $p < .05$

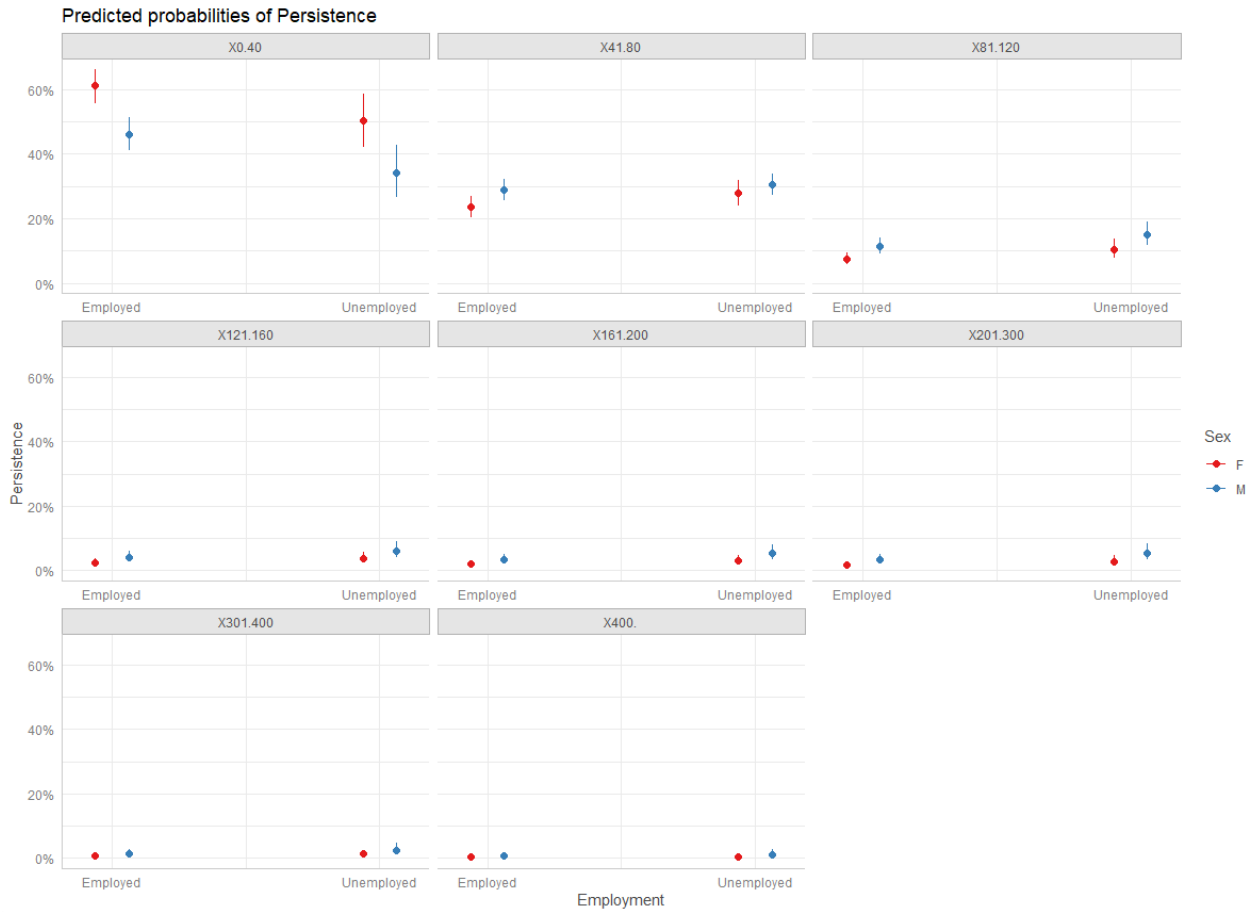
From Table 5, the positive coefficient of sex suggests that being male is associated with a 0.36 increase in the log odds, or have 1.43 greater odds of being in a higher persistence category. For this analysis, the odd ratio was determined to be the best form of reporting because it made the coefficients more interpretable. The odd ratio was found by exponentiating the log odds. To further confirm the significance of the two variables, the p -values for both sex and employment are below the significance level of $p < 0.05$. The positive coefficient, which has been converted from log odds to odds ratio, for employment implies that being unemployed is associated with 1.99 greater odds for being in a higher persistence category. These coefficient values and p -values are both statistically significant. Based on the p -values for the two variables, employment status has a stronger significance on persistence level than sex, but both are significant for this research study. The interaction term, employment and sex, tested whether the effect of employment on the outcome differs across categories of sex. The coefficient being 0.01 suggests that there is no meaningful interaction effect. The p -value indicates the same effect, which is

there is no statistically significant effect, and the relationship between employment and persistence does not change significantly based on sex. This data was ran with the exclusion of the interaction between employment and sex, and both models were within the same range for coefficients and *p*-values.

Figure 2 shows that females that were employed had higher odds of persistence, while enrolled in the adult education program at the persistence level of 0-40 study hours. Figure 2 also shows that unemployed females also had higher odds of persistence at the same level of persistence in study time. The odds changed for the 41-80 persistence study hours, and unemployed males had the higher odds of participating in this persistence level. At the 81-120 persistence level, unemployed males were higher. Overall, though, there seemed to be little discernible difference based on sex, regardless of employment status. Notably, being unemployed appeared to positively influence the likelihood of higher persistence levels.

Figure 2

Predicted Probabilities of Persistence Graphic



Research Question 2: Is there a relationship between a GED student’s employment status and self-directed learning method preference? Does this relationship differ with sex?

This question was studied using binary logistic regression because the dependent variable, which is the preference for self-directed learning methods had only two options/levels (either digital or in-person). The analysis considered sex (male and female) and employment status (unemployed or employed) as predictor variables. In this research, the analysis helped understand how the employment status (being employed or unemployed) of GED students (both male and female) related to their choices of self-directed learning method (digital or in-person). In the model summary for Table 6, the analysis examined the effects of employment status, sex,

and their interaction on the likelihood of self-directed learning. The intercept was statistically significant ($p < 0.001$), indicating that the baseline probability of the outcome (when all predictors are zero) was meaningfully different from zero. Sex was a significant predictor (0.57, $p < 0.01$), suggesting that sex plays a substantial role in influencing the self-directed learning method. Specifically, being male provides 1.76 greater odds of participating in in-person learning. However, employment status did not have a statistically significant effect on self-directed learning method at the $p < 0.05$ significance level with 1.33 greater odds that being unemployed meant choosing digital instruction with the exclusion of employed males, who were more likely than unemployed males to pick in-person instruction (Wasserstein & Lazar, 2016), indicating that employment status alone does not significantly influence the likelihood of determining self-directed learning method. Additionally, the interaction between employment and sex was not significant, suggesting that the effect of employment on self-directed learning method does not significantly vary by sex. These results imply that while sex is an important variable, employment and the interaction between employment and sex do not significantly impact the binary outcome in this model.

Table 6

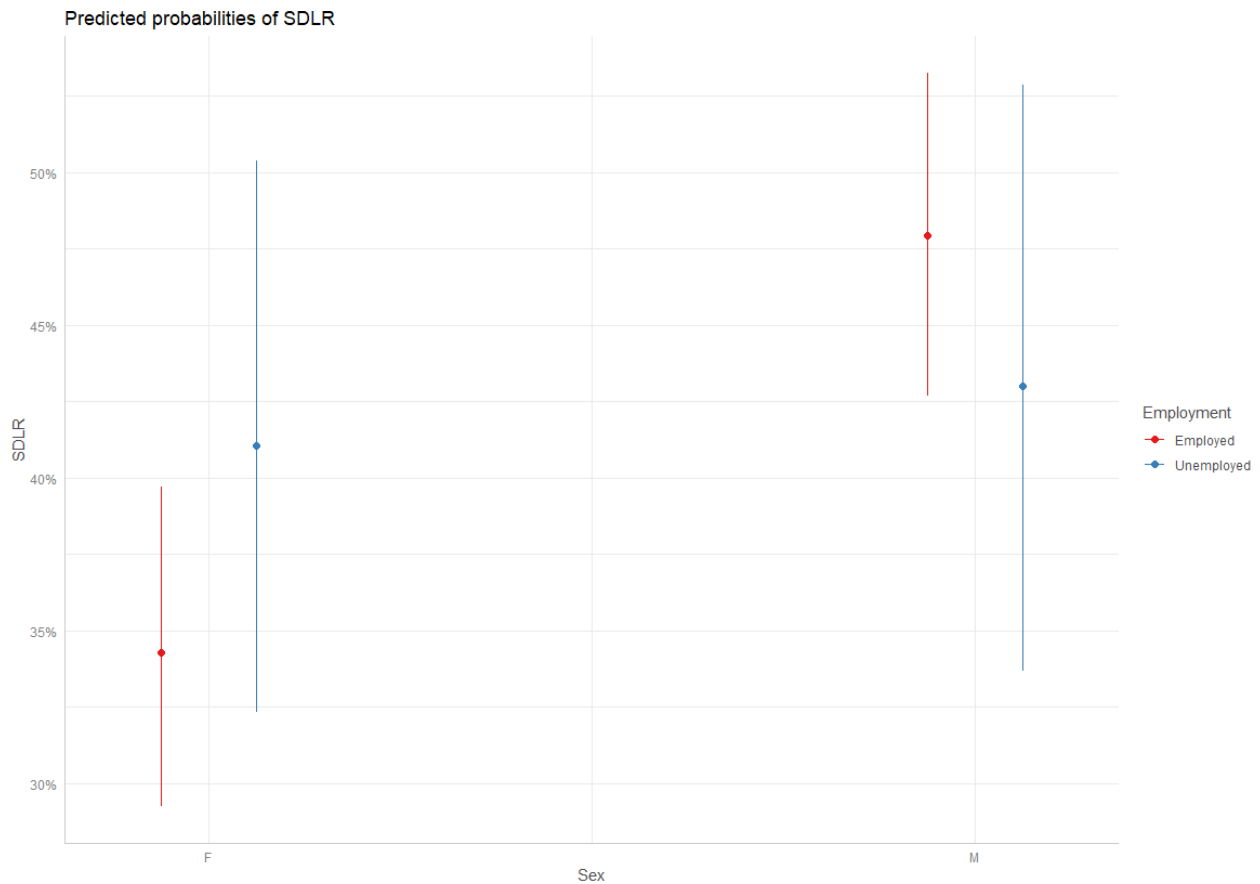
Model Summary for Research Question 2

| | Estimated Std. | Error | Z value | Pr(> z) |
|----------------|----------------|-------|---------|----------|
| Intercept | -0.65 | 0.12 | -5.48 | 4.23e-08 |
| Employment | 0.29 | 0.23 | 1.28 | 0.20 |
| Sex | 0.57 | 0.16 | 3.53 | 0.00 |
| Employment:Sex | -0.49 | 0.32 | -1.52 | 0.13 |

Note. *** significance at $p < .05$

Figure 3

Predicted Probabilities of Employment Graphic



Research Question 3: Is there a relationship between GED students’ participation in government assistance programs (TANF, SNAP) and self-directed learning method preference?

This question was analyzed by using a binary logistic regression to view if participation in government assistance programs (did participate and did not participate) of GED students (male or female) had a relationship to choose of self-directed learning method preference (digital or in-person). As shown in Table 7, the analysis was used to examine the effects of assistance, sex, and their interaction on the likelihood of determining self-directed learning method. The intercept was statistically significant ($p < 0.01$), indicating that the baseline probability of determining self-directed learning method (when no assistance is provided and for the reference

category of sex) is meaningfully different from zero. Sex was a significant predictor, suggesting that being male has a substantial odd to be 1.57 times more likely of determining self-directed learning method, which in this case would be in-person instruction. However, assistance did not have a statistically significant effect on self-directed learning method at the $P < 0.05$ level, indicating that receiving assistance does not significantly influence the likelihood of determining self-directed learning method by looking at the 0.85 odds ratio. Additionally, the interaction between assistance and sex was not significant, suggesting that the effect of assistance on determining self-directed learning method does not vary significantly across the sex variable. These results imply that while sex is an important factor, assistance and its interaction with sex do not significantly impact determining self-directed learning method.

Table 7

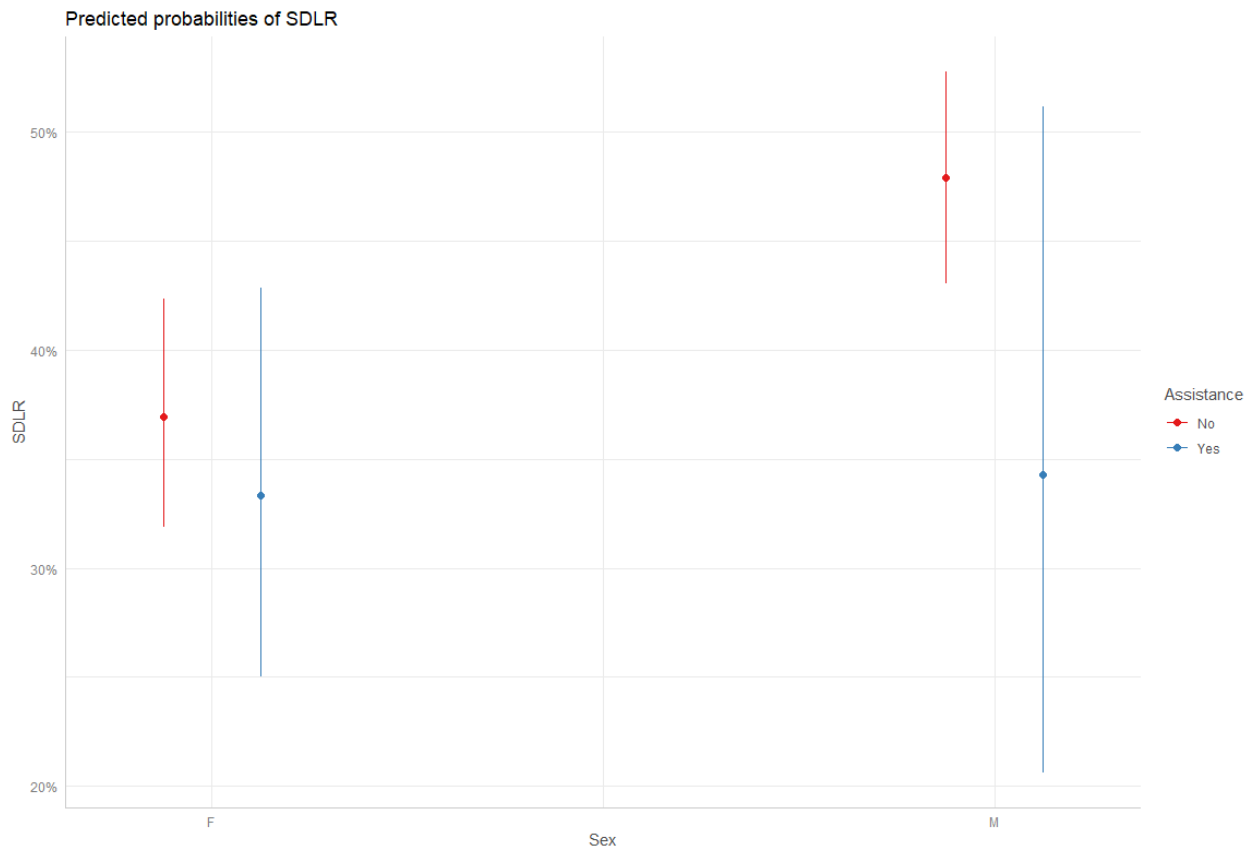
Model Summary for Research Question 3

| | Estimated Std. | Error | Z value | Pr(> z) |
|-----------------|----------------|-------|---------|----------|
| Intercept | -0.53 | 0.12 | -4.62 | 3.73e-06 |
| Assistance | -0.16 | 0.24 | -0.67 | 0.50 |
| Sex | 0.45 | 0.15 | 2.95 | 0.00 |
| Assistance: Sex | -0.41 | 0.44 | -0.93 | 0.36 |

Note. *** significance at $p < .05$

Figure 4

Predicted Probabilities of Assistance Graphic



Research Question 4: Is there a relationship between GED students' previous incarceration status and self-directed learning method preference with sex?

The binary logistic regression model summary examined the effects of incarceration history, sex, and their interaction on the likelihood of determining self-directed learning method preference. The intercept was statistically significant ($p < 0.01$), indicating that the baseline probability of determining self-directed learning method (when there is no history of incarceration and for the sex category) is meaningfully different from zero. A history of incarceration was a significant predictor based on the coefficient and the p -value, suggesting that individuals with no history of incarceration have 2.29 greater odds of in-person learning preference compared to those with such a history. Sex was also a significant predictor, based on

the coefficient and the p -value, indicating that sex plays a substantial role in influencing the determination of self-directed learning method preference. Based on Table 8 and Figure 5, males were 1.62 times likely to determine the self-directed learning method than females, and they were more likely to choose in-person learning. However, the interaction between incarceration and sex, based on the coefficients and p -values was not significant, suggesting that the effect of incarceration on the self-directed learning method does not vary significantly across the sex category. These results imply that while both incarceration history and sex are important variables, their combined effect does not significantly impact the likelihood of the binary outcome in the model.

Table 8

Model Summary for Research Question 4

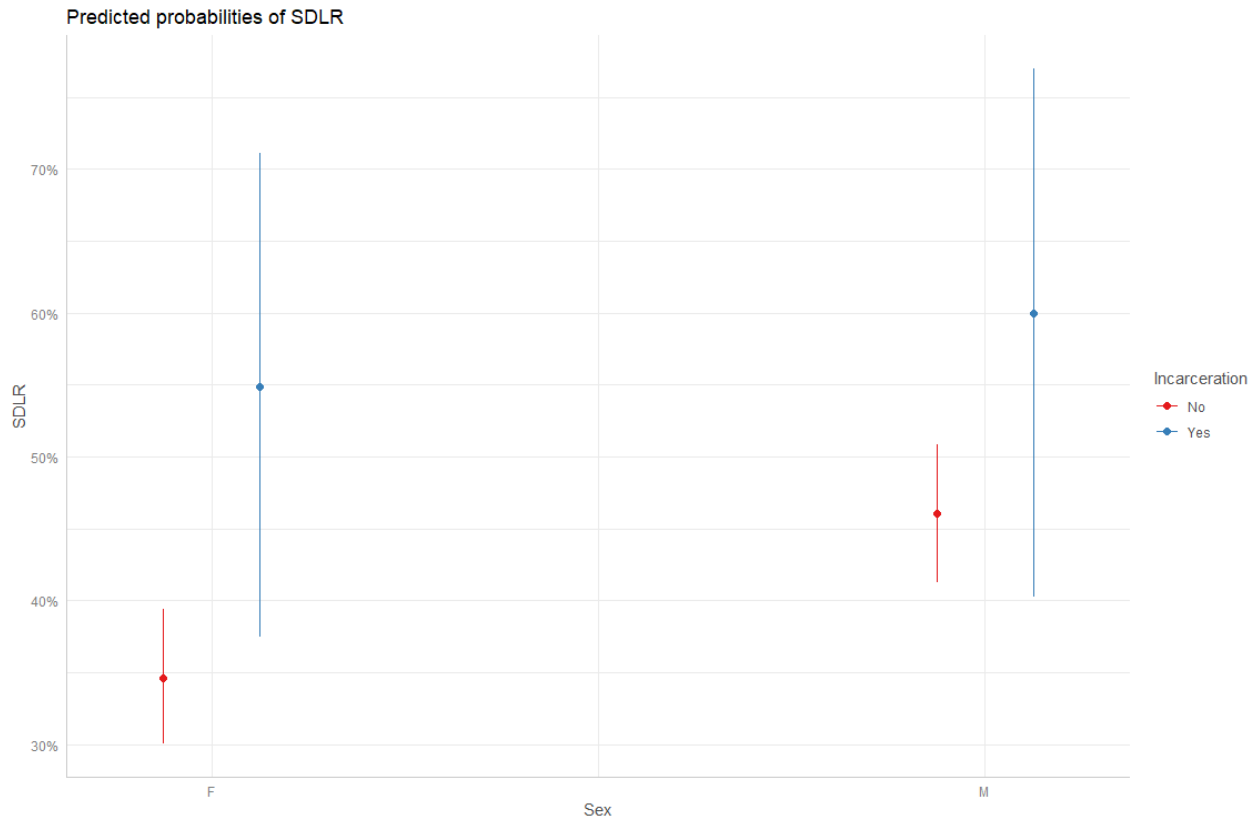
| | Estimated Std. | Error | Z value | Pr(> z) |
|--------------------|----------------|-------|---------|----------|
| Intercept | -0.64 | 0.11 | -6.02 | 1.66e-09 |
| Incarceration | 0.83 | 0.38 | 2.21 | 0.03 |
| Sex | 0.48 | 0.14 | 3.31 | 0.00 |
| Incarceration: Sex | -0.27 | 0.56 | -0.48 | 0.64 |

Note. *** significance at $p < .05$

Based on Figure 5 (see below), females had lower probability of previous incarceration if they preferred digital instruction compared to those who preferred in-person instruction. As for the males, there was a higher probability of previous incarceration for those that preferred in-person instruction compared to those who preferred digital instruction.

Figure 5

Predicted Probabilities of Incarceration Graphic



Summary

The primary focus of this research was to understand the demographic barriers that may affect a GED student’s persistence, as well as their learning method preference. The study was conducted by analyzing the data collected from a southern state’s specific community college’s Adult Education program using data that was from the program year 2021. The data was analyzed by using a combination of ordinal logistic regression (RQ1) and binary logistic regression (RQ’s 2, 3, and 4). Each research question was addressed by using model data, as well as graphics to view the information more precisely and present the statistical findings.

CHAPTER 5: DISCUSSION OF FINDINGS

Statement of the Problem

The problem is that GED students are experiencing many demographic barriers while trying to independently pursue a life-altering degree with limited assistance from educators within adult education programs. There has not been recent sufficient research on GED students that are in the classroom actively participating in self-directed learning. There has been a recent insufficient amount of research from community colleges offering adult education programs where students have multiple learning types available and self-reported demographic barriers. Adding to these pieces of literature, this study explores GED students' retention into postsecondary education or the workforce, while experiencing demographic barriers and participating in self-directed learning.

Purpose of the Study

This study aimed to explain the progress of GED students who are participating in self-directed learning while facing demographic barriers present in the sampled counties in a southern state. Knowles (1975) stated that self-directed learning is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. Since all students in the GED classrooms in the sampled southern state are taking the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying material resources for learning, choosing and implementing appropriate learning strategies, and evaluating their outcomes, they are actively participating in self-directed learning.

The research questions are as follow:

Research Question #1: Is there a relationship between a GED students' employment status and persistence in regard to sex?

Research Question #2: Is there a relationship between a GED students' employment status and self-directed learning method preference in regard to sex?

Research Question #3: Is there a relationship between a GED students' participation in government assistance programs (TANF, SNAP) and self-directed learning method preference in regard to sex?

Research Question #4: Is there a relationship between a GED students' previous incarceration status and the self-directed learning method preference in regard to sex?

Method

This quantitative research study will focus on GED participants in a southern state's community college program and the relationship between demographic barriers, retention, and self-directed learning. Access to a secondary dataset allowed for convenience sampling on a GED population. The GED students in this study self-reported demographic barriers, sex, and self-directed learning preferences. Barrier factors analyzed for this study included incarceration status, government assistance programs including Temporary Assistance for Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP) recipients, and employment status (unemployed or underemployed) (see Appendix A). The analysis for the research questions varied based on the types of variables used. For RQ 1, ordinal logistic regression was used because the variable, persistence, held more than two categories. For RQs 2-4, binary logistic regression was used because each variable analyzed contained only two categories.

Students that identified these specific demographic barriers receive food assistance and monetary assistance from a location close to the community college location. In addition, students that identify previous incarceration were held at facilities close to the researcher's community college location. Regression analyses were used to look at student retention (class enrollments and attendance), and measurable skills gains by program (see Appendix A) in relation to the above-mentioned demographics.

This study involves secondary data, or archival data, sourced from the specific southern state's database for GED students participating in adult education programs. Due to the variables in the first research question, an ordinal logistic regression analysis will be used to model the relationship between a dependent variable and on or more independent variables, with the goal of understanding the odds between variables. Due to the variables in the remaining three research questions, a binary logistic regression analysis will be used to model the relationship between a dependent variable and one or more independent variables, with the goal of understanding the odds between the variables. As noted by Spitzig (2021), prediction of binary outcomes is presented as odds of the outcome. Each research question is tested with a separate logistic regression to determine the various predictors for variables used.

Discussion of Findings

Finding 1

For the first research question, the finding suggests that the best analysis is ordinal logistic regression due to the skewness of the distribution from the multiple linear regression model summary. There was not a Bell-shaped curve or a normal distribution. From Chapter 4's Table 2, the positive coefficients for sex indicates that being male is associated with a 0.36 increase in the log odds, or a 1.43 times greater likelihood of being in a higher persistence

category. The significance of both sex and employment is confirmed by their p -values, which are below the threshold of $p < 0.05$. This means that the results are statistically significant.

Specifically, the positive coefficient for employment, when converted from log odds to an odds ratio, suggests that being unemployed is associated with 1.99 times greater odds of higher persistence. Although both variables are significant, employment status has a stronger effect on persistence than sex. The interaction term for employment and sex was tested to see if the effect of employment on persistence varies by sex. With a coefficient of 0.01, it suggests that there is no meaningful interaction effect. The p -value supports this, indicating no statistically significant interaction, meaning that the relationship between employment and persistence does not significantly differ based on sex. When the interaction term was excluded, the results for coefficients and p -values remained consistent across models. Additionally, looking at Chapter 4's Figure 2, employed females had a higher odd of persistence at the 0-40 study hours level in the adult education program. Similarly, unemployed females also showed higher odds at this level. However, at the 41-80 study hours level, unemployed males had the highest odds of persistence, and this trend continued at the 81-120 hours level, with unemployed males again showing higher persistence. Overall, there was little difference in persistence based on sex, regardless of employment status. Notably, being unemployed appeared to positively influence the likelihood of achieving higher persistence levels.

This finding aligns with existing literature suggesting that employment status can influence a student's ability to commit time to educational pursuits. Employed students may have more limited time available for studying, which may lead to lower persistence levels. Concerning the link to the existing literature, previous research has highlighted the impact of employment on educational persistence (Smith, 2017; Andrade et al., 2020). This finding adds to the body of

literature in Chapter 2 by specifically examining this relationship within the context of GED students. This finding was relevant to the literature due to the insufficient research available on GED students participating in self-directed learning while experiencing demographic barriers.

Finding 2

Sex was found to be a significant predictor ($0.57, p < 0.01$), indicating that it plays a key role in influencing the choice of self-directed learning methods. Specifically, being male increases the odds by 1.76 times of participating in in-person learning. Additionally, employment status did not have a statistically significant effect on the choice of self-directed learning methods at the $p < 0.05$ level. While unemployed individuals had 1.33 times greater odds of choosing digital instruction, employed males were more likely to opt for in-person learning (Wasserstein & Lazar, 2016). This suggests that employment status alone does not significantly influence the choice of self-directed learning methods. Moreover, the interaction between employment and sex was not significant, meaning that the effect of employment on learning method choice does not vary significantly by sex. Overall, these findings suggest that while sex is an important factor, employment status and the interaction between employment and sex do not have a significant impact on the choice of self-directed learning methods in this model.

As a link to literature, the Lieutenant Governor's Commission on 21st Century Workforce report ("Alabama Workforce Development Plan: Lt. Gov. Commission on 21st Century Workforce," 2024) emphasized skills development, industry partnerships, and innovation to prepare individuals for the demands of the modern labor market. This plan aimed to improve employment outcomes for adult learners, including GED students. Within the report, there is a call to action for quality education and training opportunities to empower individuals and advance their careers, regardless of their educational background ("Alabama Workforce Development Plan: Lt. Gov. Commission on 21st Century Workforce," 2024). The plan focuses

on innovation and technology integration gives the importance of digital learning methods in preparing for the upcoming education and training opportunities. The focus on digital learning methods over traditional in-person instruction may reflect the evolving nature of education and training in response to changing workforce needs and advancements. The shift in instruction preferences would allow more workforce participation while maintaining a higher level of education pursuit or persistence.

The Lieutenant Governor’s Commission on 21st Century Workforce report (“Alabama Workforce Development Plan: Lt. Gov. Commission on 21st Century Workforce,” 2024) also emphasized the collaboration between state employers, educators, and other government agencies to align with adult education programs, including GED initiatives. These partnerships will allow adult education programs to better address the skill gaps and Alabama workforce demands. Adult education programs already follow a K-12 curriculum with a focus on the 16 career clusters being targeted by the Lieutenant Governor’s Commission on 21st Century Workforce report (2024).

Finding 3

For the third research question, a binary logistic regression analysis was used to explore whether participation in government assistance programs (participated or did not participate) among GED students (male or female) was related to their preference for self-directed learning methods (digital or in-person). As shown in Chapter 4’s Table 4, the analysis examined the effects of assistance, sex, and their interaction on the likelihood of choosing self-directed learning method. Sex emerged as a significant predictor, indicating that being male increases the odds by 1.57 times of choosing in-person instruction. However, receiving assistance did not have a statistically significant effect on the choice of self-directed learning method at the $p < 0.05$

level, with an odds ratio of 0.85, suggesting that assistance does not significantly influence this decision. Additionally, the interaction between assistance and sex was not significant, indicating that the effect of assistance on learning method preference does not vary significantly by sex. These results suggest that while sex is an important factor in determining self-directed learning preferences, assistance and its interaction with sex do not have a significant impact on this decision.

As a link to the literature, Blagg et al. (2020) examined the relationship between government assistance participation and short-term outcomes for community college students. This study found that government assistance participation is associated with improved performance and a higher likelihood of persistence in a community college setting. Relating to this finding, the analysis between gender and government assistance program participation may reflect a call for a broader understanding of how other socioeconomic factors intersect with education pursuits and supports for adult learners.

Finding 4

For the fourth research question, a history of incarceration was found to be a significant predictor, with results showing that individuals with no history of incarceration are 2.29 times more likely to prefer in-person learning compared to those with such a history. Sex was also a significant predictor, highlighting its substantial role in influencing self-directed learning preferences. According to Chapter 4's Table 5 and Figure 5, males were 1.62 times more likely than females to choose in-person learning (Darolia et al., 2021; Berridge & Goebel, 2023). However, the interaction between incarceration and sex was not significant, indicating that the impact of incarceration on learning method preference does not vary significantly by sex. These findings suggest that while both incarceration history and sex are important factors, their

combined effect does not significantly influence the likelihood of choosing a particular self-directed learning method in the model.

As a link to literature, the Lieutenant Governor’s Commission on 21st Century Workforce report (“Alabama Workforce Development Plan: Lt. Gov. Commission on 21st Century Workforce,” 2024) states that within the last five years, the number of individuals released from Alabama Department of Corrections’ custody has ranged from 4,700 to 8,722 inmates (“Alabama Workforce Development Plan: Lt. Gov. Commission on 21st Century Workforce,” 2024). The list of barriers for those transitioning from incarceration is extensive, but many have been without educational opportunities for years, which makes this population untapped for employment and education opportunities. The link to literature from Finding 1 is relevant in this finding, too. The collaboration between employers, educators, and other government agencies aligns with adult education programs, including GED initiatives. The partnerships will allow adult education programs to better address the skills gaps and Alabama workforce demands, especially for this untapped population.

Limitations

Insufficient Statistical Power

The study included a substantial sample size ($n = 867$) of GED students, it should be considered that the different categorical variables analyses may produce insubstantial sample sizes (see Table 4). These specific categorical variables (i.e., assistance, self-directed learning method, and employment status) could limit statistical power to detect significant associations or differences, which could lead to inconclusive findings. With the findings from this study, the researcher found that all categorical variables were important for analysis, but other variables not

included in this study could have been selected for stronger findings. For example, the variable incarceration was skewed on frequency (see Table 4).

Threats to Internal Validity of Causal Inferences

The analysis used for RQ's 2-4, binary logistic regression, cannot depict the directionality of the relationship between variables. It can reveal associations with higher or lower likelihoods, but it cannot determine if those variables directly caused or influenced GED student participation. The researcher recommends further research on more community colleges in the state, as well as the nation.

Threats to External Validity (Generalizability)

This study was specific to one community college and one region of a southern state – GED students ($n = 867$). As discussed in Chapter 1 of this study, all community college Adult Education departments are linked by the same state database for this southern state. Therefore, much of this study and data can be used statewide for other community colleges because of the connection of the same statewide database. However, it is important for other community colleges in the southern state to be aware of the populations that they service because while GED students are a portion of the population in all community colleges, they may not have the specific variables that were utilized in this study. It is possible that other variables would be a better fit for other community colleges to analyze. Factors such as regional differences in local policies, socioeconomic conditions, and workforce opportunities may influence the experiences and outcomes of GED students in other settings, limiting the generalizability of the findings in this study.

Sample Findings

The primary focus of this research was to understand the demographic barriers that may or may not hinder a GED student's persistence, as well as the method they pick for study purposes. Ultimately, the study's research explored persistence in terms of demographics barriers to self-directed learning method preference. The study was conducted by analyzing the data collected from a southern state's specific community college's Adult Education program. This data was from 2021. To answer the research questions of this study, data was analyzed by using a combination of ordinal logistic regression (RQ1) and binary logistic regression (RQ's 2-4). Each research question was addressed by using model data, as well as graphics to view the information more precisely. The results support the research questions, thus suggesting that there was evidence that there are demographic barriers that affect a student's persistence and/or self-directed learning method preference.

Implications for Practice

As of 2023, the Adult Education and Family Literacy Programs in the southern state studied adhere to funding guidelines that prioritize the alignment of services with partner organizations to offer contextualized support and training for students. These community college programs are also mandated to conduct professional development sessions for faculty and staff, provide technical support to programs, and comply with state officials' monitoring processes. While funding allocation covered essential components such as curriculum design and technology implementation, there lacks a specific provision addressing the assistance of students facing socioeconomic and demographic barriers. Students enrolled in adult education programs encounter significant hurdles to persistence and achievement, underscoring the need for a more student-centric approach in funding allocation discussions. While investing in faculty and staff

development is essential, it becomes inconsequential if students face insurmountable barriers hindering their access to education. Therefore, there is a pressing need to prioritize students' needs and incorporate measures aimed at addressing their barriers within funding allocation strategies. These measures could be as simple as furthering the GED programs to offer more resources for those students exiting incarceration, or as complex as working more in-depth with state departments for better guidance on offering assistance for single and low-income students.

Future Research

Comparative Studies

This study is situated within the post-COVID-19 era, a period marked by unprecedented disruptions to educational landscapes for community colleges. For future research, an examination comparing program years predating and succeeding the COVID-19 pandemic holds promise for elucidating shifts in demographic barriers and self-directed learning methods when pertaining to student persistence. Such a comparative analysis could provide valuable insights that are imperative for a thorough reassessment of funding allocation strategies, emphasizing the evolving needs and challenges faced by adult learners in contemporary education contexts.

Studies with Different Variables

GED students contend with demographic barriers in their daily lives, a fact shown by Figure A3 in Appendix A, which reveals several factors beyond those specifically examined in this study. Of particular interest for future research are variables such as veteran status or familial ties to active-duty military personnel, as well as the inclusion of English Language Learners. Incorporating these additional variables has the potential to significantly augment the study's depth, offering a more nuanced understanding of the dynamics shaping persistence and preferences in self-directed learning methods among GED students.

Conclusions

By delving into the intricate web of demographic barriers impeding students' persistence and self-directed learning, this study unveils a pathway towards devising interventions to mitigate student adversities and foster academic triumph. Offering an analysis of the odds and likelihoods associated with employment challenges, government assistance engagement, and prior incarceration among GED students, this research serves as a foundation for discerning the multifaceted nature of obstacles hindering educational and vocational aspirations.

While this study elucidates statistically significant relationship between gender dynamics, incarceration history, persistence patterns, and preference in self-directed learning methods, it underscores the intricate interplay between demographic barriers and student triumphs. This nuanced understanding sets the stage for future investigations to unearth pragmatic solutions and advocate for augmented funding mechanisms tailored to address students' diverse needs, thereby cultivating a conducive environment for their academic and professional pursuits.

References

- Adenuga, B. O. (1989). *Self-directed learning readiness and learning style preferences of adult learners* (Publication No. 9261) [Doctoral dissertation, Iowa State University]. ProQuest Dissertations and Theses Global. <https://lib.dr.iastate.edu/rtd/9261>
- WIOA State Plan. (n.d.). *Alabama PYs 2020-2023. Adult Education and Family Literacy Act Program*. <https://wioaplans.ed.gov/node/39806>.
- Agresti, A. (2007). Building and applying logistic regression models. In *An introduction to categorical data analysis* (pp. 137-172). <https://doi.org/10.1002/9780470114759.ch5>
- The Lieutenant Governor's Commission on 21st Century Workforce. (2024). *Alabama workforce development plan*. Office of the Lt. Governor of Alabama. <https://ltgov.alabama.gov/wp-content/uploads/2024/01/Lt-Governors-Commission-on-21st-Century-Workforce-Alabama-Workforce-Development-Plan.pdf>
- Andrade, M. S., Miller, R. M., McArthur, D., & Ogden, M. (2020). The impact of learning on student persistence in higher education. *Journal of College Student Retention: Research, Theory and Practice*, 24(2), 316-336. <https://doi.org/10.1177/1521025120915576>
- Aud, S., Hussar, W.J., Kena, G., Bianco, K., Frohlich, L., Kemp, J., & Tahan, K. (2011). *The condition of education 2011* (NCES 2011-033). US Department of Education, National Center for Education Statistics. <https://files.eric.ed.gov/fulltext/ED520001.pdf>
- Berridge, G., & Goebel, V. (2013). An in-depth look at a GED program in a U.S. county jail. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education* 2(2), 68-81. <https://eric.ed.gov/?id=EJ1060033>
- Bierema, L. L., & Merriam, S.B. (2013). *Adult learning: Linking theory and practice*. Jossey-Bass.

- Blackwell, D. R. (2020). *Studying intentional change theory through qualitative Delphi research: Aged-out African American male employment* [Doctoral dissertation, Northcentral University]. ProQuest Dissertations and Thesis Global.
<https://www.proquest.com/dissertations-theses/studying-intentional-change-theory-through/docview/2415839774/se-2>
- Blagg, K., Rainer, M., & Washington, K. (2020). *Understanding SNAP take-up and short-term community college outcomes in Virginia*. Urban Institute.
<https://files.eric.ed.gov/fulltext/ED610035.pdf>
- Boesel, D., Alsalam, N., & Smith, T. (1998). *Educational and labor market performance of GED recipients. Research synthesis. Executive summary*. <https://eric.ed.gov/?id=ED418239>
- Bowen, B., & Nantz, K. (2014). What is the value of the GED? *College English*, 77(1), 32-54.
<https://digitalcommons.fairfield.edu/economics-facultypubs/10>
- Brinkley-Etzkorn, K. E., & Skolits, G. (2014). Anticipated effects of the GED® Test on educators and young adult learners. *Journal of Research and Practice of Adult Literacy, Secondary, and Basic Education*, 3(3), 8-21.
- Brockett, R. G. (1985). The relationship between Self-Directed Learning Readiness and life satisfaction among older adults. *Adult Education Quarterly*, 35(4), 210-219.
<https://doi.org/10.1177/0001848185035004003>
- Brockett, R. G., & Hiemstra, R. (1994). *Self-direction in adult learning: Perspectives on theory, research, and practice*. Routledge.
- Bozpolat, E. (2016). Investigation of the self-regulated learning strategies of students from the Faculty of Education using ordinal logistic regression analysis. *Educational Sciences: Theory & Practice*, 16(1), 301-318. <https://doi.org/10.12738/estp.2016.1.0281>

- Colvin, J., & Ashman, M. (2010). Roles, risks, and benefits of peer mentoring relationships in higher education. *Mentoring & Tutoring: Partnership in Learning*, 18(2), 121-134.
<https://doi.org/10.1080/13611261003678879>
- Daniels, L. (2021). *A study of adult learner's satisfaction and engagement in online courses using web 2.0 technologies and the impact on their digital literacy*. [Doctoral dissertation, Mississippi State University]. Scholars Junction, Mississippi State University Institutional Repository. <https://scholarsjunction.msstate.edu/td/5097/>
- Darolia, R., Mueser, P. R., & Cronin, J. (2021). Labor market returns to prison GED. *Economics of Education Review*, 82(June 2021), 102093.
<https://doi.org/10.1016/j.econedurev.2021.102093>
- Doren, A. T. (2013). *An application of double-loop learning to community college remedial education: A new model of integrated supports for ongoing student success* [Doctoral dissertation, University of Maryland University College]. ProQuest Dissertations and Theses Global. <http://contentdm.umgc.edu/digital/collection/p15434coll2/id/57/>
- Durrington, V. A., & Zvoch, K. (2010). The effects of self-directed learning strategies on the pass rate of adult GED students. *Journal of Research and Practice of Adult Literacy, Secondary, and Basic Education*, 1(2), 71-82.
- Flatt, C., & Jacobs, R. L. (2018). The relationship between participation in different types of training programs and gainful employment for formerly incarcerated individuals. *Human Resources Development Quarterly*, 29(3), 263-286. <https://doi.org/10.1002/hrdq.21325>
- Field, A. (2017). *Discovering statistics using IBM SPSS statistics: North American Edition*. SAGE.

- Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly*, 48(1), 18-33. <https://doi.org/10.1177/074171369704800103>
- Guglielmino, L.M., & Guglielmino, P.J. (1977). *Learning Preference Assessment*.
<https://www.lpasdlrs.com/>
- Hiemstra, R., & Brockett, R.G. (2012). Reframing the meaning of Self-Directed Learning: An updated model. *Adult Education Research Conference*.
<https://newprairiespress.org/aerc/2012/paper/s/22/>
- Houle, C. O. (1972). *The design of education*. Jossey-Bass.
- Hutt, E. (2014). The GED and the rise of contextless accountability. *Teachers College Record*, 116(9), 1-20. <https://doi.org/10.1177/016146811411600906>
- Hutt, E. L., & Stevens, M. L. (2017). From soldiers to students: The tests of General Educational Development (GED) as diplomatic measurement. *Social Science History*, 41(4), 731-755.
<https://doi.org/10.1017/ssh.2017.25>
- Kefallinou, M. (2009). The learner persistence project at Quinsigamond Community College. *Adult Basic Education*, 3(2), 105-109. <https://eric.ed.gov/?id=EJ845841>
- Kennel, K. D., & Ward-Smith, P. (2017). Academic persistence among nursing students: A concept analysis. *Journal of Nursing Education and Practice*, 7(11), 62-68.
<https://doi.org/10.5430/jnep.v7n11p62>
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. Cambridge, The Adult Education Company.
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. Cambridge, The Adult Education Company.

- Leong, S. (2020). Self-directed learning: A core concept in adult education. *Education Research International*, 2020, 1-12. <https://doi.org/10.1155/2020/3816132>
- Liu, C. (2020). A multi-level analysis of the effects of independent living programs on educational attainment, employment, and housing outcomes of youth aging out of foster care. *Child Welfare*, 98(4), 97-120.
- Machynska, N., & Boiko, H. (2020). Andragogy – The science of adult education: Theoretical aspects. *Journal of Innovation in Psychology, Education, and Didactics*, 24(1), 25-34.
- Macias, E. (2021). A new purpose in GED education: Towards the empowerment and civic engagement of “Push Out” youth. *Journal of Critical Thought and Praxis*, 10(2).
<https://doi.org/10.3127/jctp.11544>
- Magassa, L. (2020). *“I am not computer savvy”: A look into everyday digital literacy levels of formerly incarcerated people using a novel holistic digital literacy framework*. [Doctoral dissertation, University of Washington].
https://digital.lib.washington.edu/researchworks/bitstream/1773/46493/1/MAGASSA_washington_0250E_21999.pdf
- Martin, V., & Broadus, J. (2013). *Enhancing GED instruction to prepare students for college and careers: Early success in LaGuardia Community College’s bridge to health and business program*. MDRC Policy Brief. <https://doi.org/10.2139/ssrn.2265891>
- Martin, L. G., Martin, F. A., & Southworth, E. (2015). A critical review of concept mapping research literature: Informing teaching and learning practices in GED Preparation Programs. *New Horizons in Adult Education and Human Resource Development*, 27(3), 27-45. <https://doi.org/10.1002/nha3.20109>

- McDermott, E.R., Donlan, A. E., & Zaff, J. F. (2019). Self-control and persistence in the transition to adulthood: Employment outcomes among individuals with no credential, a GED, and a high school diploma. *Compare: A Journal of Comparative and International Education*, 49(5), 742-758. <https://doi.org/10.1080/03057925.2018.1453350>
- McDonnell, R. P., Soricone, L., & Sheen, M. (2014). *Promoting persistence through comprehensive student supports*. Jobs for the Future. <https://file.eric.ed.gov/fulltext/ED561305.pdf>
- McLendon, L. (2017). High school equivalency assessment and recognition in the United States: An eyewitness account. *New Directions for Adult and Continuing Education*, 2017(155), 41-49. <https://doi.org/10.1002/ace.20239>
- Merriam, S. B., & Brockett, R. G. (1996). *The profession and practice of Adult Education: An introduction*. Jossey-Bass.
- Merriam, S. B., Caffarella, R. S., & Baumgartner, L. M. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). John Wiley & Sons.
- Merriam, S. B., & Baumgartner, L. M. (2020). Self-Directed Learning. In *Learning in adulthood: A comprehensive guide* (4th ed., pp. 137-165). John Wiley & Sons.
- National Center for Biotechnology Information. (2005). *Gene therapy*. In *Medical subject headings : Gene therapy*. National Library of Medicine. <https://www.ncbi.nlm.nih.gov/books/NBK19878/>
- Nix, J. V., & Michalak, M. B. (2012). START! The Successful Transitions and Retention Track Program: A comprehensive approach to supporting GED holders entering college. *Journal of Adult Education*, 41(2), 65-67.

- Nix, J. V., Lion, R. W., Michalak, M. B., & Christensen, A. (2015). Individualized, purposeful, and persistent: Successful transitions and retention of students at risk. *Journal of Student Affairs Research and Practice*, 52(1), 104-118.
- Olesen-Tracey, K. (2010). Leading online learning initiative in adult education. *Journal of Adult Education*, 39(2), 36-39. <http://files.eric.ed.gov/fulltext/EJ930245.pdf>
- Owen, T. R. (2002). *Self-directed learning in adulthood: A literature review*. <https://eric.ed.gov/?id=ED461050>
- Page-Reeves, J. (2015). *How the privatization of "GED" high school equivalency degrees has created new roadblocks for the poor*. Scholars Strategy Network. <http://www.scholarsstrategynetwork.org/content/how-privatization-ged-high-school-equivalency-degrees-has-created-new-roadblocks-poor>
- Prins, E., & Kassab, C. (2015). GED recipients in postsecondary education: A rural-urban analysis of Pennsylvania FAFSA applicants' education, demographic, and financial characteristics. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education*, 4(2), 20-36.
- Quigley, B. A. (1992). The disappearing student: The attrition problem in adult basic education. *Adult Learning* 4(1), 25-26.
- Quinn, L. M. (2002). An institutional history of the GED. In J. J. Heckman, J. E. Humphries, & T. Kautz (Eds.), *The myth of achievement tests: The GED and the role of character in American Life* (pp. 57-108). University of Chicago Press. <https://doi.org/10.7208/chicago/9780226100128.003.0002>

- Rabourn, K. E., Soup, R., & BrckaLorenz, A. (2015). *Barrier in returning to learning: Engagement and support of adult learners* [Paper]. Association for Institutional Research 2015 Conference, Denver, CO. <https://hdl.handle.net/2022/23590>
- Rose, M. (2013). Second chances: The value of adult education and the GED. *Phi Delta Kappan*, 94(6), 45-49. <https://doi.org/10.1177/003172171309400612>
- Ross-Gordon, J. M., Rose, A. D., & Kasworm, C. E. (2016). *Foundations of adult and continuing education*. John Wiley & Sons.
- Rutland, A. M., & Guglielmino, L. M. (1987). *Increasing Readiness for Self-Directed Learning: A facilitator's manual for ten Self-Directed Learning group modules for adults*. (1987). <http://files.eric.ed.gov/fulltext/ED324466.pdf>
- Rutschow, E. Z., & Cary-Ross, S. (2014). *Beyond the GED: Promising models for moving high school dropouts to college*. MDRC. <https://www.mdrc.org/publication/beyond-ged>
- Ryder, A.J., & Hagedorn, L.S. (2012). GED and other noncredit courses: The other side of the community college. *New Directions for Institutional Research*, 2012(153), 21-31. <https://doi.org/10.1002/ir.20004>
- Shank, P. (2007). *The online learning idea book: 95 proven ways to enhance technology-based and blended learning*. Pfeiffer & CO.
- Spitzig, J. (2021). *The relationship between student engagement and student retention of adult learners at community colleges* [Doctoral dissertation, Franklin University]. OhioLINK. http://rave.ohiolink.edu/etdc/view?acc_num=frank1620213209704112
- Sternberg, R. J., & Williams, W. M. (2010). *Educational psychology*. Pearson.
- Taylor, J., Reynolds, J., Laton, D., & David, T. (2012). Measuring pedagogy, mesagogy, and andragogy in a community college setting. In C. J. Boden & K. P. King (Eds.).

- Conversations about adult learning in our complex world* (pp. 61- 76). Information Age Publishing.
- Todd, J. E., & Gregory, C. (2018). Changes in Supplemental Nutrition Assistance Program real benefits and daily caloric intake among adults. *Food Policy*, 79, 111-120.
<https://doi.org/10.1016/j.foodpol.2018.06.004>
- Tough, A. (1971). *The Adult's Learning Projects: A fresh approach to theory and practice in adult learning*. <https://ietl.org/tough/books/alp.htm>
- Tyler, J. H. (2005). The General Educational Development (GED) credential: History, current research, and directions for policy and practice. *Review of Adult Learning and Literacy*, 5(45), 45-84. https://www.ncsall.net/fileadmin/resources/ann_rev/rall_v5_ch3.pdf
- Urbancikova, N., Manakova, N., & Ganna, B. (2017). Socio-economic and regional factors of digital literacy related to prosperity. *Quality Innovation Prosperity*, 21(2), 124-141.
- Uretsky, M. C., & Henneberger, A. K. (2023). Supporting late graduates, GED earners, and non-completers through the transition into postsecondary and the labor market. *Preventing School Failure: Alternative Education for Children and Youth*, 67(1), 68-77.
- U.S. General Services Administration. (n.d.). *Welfare or Temporary Assistance for Needy Families (TANF)*. USA.gov. <https://www.usa.gov/welfare-benefits>
- Wasserstein, R. L., & Lazar, N. A. (2016). The ASA statement on *p*-Values: Context, process, and purpose. *The American Statistician*, 70(2), 129-133.
<https://doi.org/10.1080/00031305.2016.1154108>

Appendix A

DEFINING MSG TYPES

| Name | Details |
|---|--|
| Achievement on a Pretest-Posttest | Documented achievement of at least one educational functioning level of a participant who is receiving instruction below the postsecondary education level |
| Postsecondary Enrollment | Documented Post-Exit enrollment in postsecondary education or training during the same program year that contains the date of exit |
| High School Diploma/ Equivalency Achievement | Documented attainment of a high school diploma/ equivalency (only applicable to those who did not have diploma/equivalency at date of participation) |
| Postsecondary Transcript or Report Card * | Documented postsecondary transcript or report card that shows a participant is meeting academic standards, as defined by the policy of the State (for AL – TBD) |
| Progress Milestones* | Satisfactory or better progress report, towards established milestones, such as completion of OJT or completion of one year of an apprenticeship program or similar milestones, from an employer or training provider who is providing training. |
| Skills Progression* | Successful passage of an exam that is required for a particular occupation or progress in attaining technical or occupational skills as evidenced by trade-related benchmarks, such as knowledge-based exams |

Note. This image is from the 2021 Alabama state database training.

| | | | | | | | | | | | | | |
|---|---|--------------------------------------|-----------------------------------|----------------------------------|------------------------------------|---------------------------------------|--|-----------------------------------|--|--|--|---|--|
| <p><i>First Name</i> <i>Full name—no nicknames</i></p> <hr/> <p><i>Middle Name</i></p> <hr/> <p><i>Last Name</i></p> <hr/> <p><i>Date of Birth</i> <i>Age</i></p> <hr/> <p><i>Address</i></p> <hr/> <p><i>City</i></p> <hr/> <p><i>State</i></p> <hr/> <p><i>County</i></p> <hr/> <p><i>Zip</i></p> <hr/> <p><i>Gender</i> <input type="checkbox"/> Male <input type="checkbox"/> Female</p> <hr/> <p><i>Data Exchange Permission</i> <input type="checkbox"/></p> | <p><i>Home Phone:</i></p> <hr/> <p><i>Work Phone:</i></p> <hr/> <p><i>Cell Phone:</i></p> <hr/> <p><i>Emergency Phone:</i></p> <hr/> <p><i>Email Address:</i></p> <hr/> <p><i>Social Security Number:</i></p> <hr/> <p><i>Language</i> <input type="checkbox"/> English <input type="checkbox"/> Non-English</p> <hr/> <p><i>Ethnicity</i> <input type="checkbox"/> Black or African American <input type="checkbox"/> American Indian or Alaskan Native <input type="checkbox"/> Native Hawaiian or other Pacific Islander <input type="checkbox"/> White/Caucasian <input type="checkbox"/> Hispanic or Latino <input type="checkbox"/> Asian <input type="checkbox"/> Two or more races</p> <hr/> <p><i>I learned about the AE class from:</i></p> <table border="0"> <tr> <td><input type="checkbox"/> Print Media</td> <td><input type="checkbox"/> Employer</td> </tr> <tr> <td><input type="checkbox"/> Website</td> <td><input type="checkbox"/> Classmate</td> </tr> <tr> <td><input type="checkbox"/> Social Media</td> <td><input type="checkbox"/> Counselor/Social Worker</td> </tr> <tr> <td><input type="checkbox"/> Radio Ad</td> <td><input type="checkbox"/> Career Center</td> </tr> <tr> <td><input type="checkbox"/> Television Ad</td> <td><input type="checkbox"/> Postsecondary Institution</td> </tr> <tr> <td><input type="checkbox"/> Friend, Neighbor, or Family Member</td> <td><input type="checkbox"/> Returning Student</td> </tr> </table> | <input type="checkbox"/> Print Media | <input type="checkbox"/> Employer | <input type="checkbox"/> Website | <input type="checkbox"/> Classmate | <input type="checkbox"/> Social Media | <input type="checkbox"/> Counselor/Social Worker | <input type="checkbox"/> Radio Ad | <input type="checkbox"/> Career Center | <input type="checkbox"/> Television Ad | <input type="checkbox"/> Postsecondary Institution | <input type="checkbox"/> Friend, Neighbor, or Family Member | <input type="checkbox"/> Returning Student |
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| <input type="checkbox"/> Radio Ad | <input type="checkbox"/> Career Center | | | | | | | | | | | | |
| <input type="checkbox"/> Television Ad | <input type="checkbox"/> Postsecondary Institution | | | | | | | | | | | | |
| <input type="checkbox"/> Friend, Neighbor, or Family Member | <input type="checkbox"/> Returning Student | | | | | | | | | | | | |
| <p><i>Primary Designation:</i> <input type="checkbox"/> ABE/ASE <input type="checkbox"/> ESL <input type="checkbox"/> ARC</p> <p><i>Secondary Designation:</i> <input type="checkbox"/> Work Keys</p> | | | | | | | | | | | | | |

Figure A2. Adult Education Enrollment Form Page 1.

Date Registered: _____ *Hrs. Attended* _____

Class Name: _____ *Class Type* _____

Citizenship US Citizen Lawfully Admitted Alien
 No Response

Highest level of schooling or degree attained:
 No Schooling
 1st-5th Grade
 6th-8th Grade
 9th-12th Grade (No Diploma)
 Sec. Sch. Diploma or Alternate Credential
 Sec. Sch. Equivalent
 Some Post Ed. (No Degree)
 Postsecondary/Prof. Degree
 Unknown

US Based Schooling Non-US Based Schooling

Employment Yes, Full Time
 Yes, Part Time
 Employed, but Notice of Termination
 Military Separation Pending
 No, Currently Unemployed
 Not in Labor Market

ABAWD (Able Bodied Adult without Dependents) No Response Yes No
Active Duty Military Spouse No Response Yes No
Adult with Aging Dependents No Response Yes No
Caregiver No Response Yes No
Coal mining or Supporting Industry No Response Yes No
Cultural Barriers No Response Yes No
Dislocated Worker No Response Yes No
Displaced Homemaker No Response Yes No
English Language Learner No Response Yes No
Ex-offender No Response Yes No
Exhausting TANF (w/in 2 yrs.) No Response Yes No
First Generation College Student No Response Yes No
Formerly Incarcerated No Response Yes No
Homeless/Runaway Youth No Response Yes No
Individual with Disabilities No Response Yes No
In Need of Support Services No Response Yes No
Long-term Unemployed No Response Yes No
Low Income No Response Yes No
Migrant/Seasonal Worker No Response Yes No
Non-traditional Occupation No Response Yes No
Parent of Children Aging out of Social Security No Response Yes No
Preparing for Non-Traditional Field No Response Yes No
Single Parents, including Single Pregnant Women No Response Yes No
SNAP Recipient No Response Yes No
Specific Learning Disability No Response Yes No
TANF Recipient No Response Yes No
Underemployed No Response Yes No
Unemployed or Underemployed No Response Yes No
Veteran No Response Yes No
Youth/Young Adult in or Aged Out of Foster Care No Response Yes No
Youth with Parents in Active Duty Military No Response Yes No

Figure A3. Adult Education Enrollment Form Page 2.

| | | | |
|---|--------------------------------------|------------------------------|-----------------------------|
| ABAWD (Able Bodied Adult without Dependents) | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Active Duty Military Spouse | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Adult with Aging Dependents | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Caregiver | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Coal mining or Supporting Industry | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Cultural Barriers | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Dislocated Worker | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Displaced Homemaker | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| English Language Learner | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Ex-offender | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Exhausting TANF (w/in 2 yrs.) | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| First Generation College Student | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Formerly Incarcerated | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Homeless/Runaway Youth | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Individual with Disabilities | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| In Need of Support Services | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Long-term Unemployed | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Low Income | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Migrant/Seasonal Worker | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Non-traditional Occupation | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Parent of Children Aging out of Social Security | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Preparing for Non-Traditional Field | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Single Parents, including Single Pregnant Women | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| SNAP Recipient | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Specific Learning Disability | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| TANF Recipient | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Underemployed | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Unemployed or Underemployed | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Veteran | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Youth/Young Adult in or Aged Out of Foster Care | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Youth with Parents in Active Duty Military | <input type="checkbox"/> No Response | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Figure A4. Adult Education Demographic Barriers.

**ALABAMA ADULT EDUCATION SYSTEM FOR ACCOUNTABILITY AND PERFORMANCE
(AAESAP)
EMPLOYEE CONFIDENTIALITY/SECURITY AGREEMENT**

I understand that I may be allowed access to personal identifying information to include, but not limited to, *name, address, phone number, email address, social security number, date of birth, gender, race, ethnicity, test scores, employment information, and achievements/credentials earned*, in order that I may perform my specific job duties. I further understand and agree that I am prohibited from disclosing or using personal identifying information and/or records other than for the purpose of performing my specific job duties.

I understand that all Alabama Adult Education System for Accountability and Performance (AAESAP) passwords to access Alabama Adult Education (AE) electronic data or data of any type are issued on an individual basis. I further understand that I am solely responsible for all information entered and obtained, through system access, using my unique password. At no time will I allow any other person access to or use of my AAESAP password.

I understand that the unauthorized accessing, use, or disclosure of personal identifying information and/or records constitute a violation of this agreement and will result in an immediate revocation of my user id and password permission to the system and may result in disciplinary action taken against me, up to and including dismissal and/or my prosecution under the Alabama Digital Crime Act or other applicable laws.

By affixing my signature to this document, I acknowledge that I have been apprised of the relevant laws, regulations and policies concerning access, use, maintenance, and disclosure of personal identifying information and/or records, which shall be made available to me through my employment. I further agree that it is my responsibility to assure the confidentiality of all information, which has been disclosed to me in confidence even after my employment ends.

Enter Your Full Name: Date:

Figure A5. Researcher’s Approval for Database Access.