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Impact of the Accelerate You! Instructional Model on Student Success

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by

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Abstract

This study examines a multi-faceted instructional model used in Applied Technologies programs at a medium size community college. The model accelerates students who have not met placement test benchmarks into college level math with the support of multiple strategies utilized in the model, specifically team teaching in the technical and math courses, a learning community structure, weekly tutoring, and a first year experience course. This study examined the impact of the instructional model on student success, specifically course grades and semester-to-semester persistence, and impact on students' personal qualities, specifically mindset, grit, and study skills self-efficacy. Mixed methods research design examined statistical significance in differences in means of course grades, expected and observed rates of persistence, and personal qualities scores at the beginning of the year, midterm, and at the end of the year. Focus groups were utilized to provide student perceptions to enrich the quantitative data. Findings from the study support acceleration of students scoring near placement test benchmarks with team teaching used to support student learning. Findings affirm the important role institutional representatives as well as peers play in academic integration for community college students.

Key words: community college, mixed methods research, developmental education, academic integration

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Chapter 1: Introduction

"A college degree has replaced the high school diploma as a mainstay for economic self-sufficiency and responsible citizenship." (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008, p. 540)

National Context

In January 2015 the Educational Testing Service (ETS) Center on Research on Human Capital and Education released the report *America's Skills Challenge: Millennials and the Future*, addressing growing inequalities in the United States despite increased access to education. Citing numerous statistics from international rankings, the writers of the report paint a bleak picture of the numeracy and literacy skills U.S. millennials possess. The writers of the report, Goodman, Sands, and Coley (2015), contend that there are numerous costs to having a low skilled workforce, first of which is lack of competitiveness in a global economy.

Country to country comparisons made by Goodman, et al. (2015) reveal patterns and deeper issues than global competitiveness. Higher skill levels are associated with better health, greater trust in government, and increased community participation. Lower skill levels are associated with decreased access to resources, decreased participation in democracy, and decreased access to educational opportunities. According to Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008), earning a college degree has long-term social and economic benefits that ripple on to future generations' families and communities. Howard (2016) affirms that college graduates have better employment opportunities, are more active in their communities and government processes, and have overall better health. Goodman, et al. (2015) note that distribution of skill levels in a nation are linked to the distribution of income and wealth. Yet the United States is one of the wealthiest nations as well as one of the most economically unequal (Goodman, et al., 2015).

Illustrating economic inequality, Georgetown University's Center on Education and the Workforce found that the majority of the jobs in the recovery from the Great Recession of 2008-2009 went to those holding more than a high school diploma. More specifically, 11.6 million jobs were created in the recovery and 11.5 million went to people with some post-secondary education (Carnevale, Jayasundera, & Gulish, 2016). Looking to the future, the Center on Education and the Workforce found that 65% of jobs created by 2020 will require postsecondary credentials (Carnevale, Smith, & Strobl, 2013). This finding further complicates the skills deficiencies the U.S. already sees. Ultimately, getting students in and keeping them in college is important because the states risk "social and economic losses" (Engberg & Allen, 2011, p. 786) and weakening "social cohesion" (Longden, 2006, p. 174) without the needed skills that come with post-secondary training.

Providing more students financial access to higher education seems a productive route to improve credential attainment rates; however, simply providing access does not ensure credential attainment. Nationally, the average graduation rate for 4 year institutions (at 150% normal completion time for cohort year 2008) is 54% (United States Department of Education., n.d.). More concerning is the three-year graduation rate for two-year institutions of 30.7% (at 150% of normal completion time for cohort year 2011) (U.S. Dept. of Ed., n.d.). Low completion rates are a consistent trend across higher education. Of students seeking a certificate or associate's degree (typically at two-year institutions) beginning in 2003-2004, 65% persisted or attained a credential in six years. Of that 65%, half attained a credential at the end of the six years while 15% were still enrolled without having completed a credential (U.S. Dept. of Ed. NCES, 2016). Even if students have access to college, many are not completing.

These statistics for two-year institutions are more concerning because community colleges, as Cohen and Brawer (2003) describe them, are “open channels for individuals, enhancing social mobility that has characterized America” (p. 36). These “open channels” (Cohen & Brawer, 2003, p. 36) provide opportunity for students who generally do not have the resources needed to attend 4-year institutions (Cohen & Brawer, 2003).

Lack of academic preparation is one characteristic of under-resourced students, specifically the need for developmental education prior to entering college credit-bearing courses (Hodara & Jaggars, 2014). Bailey, Jeong and Cho (2010) report that more than half of community college students enroll in developmental courses. Jaggars, Hodara, Cho, and Xu (2015) report “approximately two thirds of incoming community college students are deemed academically underprepared for college” (p. 3-4), the majority of which are referred to developmental math, sometimes up to three developmental courses before credit-bearing courses can be taken. Developmental courses attempt to address skills deficits, thereby providing higher education access to those already experiencing a skills deficit. Unfortunately, of those who do enter college requiring developmental education courses, the majority do not complete the developmental requirements and never enter college-level courses (Hodara & Jaggars, 2014). The Community College Research Center (CCRC) reports that slightly more than 30% of students referred to developmental math education complete the required sequence of developmental courses needed to enter a college level math course (Edgecombe, 2011). A student’s rate of reaching college level courses decreases for each of the multiple levels of developmental courses required (Edgecombe, 2011). Goodman, et al. (2015) assert that simply providing more education cannot address education problems, referencing decades of K-12 reforms across the nation while the nation’s students continue to fall further behind international

peers. The addition of developmental courses before college credit-bearing classes has not proved to improve skill levels or credential completion (Goodman, Sands, & Coley, 2015).

Beyond proving ineffective, developmental education has proven costly. Bailey, Jeong, and Cho (2010) assert that developmental education at community colleges is costly. Yet Bailey, et al. (2010) also note that developmental education does not come at just financial costs; developmental education has psychological and opportunity costs. Yeager and Dweck (2012) found that a majority of developmental math students possess a fixed mindset, the belief that their level of intelligence is fixed and, therefore, cannot be expanded or grown. Yeager and Dweck (2012) also found that a fixed mindset can be a significant hindrance in academic settings, illustrating yet another obstacle in persistence and credential completion.

With greater awareness of disappointing college completion rates (U. S. Dept. of Ed., n.d.) and the pressing need for a skilled workforce for economic and individual benefits (Carnevale, et al., 2013), state legislatures and post-secondary governing bodies are examining how to spur credential completion (Hillman, Tandberg, & Gross, 2014). Efforts include narrowing developmental education parameters and rethinking traditional funding models that provide state appropriations according to student enrollment and shifting to appropriations based on credential completion. In response to these issues as well as with accountability motives, states are adopting completion agendas that utilize outcomes and performance-based funding models that appropriate funds based on how well an institution meets educational goals, such as credential completion rates (Hillman, et al., 2014). This approach focuses the phrase “money follows mission” (Schloss & Cragg, 2013, p. 102) more narrowly for postsecondary institutions. No longer can institutions simply identify their mission as providing quality teaching and

learning; they must now be on mission to produce credential completers in appropriate time frames.

In response to the Great Recession of 2008-2009, President Obama acknowledged the important role community colleges play in economic recovery for individuals and the nation. Obama noted how community colleges provide pathways to higher standards of living for low skilled workers. Reflecting his position and spurred by his administration's efforts, career pathway initiatives for adult learners have evolved across the country to improve credential completion. These initiatives target low-skilled or under-resourced adults, providing them with postsecondary credential pathways to careers (Bragg, 2014). Such initiatives include Accelerating Opportunity (AO), an initiative adopted in the Kentucky Community and Technical College System (KCTCS) in 2012 as Accelerating Opportunities Kentucky (AOKY), a four year grant-funded initiative. The AO model implements multiple strategies to move adult basic education students (students without a high school diploma) into pathways to college credentials that are valued in the job-market (Bragg, 2014). The goal of the initiative is to remove barriers, such as developmental coursework, that discourage adults from beginning and completing a college credential by integrating basic skills and career training.

Institutional Context

West Kentucky Community and Technical College (WKCTC), one of 16 colleges in Kentucky Community and Technical College System, was part of the initial phase of the AOKY grant and developed the initiative through Adult Education. According to Carnegie Classification of Institutions of Higher Education, WKCTC is classified as a medium sized two-year institution offering associate's degree programs to a primarily rural student population of 6402 students as of 2014. Integrated Postsecondary Education Data System (IPEDS) data identifies WKCTC's

student body as of fall of 2016 as 6065, 63% of which are part-time and 95% receive some form of financial aid (U.S. Dept. of Ed., n.d.).

The initial design of the AO initiative at WKCTC fulfilled the AO requirements by targeting students who qualified for adult education. However, that population was limited due to financial aid parameters. The initiative also targeted WKCTC students who did not meet placement test benchmarks in math, though the AO initiative supported certificate and diploma pathways that did not require college level math. Required math skills for technical programs were contextualized in technical courses with Adult Education staff *team teaching* math skills alongside the technical course instructors. One hour a week was dedicated to tutoring specifically for AO students and led by Adult Education staff who were also team teachers in the technical courses. This instructional design allowed students without a high school diploma to advance into a technical program and complete a credential in a short period of time as well as supported math skills of students who demonstrated a skill deficient in math based on placement test scores. Though AOKY did not address developmental education needs, it did provide a framework to rethink how to serve developmental education students.

With the grant nearing its end in 2015, KCTCS mandated sustainability plans developed to keep the initiative going on each campus beyond the grant period. WKCTC was granted permission by KCTCS to rename the program Accelerate You! (AY!), and WKCTC continued the program in Applied Technologies with expansion to address the needs of students who required developmental education. The sustainable model of the AO initiative, Accelerate You! (AY!) in Applied Technologies, is intended to provide a pathway to credential completion, particularly for at-risk students who have not demonstrated college-level math skills, by

providing a multi-faceted support structure in the first semester and narrowed supports in the second semester.

The AY! model includes a battery of support strategies, some from the AO design and new features to improve student success, specifically semester-to-semester persistence and credential completion. The new features added to the original support structures include a first year experience course required in the first semester and math modules to re-teach math concepts addressed in math and technical courses. Faculty and staff intend for the multifaceted design to address complex needs of students, particularly those who outside this initiative would require developmental education but also students who already demonstrate college readiness.

Purpose of the Study

Assessing efficacy of the AY! model in addressing low persistence and credential attainment rates could simply be done by comparing pre-AY! numbers to post-AY! numbers to ascertain whether more students are persisting and completing. This level of analysis, however, would gloss over more important underlying issues. State and national data show developmental education as an indicator that students are less likely to persist and complete a credential (Bailey et al., 2010; Spalding, 2012); however, data also show low persistence and completion rates for all community college students (Tinto, 2012b). The AY! model eliminates the developmental education sequence and accelerates students with skills deficits into credit-bearing courses, thereby moving developmental students toward a degree more quickly and doing so alongside students who enter college having demonstrated college readiness. This provides a mixed cohort of students with varying risk factors for college departure yet all have access to the same support interventions in the program.

This unique design of the AY! model allows for the examination of how multiple college support structures integrated into one instructional model can impact students with and without college readiness skills as well as impact persistence and completion rates. The design also allows for the examination of the effects of the supports on students' non-cognitive traits or personal qualities. If correlations can be drawn between the structure of interconnected supports (such as contextualization, team teaching, and first-year experience courses) and positive change in personal qualities (such as implicit theories of intelligence or mindset, grit, and self-efficacy), educators will have evidence to develop instructional models that have deeper, long-term impacts on how students think and function. The full support structure of the AY! model is available to students who entered the AY! program having demonstrated college readiness skills. Findings from this study will provide insight into the impact of the AY! instructional model on student success (defined using course success rates and fall-to-spring persistence) and personal qualities conducive to goal achievement, thereby impacting future instructional interventions and design decisions for community college students.

This study seeks to answer:

- RQ1: How does the Accelerate You! (AY!) model impact student success, as defined by course grades associated with the AY! model and semester-to-semester persistence?
    - Ho1: The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered before and in the AY! model.
    - Ho2: The AY! model demonstrates no impact on fall-to-spring semester student persistence.

- RQ2: Does an association exist between participation in the AY! model and changes in students' personal qualities associated with academic success, specifically mindset, grit, and study skills self-efficacy?
    - Ho1: The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy.
- RQ 3: What are students' perceptions of the AY! model's influence on their success?

This study seeks to answer these questions utilizing a mixed methods research design. Combining of traditional research approaches, specifically quantitative measures of success as well as quantitative and qualitative measures of student perceptions of self and the institution, offers knowledge that can inform decision-making (Borland, 2001). To answer these questions, this study follows a causal comparative design (Schenker & Rumrill, 2004) to explore the impact of the AY! model on students. Triangulation of data provides a clearer understanding of how the AY! model, and its individual support interventions, affect student success for students.

Key Terminology

This study explored important issues in higher education, particularly in community colleges, associated with terminology that can be used loosely at times. For the purpose of this study, the following terms are used according to definitions from the literature. The list of terms is alphabetical.

Academic integration. Braxton and Lien (2000) define academic integration as the student's perception that his or her attitudes and values align with the institution's attitudes and values as well as a sense that the student is not "isolated" in his or her academic pursuits (as cited in Braxton, et al., 2014, p. 118). Davidson & Petrosko (2015) emphasize that this type of integration is more important than social integration for commuter students.

Mindset or Implicit Theories of Intelligence. Dweck, Chiu, and Hong (1995) establish that lay people's theories are for the most part implicit or "poorly articulate" (p. 267), requiring behavioral scientists to map those implicit beliefs. Dweck, Chiu, and Hong (1995) identify two different assumptions about the malleability of personal attributes, specifically the attribute of intelligence. Those two different assumptions are called entity theory of intelligence or fixed mindset, in which the individual believes intelligence cannot grow or change, and incremental theory of intelligence or growth mindset, in which the individual believes intelligence can grow or develop (Dweck, 1999; Dweck, Chiu, & Hong, 1995; Yeager & Dweck, 2012).

Persistence. Berger, Ramirez, and Lyons (2012) define persistence as the student level "desire and action" to remain in higher education from the beginning of the first year through completion of a degree. This study focuses on fall-to-spring persistence.

Personal Qualities. This study examines influences of the AY! model on students' mindset, grittiness, and study skills self-efficacy. These qualities are often labeled non-cognitive traits or skills or within the category of soft skills. Duckworth and Yeager (2015) discuss the problematic terminology associated with the qualities addressed in this study and others that are categorized similarly. This study utilizes the term "personal qualities" (Duckworth & Yeager, 2015, p. 239) as the category label for the non-cognitive traits or qualities addressed in this study, specifically mindset, grit, and self-efficacy.

Retention. Retention is the institutional level ability "to retain a student from admission through graduation" (Berger, Ramirez, & Lyons, 2012, p. 12). This study focuses on fall-to-spring retention.

Social Capital. Bourdieau (1986) defines social capital as networks of connections one can utilize. Social capital includes the economic, cultural, and symbolic capital possessed within

a network. Networks of connections can include people and resources that can be utilized to enhance oneself. Social capital relevant to college students includes family networks, peer networks, and college-linking networks (Engberg & Allen, 2011).

Student Departure. Tinto (2012b) uses student departure to refer to a student leaving an institution without a credential for varied reasons yet with the possibility that the student will return at a later point.

Student Success. Crisp and Mina (2012) argue that community colleges have a student population with diverse intentions and goals that challenge retention as a sole measure of success. The authors note that a community college student choosing not to persist does not mean the student has not achieved a personal or academic goal. Instead of viewing community colleges through four-year institutional values, practitioners can "consider alternative measures of student success" (p. 161). However, because of external accountability expectations, this study defines student success using course success rates and semester-to-semester persistence. A grade of "C" or higher is considered satisfactory because 2.0 GPA is required for "Satisfactory Academic Progress" to continue receiving federal financial aid.

Chapter 2: Literature Review

> The problem with student departure require[s] both an understanding of the key forces that influence student persistence and the development of policies and practices designed to improve student retention rates based on our understanding of such key forces of student persistence. (Braxton, et al., 2014, p. ix)

Introduction

More than half of community college students are not completing a college credential in a normal time frame (U.S. Dept. of Ed., n.d.). In exploring why students leave post-secondary institutions without a credential, Longden (2006) questions whether student departure is an indirect result of massification of higher education, the fact that masses of students are entering who are not prepared for higher education, or a result of institutional inability to address the changing context of today's students. Considering Carnevale, Smith and Strobl (2013) finding that 65% of future jobs created will require post-secondary education and underprepared students continue to enter postsecondary education (Center for Community College Student Engagement, 2010), Longden's (2006) exploration of departure as an either-or scenario over-simplifies why students do or do not complete a college credential. Data support massification of higher education as an economic necessity (Carnevale et al., 2013). Access to college has increased nationally, including access for low-income students (Tinto, 2012c); consequently, higher education institutions must move beyond Longden's (2006) focus and shift their focus to student success (Howard, 2016; Tinto, 2012c) in order to develop the ability to improve student persistence and ultimately credential completion rates. To improve student persistence and credential completion rates, institutions must identify why students leave before completing a credential.

Student Departure Theory

The 1960s and 1970s in the U.S. marked the development of theory related to student departure, persistence, and retention. Arguably driving the exploration of student departure and retention theory was the work of Vincent Tinto (Berger, Ramirez, & Lyons, 2012). Scholars in the following decades examined and expanded on Tinto's theoretical model (Berger et al., 2012), including Tinto himself updating his work in *Leaving College: Rethinking the Causes and Cures of Student Attrition* (2012b), in which he explored the issue of departure, identifying the attributes of intention and commitment as roots in individual departure as well as the impact of individual experiences with adjustment, difficulty, incongruence, and isolation at the institutional level. Tinto (2012b) asserts the individual attributes of intention and commitment interact within the institutional environment affecting student departure rates.

Though intention and commitment are individual attributes that are shaped largely before entry to college, Tinto (2012b) contends institutions must understand the varied influences that shape student intention and commitment. Moreover, Tinto (2012b) states that whatever intentions and commitment with which students arrive, the interaction of those intentions and commitment within institutions yield individual experiences that influence the individual perceptions, making the interaction after entry into the institution often more influential in the student departure process than any previous influences.

Literature that followed Tinto's 1993 (updated 2012b) work follows similar methodology of framing or categorizing departure factors or influences, yet the frames or categories vary somewhat. Kuh, Kinzie, Buckley, Bridges, and Hayek (2006) reviewed the varied literature on student success, identifying five perspectives: organizational perspectives (focusing on how institutional structures and processes impact student departure), sociological perspectives

(focusing primarily on Tinto's work and updated frameworks by Braxton that emphasize how students integrate into college), psychological perspectives (focusing on characteristics of students, particularly attitudes and behaviors), cultural perspectives (emphasizing the influences of students' cultural backgrounds prior to and while in college), and economic perspectives (emphasizing cost and benefit factors influencing students). Longden (2006) asserts four general categories to identify why students leave college without completing a credential: error in judgment about program of study, perceived negative experience in program of study, inability to cope with college demands, and external factors that impact students' lives. More recently, Braxton, et al. (2014) identify four perspectives: economic, organizational, psychological, and sociological. All of these categorizations capture the most often referenced theoretical models seeking to explain student departure and retention, yet Morrison and Silverman (2012) assert Tinto's model with a focus on social integration is "generally the cornerstone of the research" (p. 77).

Kuh et al. (2006) note that not one theory can account for the wide-ranging influences on student departure. Instead, together, "the different theoretical perspectives...provide a holistic accounting of many of the key factors that come into play to shape what students are prepared to do when they get to college and influence the meanings they make of their experiences" (p. 16). Longden (2006) concurs that it is the interaction of several issues that result in departure. Morrison and Silverman (2012) assert "no single intervention strategy will adequately prevent all students from departing college," and consequently, each institution "must create and implement its own program uniquely designed to meet its own available resources and institutional purposes" (p. 77).

The AY! model in the Applied Technologies Division at WKCTC implements numerous interventions to target the complex issues influencing student departure. The AY! model follows a career pathway structure that includes a learning community design anchored by a first year experience course. The AY! model also includes team-teaching of contextualized math with technical courses for most of the Applied Technologies programs. The design's interventions appear to address most specifically sociological factors by providing layered supports to transition students into the college environment in the first semester. The layered supports are provided to both students who meet benchmarks to enter credit-bearing courses and students who do not meet the benchmarks and would without the AY! model begin the first semester with developmental education courses. This review of the literature proceeds with an exploration of sociological perspectives on student departure.

Sociological perspectives on departure. Sociological perspectives or frameworks emphasize the influence of outside social forces on student persistence, including but not limited to peers, family, socioeconomic status, and student socialization structures (Braxton, et al., 2014). Tinto's work on sociological perspectives of student departure dominates retention research, as Braxton et al. (2014) demonstrates by noting the hundreds of Tinto citations made in research in recent decades.

Tinto (1988) provides a well-known research foundation for student success, examining the sociological context of student departure by utilizing Van Gennep's rites of passage framework that emphasizes the students' integration into the college social structure. This framework seeks to understand challenges first-year students face as they follow their own rites of passage into college. Essentially, Tinto (1988) aligns Van Gennep's rites of passage process with new college students' stages through which they move to complete a college credential,

arguing that student departure is influenced by different factors at different stages of their college experience. This first year marks, according to Tinto (1988), the stage of separation in which students must separate themselves from past associations and habits. This process can be especially difficult if the past associations held "markedly different social and intellectual orientation" (p. 443) from the new college setting, which may be the case for first-generation college students who come from home cultures that lack understanding of the college culture.

Kuh, et al. (2006) identify being a first generation college student as a risk factor in departure. Spalding (2012) also identifies being a first generation college student as a barrier to college persistence and completion, particularly for community college students in Kentucky. Moschetti and Hudley (2015) assert first-generation college students (those whose parents have not earned a college degree) from working class families are at the highest risk of academic struggles. First generation college students drop out at higher rates than middle and upper class first generation students (Moschetti & Hudley, 2015). Moschetti and Hudley (2015) point out that not all low socioeconomic level students are first generation and not all first generation are low socioeconomic level; however, those with both characteristics experience additional stresses as new college students. First generation college students who are also in a low socioeconomic level, as Moschetti and Hudley (2015) assert, are entering an environment that calls on them to network and utilize resources, yet they have no prior experience with these skills and lack family support with that experience or knowledge.

The lack of ability to network and utilize resources due to no prior experience or knowledge demonstrates capital deficiency theory, as explored in part by Engberg and Allen (2011), Massey, Charles, Lundy, and Fischer (2003), and Perna (2006). Capital deficiency theory merges economic and sociological theories to explain how resources derived from financial,

human, social, and cultural capital impact academic achievement. Perna (2006) explains that the concept of social capital captures networks derived from relationships with others and memberships within social structures as well as the ways networks and connections are used. Social capital's importance lies in its function to provide access to other forms of capital and the resources associated with the capital (Perna, 2006). First generation college students and low socioeconomic status students tend to lack college-going networks. Engberg and Allen (2011) assert "the importance of capturing student background and socioeconomic characteristics as well as students' exposure to various forms of capital during their formative school years" (p. 788) in understanding how students access higher education, arguing that access disparities "fuel the reproduction of social inequality" (p. 786).

As Tinto (1988) argues, first generation college students and low socioeconomic status college students are expected to leave the characteristics of their home lives and enter a new setting with new expectations,. Tinto (1988) contends that persistence in college is dependent upon students "becoming leavers from their former communities" (p. 443). After separating from their previous communities, students must transition to "acquire the norms and patterns of behavior appropriate to the integration in the new communities of the college" (Tinto, 1988, p. 444). An inability to cope with the stress of this adjustment stage, according to Tinto (2012b), can result in early withdrawal, as early as the first six to eight weeks. Tinto (2012b) also notes that this difficult adjustment can even defy a student's best intentions and strong goals. Though a first generation college student may seek to do what no one else in his or her family has done, he or she will likely find the transition and adjustment to college difficult, especially so if coming from a low socioeconomic background despite the goal of pursuing a college credential to move into the middle class. Pascarella, Pierson, Wolniak, and Terenzini (2004) support the need for

"sharply focused and sustained efforts…to increase first-generation students' involvement in the academic and nonacademic systems of the institutions" (p. 279) because of their inherit challenges as at-risk students. The experience at college brings the opportunity to acquire "additional cultural/social capital" (Pascarella et al., 2004, p. 252).

Tinto (2012b) identified students' intention and commitment as well as how those attributes interacted with the institution as factors in student departure. Tinto (2012b) asserted that students' individual intention and commitment can change in time; therefore, students' experiences with adjustment, difficulty, incongruence, and isolation can have a greater impact on departure. A new college student, particularly a first generation college student, potentially enters college with the intention to earn a credential and is at some level committed to the goal, yet, as Tinto (2012b) asserts, the student's experience with adjustment, level of difficulty, incongruence between student expectation and reality, and a sense of isolation can change the student's intention and commitment. This potential change can be deterred by purposeful and focused efforts by institutions of higher education (Pascarella, Pierson, Wolniak, & Terenzini, 2004).

Braxton, Vesper, and Hossler (1995) set out to test how students' expectations about institutions affect departure. The authors found that intent to persist is affected by the fulfillment of students' institutional expectations, which include students' "appraisal of whether the college meets [their] expectations for the college experience" (p. 607). For example, students entering college at the developmental education level may not see developmental education coursework as a bridge to their career goals (Baker, Hope & Karandjeff, 2009, Spr.), thereby, feel the college experience is not fulfilling their expectations of gaining concrete skills to use in the job market.

Classroom dynamic is a factor influencing students' perceptions of the college's fulfillment of expectations, and this dynamic is affected by peers as Braxton and Caboni (2005) conclude, asserting "that norms influence college student behavior" and "knowledge of the norms espoused by students…offers an interpretative framework through which to understand behavior" (p. 7). Additionally, Braxton and Carboni (2005) assert that institutions should create strategies "designed to develop normative support among students and subgroups… [for] the prevention of student behavior that undermines the effectiveness of the focal policy or program" (p. 7).

Mixing students of varying risk-factors can also be problematic. Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) affirm that students who feel a sense of belonging are more likely to remain in school. Integrating at-risk students who come from backgrounds quite different from students who do not reflect the at-risk indicators could create greater alienation. Joo, Durban and Grable (2009) affirm the non-academic factors that contribute to a student's decision to leave college include a lack of psychological support and institutional resources. Tinto (2016) asserts that students who perceive a sense of belonging at an institution become more motivated and willing to engage in the college experience. Students without a sense of belonging at the institution withdraw from interaction with other students and faculty, decreasing the students' motivation to continue. Institutions should implement a comprehensive approach to interconnect initiatives to improve student success (Kuh, et al., 2008).

Student departure theory for community colleges and universities. Much of the integration research focuses on four-year institutions, yet community colleges experience student departure at higher rates than four-year institutions (U.S. Dept. of Ed., n.d.) while serving a population that spends less time on campus to experience integration (Crisp & Mina, 2012). To

understand the higher rates of student departure, Crisp and Mina (2012) state that there must be a recognition of the differences in students. Community college students are more likely than four-institution students to be African American or Hispanic, first generation college students, less academically prepared, and enrolled part-time. Though the community college student experiences college differently, research does support an indirect relationship between community college student departure and integration (Crisp & Mina, 2012). Moving beyond Tinto's interactionalist approach to emphasize the institutional role in student departure, as Braxton, Hirschy. and McClendon (2004) suggest, is needed to understand student departure, particularly at commuter institutions.

Braxton, Doyle, Hartley, Hirschy, Jones, and McLendon (2014) explain student departure theory for community colleges and universities as including components influenced by the student, the external environment, and the institution, as well as the interaction among these components. Student characteristics include, but are not limited to, motivation and self-efficacy; external forces include family and finances; institutional characteristics include perceived commitment to student welfare (Braxton et al., 2014).

Crisp and Mina (2012) maintain that for the community college student, integration takes place in the brief time they are on campus before, during, and after class. Braxton et al. (2014) concur that commuter students spend little time on campus and the time that is spent is focused on classes and meeting degree requirements; little time is spent socializing. Braxton et al. (2014) further assert that external forces in the students' lives and "buzzing confusion" (p. 113), or comings and goings of the commuter campus, require commuter students to "have high levels of self-efficacy" (p. 114), a student characteristic. Essentially, the more a student believes he/she can achieve a goal through his/her own efforts, the more likely the student is to persist (Braxton

et al., 2014). Braxton et al. (2014) contend that control or a student's desire for control can influence departure. In essence, the more a student needs control and order in their daily lives, the less likely a student will persist in college due to the demands of academics and family/work responsibilities (Braxton et al., 2014).

Braxton, et al. (2014) further posit that organizational characteristics, specifically institutional commitment to student welfare and institutional integrity, impact student persistence. Because of the commuter student's limited time on campus, academic integration has a more significant impact than social integration (Davidson & Petrosko, 2015); therefore, student retention and success become a classroom function (Tinto, 2012c). Braxton, et al. (2014) theorize classroom practices positively impact student persistence, noting specifically the use of learning communities, active learning practices, and effective teaching skills. Referencing Chickering and Gamson, Braxton, et al. (2014) identify four principles that positively impact student "academic and intellectual development" (Braxton et al., 2014, p. 117) (revised term for academic integration): specifically student-faculty contact, encouragement of cooperation among students, prompt feedback, and communication of high expectations. Braxton et al. (2014) assert that the more frequently students experience effective teaching skills, the more likely the students will experience greater levels of perceived academic and intellectual development.

Braxton, et al. (2014) provide three organizational forces that influence student academic and intellectual development: academic advising, first-year student orientation, faculty interest in students and good teaching. Advising refers to students realizing their potential through the interaction with his/her advisor (Braxton, et al., 2014). First year student orientation prepares students for their academic lives ahead (Braxton, et al., 2014). Faculty interests in students and good teaching creates a "supportive psychological context" necessary to positively impact

students (Braxton, et al., 2014, p. 124). Each of these forces contribute to the academic and intellectual development of commuter students (Braxton, et al., 2014).

Psychological Factors in Student Departure

Multiple factors influence student departure (Berger, Ramirez, & Lyons, 2012; Kuh et al., 2006; Longden, 2006); therefore, any institutional action to improve student departure rates must address the issue from multiple perspectives. Within Tinto's work on the sociological perspectives of student departure (1988, 2012b) is an acknowledgement of the role of stress, a psychological influence, linking sociological perspectives with psychological perspectives on departure. Tinto (1988) argues students withdraw at the transition stage less from being unable to integrate and more from the stress of the transition. Earlier research on the psychological influences on departure focused on intellectual attributes or individual willingness that affected students' abilities to meet academic expectations (Tinto, 2012b). This focus of early psychological perspectives, according to Tinto (2012b), falls short in explaining departure. A focus on student ability and willingness cannot explain why some attributes result in staying in college in some situations while other situations result in leaving; therefore, according to Tinto (2012b), little insight is provided from early psychological perspectives to institutions to influence policy changes to improve student retention.

Psychological researcher Angela Duckworth (2013) at the University of Pennsylvania asserts in her popular TED Talk "The Key to Success? Grit" that educational research has led to extensive understanding of cognitive skills in relation to success, but educational research has previously shown little about the psychology of success. Duckworth, Peterson, Matthews & Kelly (2007) note that research has done little to understand why some people use such limited amounts of their available resources, while other people strive to their limits. Duckworth and

Yeager (2015) note the growing body of literature that explores the impact of what are loosely referred to as non-cognitive traits on student learning and success (Duckworth & Yeager, 2015) and providing an increasing understanding of how non-cognitive factors can influence retention and completion.

Braxton, et al. (2014) contend that psychological characteristics and psychological processes related to student departure are at the level of the student or the institution, concurring with Tinto (2012b) that intention and commitment are at the student level and the interaction of those attributes with the institution are at the institutional level. At the student level, psychological characteristics and processes, according to Braxton et al. (2014), can affect student persistence through academic skills, motivation, personal qualities, and student development theories (p. 72-73). Gutman and Schoon (2013) define non-cognitive traits or skills that arise from the psychological processes students demonstrate as "those attitudes, behaviors, and strategies which facilitate success in school and workplace, such as motivation, perseverance, and self-control" (p. 4). Student departure is likely influenced in part by psychological processes that shape students' academic skills, motivation, and abilities to manage college transition. Improving students' non-cognitive attributes could affect student departure rates.

Yet, Gutman and Schoon (2013) point out there are significant gaps in the evolving body of literature on non-cognitive skills, demonstrating a lack of consensus on the relationship between the non-cognitive skills and outcomes, a limited understanding of the ability to change non-cognitive skills in the long-term, little agreement on defining and measuring non-cognitive skills, and no clear evidence demarking which of the interrelated non-cognitive skills has the greatest impact on the whole body of traits (p. 4). Gutman and Schoon (2013) additionally note that discussion of non-cognitive skills "is complicated and contested," including the "erroneous

distinction between cognitive and non-cognitive factors" (p. 7), because non-cognitive functions cannot occur without some level of cognition. Yet, Gutman and Schoon (2013) maintain the term "non-cognitive skills" to align with the literature and categorize non-cognitive skills in several categories: self-perceptions, motivation, perseverance, self-control, resilience, and others. Yet the categories themselves overlap with unclear lines.

Duckworth and Yeager (2015) tackle the complexity of labeling non-cognitive traits and the related research, recognizing the increasing interest by researchers and practitioners. Garcia (2014) writing for the Economic Policy Institute in Briefing Paper #386 argues that "schools should nurture and policies should promote" particular non-cognitive traits: critical thinking, problem solving skills, emotional health, social skills, work ethic, and community responsibility (p. 3). Though Garcia (2014) uses the term non-cognitive skills, she cites in her definition of non-cognitive skills Borghans, Duckworth, Heckman, and Weel (2008), who contend the difference between cognition and personality is not easy to identify and use the term personality traits, rather than non-cognitive skills. To illustrate, Borghans, et al. (2008) describe executive function, noting it is not one trait but rather a collection of behaviors. Duckworth and Yeager (2015) identify the numerous contrasting labels for what they term "personal attributes" from non-cognitive traits to 21st century skills, arguing the appropriateness and inappropriateness of each with none fully fitting the set of attributes to which the terms refer.

Duckworth and Yeager (2015) emphasize the terminology is less important than the specific attributes and the measurements. The authors, for their purposes of examining measurements, choose to use the term *personal qualities* for "positive personal qualities other than cognitive ability that lead to student success" (p. 239). Acknowledging Duckworth and

Yeager's (2015) thoughtful exploration of related terminology, this study adheres to the term *personal qualities* and the operational definition provided by Duckworth and Yeager (2015).

The range of personal qualities within educational discourse is broad and often overlapping. This study purposefully focuses on three personal qualities demonstrated through research to be linked to academic achievement and to each other.

Self-efficacy. Considering the assertion that stress experienced by students in the transition stage is a factor in student departure (Tinto, 2012b), effectively managing stress could result from Bandura's (1997) concept of perceived self-efficacy. In exploring control and motivation, Bandura (1997) asserted the concept of perceived self-efficacy as "a belief in one's personal capabilities [that] regulates human functioning," particularly cognitively, motivationally, and affectively (p. 4). Affective functioning with high perceived self-efficacy, according to Bandura (1997), enables people to manage threats and lower stress and anxiety. People with high self-efficacy take long views and set challenges, committing to meet the challenges. They are able to envision outcomes and motivate themselves to make action plans while being resilient when faced with obstacles (Bandura, 1997). Zajacova, Lynch, and Espensdade (2005) found academic self-efficacy to have a "strong positive effect" on minority college freshman grades and is the "single strongest predictor of GPA" (p. 696). However, the authors did not find a correlation between academic self-efficacy and persistence. According to Larson, et al. (2015), this lack of significant correlation could be attributed to academic self-efficacy being too broadly defined. Another domain-specific self-efficacy construct would correlate more closely, though the authors found that mathematics/science self-efficacy was not a good predictor either. However, as noted previously, Braxton, et al. (2014) argue that commuter

students must have self-efficacy to effectively manage external forces and the "buzzing confusion" of a commuter campus and lifestyle (p. 114).

Self-efficacy is one of several control beliefs within cognitive theories of achievement motivation, as explained by Shell and Husman (2001). Control beliefs focus on how persons perceive their ability "to control or influence their environment to attain desired outcomes" (p. 48). Shell and Husman (2001) define self-efficacy, referencing Bandura, Pajares, Schunk, and Zimmerman, as "confidence in one's capability for organizing and implementing the cognitive, behavioral, or social skills necessary for successful performance of a task" (p. 482), therein acknowledging the link between non-cognitive and cognitive processes. In addition to self-efficacy, control beliefs include "causal attributions or one's judgments about the causes of success or failure" as well as expectancies or the "expectation that successful performance…will result in particular outcomes" (p. 482).

Based on the definition of self-efficacy as a control belief and previous research on cognitive theories of achievement, Shell and Husman (2001) set out to question the relationship to academic performance when self-efficacy (the self-control to implement skills needed for success), attribution (judgments about what causes successful or unsuccessful outcomes), and expectancy beliefs (expectations for successful efforts to reach success) are considered. Shell and Husman (2001) conclude that personal control is complex and further examination of the multivariate nature of the relationship between control and academic achievement are needed. Shell and Husman (2001) maintain that educators "need to be concerned not only with the effects … on students' motivation, achievement, and self-regulation…but also with the multivariate effects of the interrelated combinations of these beliefs" (self-efficacy, attribution, and expectancy) (p. 501). Consequently, practitioners cannot simply target self-control; instead, self-

control can be addressed with awareness of the impact of students' perceptions of causes of their performance outcomes and students' expectations of what is needed for success, which can intertwine with students' institutional expectations, a factor in departure (Braxton, Vesper & Hossler, 1995; Braxton, Hirschy & McClendon, 2004).

Dewitz, Woolsey, and Walsh (2009) acknowledge first year college students have difficulty incorporating the numerous variables that factor into creating their new college selves, variables that include opportunity, means, and motivation. The authors go on to criticize the limitations of Tinto's social integration model, asserting this perspective is not particularly useful to college personnel in influencing student retention. Dewitz, et al. (2009) point out that the reasons students leave college do not fit effectively into Tinto's model. Dewitz, et al. (2009) go on to assert that a college student can find a fit at a college, yet the student can do so without goals or purpose for the college experience. Using the theoretical framework of Frankl's purpose of life construct and Bandura's theory of self-efficacy, Dewitz, et al., (2009) sought to examine the connection between purpose of life and self-efficacy as a means to influence student persistence. The study (Dewitz, et al., 2009) found that "all variables of self-efficacy were significantly and positively correlated with purpose of life" (p. 27) and "there were significant differences in reported life meaning between the upper and lower self-efficacy groups" (p. 29). The authors assert the study supports the development of self-efficacy building strategies to influence students' sense of purpose in life (p. 31). Building students' self-efficacy could impact students' intention and commitment to the college experience. Research suggests that learning experiences lead to the development of self-efficacy through performance, learning, social influences, and environmental stimuli (Betz, 2014).

Mindset or Implicit Theories of Intelligence. Potentially linked to the concept of attribution within the self-efficacy research (Shell & Husman, 2001) is Carol Dweck's research on implicit theories of intelligence or mindset. At the core of Dweck's research on implicit theories of intelligence are two opposing mindsets (Dweck, Chiu, & Hong, 1995). Growth mindset or incremental theory of intelligence is the belief that an individual can increase or grow intelligence, and fixed mindset or entity theory of intelligence is the belief that intelligence is predetermined and cannot be significantly expanded (Dweck, 1999; Dweck, 2010; Dweck, Chiu, & Hong, 1995; Paunesku, Walton, Romero, Smith, Yeager, & Dweck, 2015; Yeager & Dweck, 2012).

Diseth, Meland, and Breidablik (2014) sought in a study of sixth and eighth graders to examine relationships between self-esteem and self-efficacy and implicit theories of intelligence. Their study did affirm previous research that supported self-efficacy as a better predictor of performance than self-esteem. However, their study did not find a correlation between implicit theories of intelligence and academic achievement. The authors note the age level of their study group as a significant factor, emphasizing that age level should be considered because theories of intelligence appear to play a lesser role in younger students. Yet the authors do affirm in their study "a relationship between two different sets of self-beliefs, namely self-esteem and self-efficacy on the one hand, and implicit theories of intelligence on the other, thus integrating two research traditions regarding self-beliefs" (p. 7), validating the assertion of a link between mindset and self-efficacy.

Various mindset studies demonstrate how the belief that intelligence is a fixed trait can lead students to perceive challenges as insurmountable, whereas the belief that intelligence can be grown can lead to greater academic achievement (Dweck, 2010; Paunesku et al., 2015;

Yeager & Dweck, 2012). Yeager and Dweck (2012) state that "this way of thinking compromises resilience in academic settings" (p. 302). The authors further explain that two distinct worlds are created in the two implicit theories of intelligence. The growth mindset views the world, even setbacks, in terms of learning and growth. Whereas the fixed mindset views the world in terms of measurements of ability that are seen as threats, creating defense responses. These theories shape goals, effort, attributions, and strategies as a result. The growth mindset or incremental theory is not eager to learn, rather seeks not to look dumb; sees effort as a result of having no talent; perceives self as dumb; and is tempted to cheat as a defense mechanism. The fixed mindset or entity theory, conversely, is eager to learn, sees effort as the path to success, perceives setbacks as a sign to alter approach or self, and will work harder to reach success (Dweck, 2010; Paunesku, et al., 2015; Yeager & Dweck, 2012).

Yeager & Dweck (2012) acknowledge that both high achieving and low achieving individuals can follow this process. Yet, "inevitably, academic standards rise, and…a person's implicit theory of intelligence can affect whether they respond resiliently" (p. 304). The transition to college is an increase in demands and expectations, ultimately testing students' beliefs in their abilities to change. Stress can develop resulting from the students' perceived inability to "learn" how to face new demands and challenges.

In another study involving Dweck, perception of personal qualities is examined within the context of self-regulation and grades. Job, Walton, Bernecker, and Dweck (2015) explore whether a student's beliefs about willpower or self-control affect the ability to exercise self-control. The study found students who perceived self-control as expendable self-regulate less effectively when they are faced with many demands. Conversely, students who perceived their self-control as unlimited applied it more effectively and ended the term with higher grades than

the students who perceived self-control as limited. This study's conclusions parallel other studies on mindset that demonstrate mindset impacting academic performance. Those perceiving themselves as having the ability to grow their intelligence face adversity with greater resilience (Dweck, 1999; Dweck, 2010; Yeager & Dweck, 2012).

Linkages can be identified between the mindset literature and research on the levels of remediation needed for new college students. As stated previously, 68% of community college students place in at least one developmental or transitional course (Center for Community College Student Engagement, 2015). Thirty-one percent of students referred to developmental math actually complete the remedial sequence of classes in three years. Of those referred to the lowest levels of developmental math, only 16 % actually completed remediation coursework (Edgecombe, 2011). Kuh, et al. (2006) identified being underprepared academically as a factor in student departure. Likewise, Spalding (2012) identified needing developmental education to enter credit bearing courses as one of the most common risk factors for stopping out before credential completion for community college students in Kentucky. Consequently, Yeager and Dweck (2012) assert that students can conclude from developmental placement that skill levels, math in particular to their research, are fixed. They note one study that found 68% of developmental math students demonstrated fixed mindsets about their own math abilities (Yeager & Dweck, 2012). Shively and Ryan (2007) found that math students with incremental theories of general intelligence (growth mindsets, not domain specific) were more motivated to seek help in math, an important motivation to have for those with deficits in skills. Yet the research shows those with skills deficits tend to more often have entity or fixed mindsets (Yeager & Dweck, 2012).

Arguably, developmental education students are more likely to have a fixed mindset and experience low levels of perceived self-control when they are unable to see correlations between required developmental education course sequences and their declared majors, particularly if they realize the developmental courses do not contribute to earned credits for a credential. Students do not perceive a sense of control over their academic advancement, which they attribute to an inability to learn the needed skills and cannot see a way to learn those skills. The lack of perceived self-control as well as lack of willingness to seek assistance for their skills deficits likely explains, in part, the high rates of developmental education students not completing the developmental sequence and ultimately dropping out of college without a credential.

Grit. Closely linked with self-efficacy and growth mindset is the personal quality of grit, captured by the research of Angela Duckworth at the University of Pennsylvania. Grit refers to the ability to persevere in pursuit of long-term goals and is a trait Duckworth aligns closely with growth mindset (Duckworth, 2013; Duckworth & Eskreis-Winkler, 2013). Most notable in the grit research is the finding that grit, as measured through the grit scale, is a better predictor of success than IQ (Duckworth, Peterson, Matthews, & Kelly, 2007). Duckworth's research supports a correlation between grit and academic achievement as well as grit and commitment across life contexts beyond academic pursuits (Duckworth et al., 2007; Eskreis-Winkler, Shulman, Beal & Duckworth, 2014), which suggests grit is a valuable personal quality to possess. In fact, Duckworth, et al. (2007) suggest that grit is one personal quality found in "most prominent leaders in every field" (p. 1087).

Gutman and Schoon (2013) place grit in the non-cognitive category of perseverance with engagement. This alignment of perseverance and engagement is confirmed by Von Culin,

Tsukayama, and Duckworth (2014). The authors examine how grit correlates with happiness, linking happiness with engagement, finding that grittier individuals were more likely to seek meaning, rather than pleasure, in the pursuit of happiness. Though this study does not examine a relationship between education or professional levels, Von Culin, et al. (2014) reference a previous study that found "more educated and professional successful adults are more likely to endorse engagement and meaning, and less likely to endorse pleasure" (p. 5). The authors "speculate that grit might mediate the effect of this motivational configuration on achievement outcomes," which appears to support previous longitudinal research that demonstrates grit predicting educational attainment and performance (Duckworth, et al., 2007; Duckworth & Quinn, 2009). Von Culin, et al. (2014) conclude that those who pursue engagement and meaning, rather than pleasure, are grittier. The growth of grit can be a factor in engagement in academic pursuits that potentially leads to persistence and completion.

As previously noted, self-efficacy is categorized as a control belief (Shell & Husman, 2001). In Duckworth's initial research, findings did not provide correlations between self-efficacy and grit (Duckworth, et al., 2007). Yet, later Duckworth and Gross (2014) assert that "self-control" and "grit" are often interchanged; however, the meanings are different "despite overlap in key underlying psychological processes" (p. 1). Self-control is the ability to choose an option that has greater long-term benefit over an option that has more value within the moment, whereas grit is the ability to maintain focus on goals with greatest significance in the face of challenges from lower valued goals. Grit as perseverance toward long-term goals (Duckworth, 2013; Duckworth & Eskreis-Winkler, 2013) cannot alone result in academic achievement. Grit could factor into persistence, while control beliefs, such as self-efficacy could factor into the steps along the way that provide for success--grades, for example. Duckworth, Quinn, and

Tsukayama (2012) conducted a series of studies that demonstrate the correlation between control beliefs factoring into incremental steps. Duckworth, et al. (2012) findings suggest report card grades have greater correlation to self-control than intelligence while standardized tests reflect intelligence more than self-control, suggesting that control beliefs, such as self-efficacy, need to accompany the presence of grit.

Based on findings from previous studies on grit and mindset noted, a student needs to possess a growth mindset or the belief in his or her ability to learn within the college environment as well as believe he or she has the ability to influence that environment to meet the learning objectives in order to pursue the long-term goal, and sometimes daunting path, to earn a college credential. The research studies noted in this literature review show that these three personal qualities, self-efficacy, mindset, and grit, are important psychological factors in academic performance and, arguably, in all life's contexts.

Institutional Responses to Student Departure

Berger, Ramirez, and Lyons (2012) explain that the sociocultural context of the U.S. "has shaped who has been served and in what ways they have been served during different points in history" (p. 9). While Tinto (2012b) asserts national gains have been made in providing greater access to post-secondary education, the same improvements have not been demonstrated in retention and completion; institutions must shift efforts to creating "conditions on campus that are known to promote student success" (p. 6). Tinto (2012) argues that institutions have "an obligation to do what [they] can to help the student stay and graduate" (p. 6). This sentiment is widely held with the demand for more graduates, and as a result there is a heightened attention on retention (Berger, Ramirez, & Lyons, 2012) as represented by the vast research surveyed.

Braxton, Brier & Steel (2008) state that "student departure poses an ill-structured problem for practitioners" and "ill-structured problems...require a range of possible solutions each with an uncertain possibility of solving the problem" (p. 393). As no one theory or framework can fully explain student departure, Morrison & Silverman (2012) maintain no one intervention can fully address student departure. Instead, institutions must design unique programs to fit needs that address the conditions within which students are placed (p. 77). Braxton, et al. (2008) assert that retention efforts must be grounded in empirical research. Tinto (2012c) identifies four areas in which institutions can make change: expectations, support, assessment and feedback, and involvement. These four areas are grounded in the argument that without learning there is no student success, even if students persist. Essentially, the more students learn the more they will find value in their academic pursuits and complete the credential.

Students arriving on campus with at-risk characteristics, often associated with social class (first generation, low socioeconomic status), experience greater difficulty navigating the college environment (Moschetti & Hudley, 2015; Spalding, 2012) because they lack the ability to network and utilize resources, skills associated with social capital gained from prior experience or knowledge (Engberg and Allen, 2011). The development of social capital for at-risk students, according to Tinto (2012a), comes in the classroom, the "building block upon which student retention is built and pivot around which institutional action...must be organized" (p. 124). Research affirms that increased student focus on academics, either engaged in maintaining grades or interacting with faculty, improves credential completion outcomes (Cabrera, Burkum, La Nasa, & Bibo, 2012). Pascarella and Terenzini (1979) found the significant correlation

between freshman year persistence and frequency of contact with faculty regarding academic matters.

The Association of American Colleges and Universities (AACU) has identified ten "high-impact" practices that the Association asserts "have been widely tested and have been shown to be beneficial for college students from many backgrounds." The ten high-impact practices are first year experience course/seminar, common intellectual experiences, learning communities, writing-intensive courses, collaborative learning, undergraduate research, study abroad, service learning, internship, and capstone course/experience (Kuh, 2008). Kilgo, Sheets, and Pascarella (2015) examined the impact of the ten high-impact practices on student learning outcomes. They concluded that postsecondary institutions should provide students with more intentionally designed access to high-impact practices.

The AY! model at WKCTC, designed to accelerate students who qualify for developmental math sequences into college-level math, explicitly incorporates two of the ten high-impact practices that address social structures, specifically the learning communities and the first year experience course. These two practices are incorporated into the guided pathway structure of the AY! model design, creating a multi-layered intervention strategy to create a culture that facilitates social integration primarily through classroom support structures.

Guided pathways. Jenkins (2014), Bailey (2015), and Bailey, Jaggars, and Jenkins (2015) with the Community College Research Center (CCRC) criticize community college "self-serve" or "cafeteria" model of education and argues that it contributes to students having difficulty navigating college and ultimately completing a credential. Spalding (2012) supports this idea, having identified the inability to navigate the college structure as a factor in student departure for community college students in Kentucky. Institutional awareness of student needs

to effectively integrate into the college culture is reflected in the guided pathways movement, a movement that evolved to address the needs of at-risk students and move them into career pathways more efficiently (Bragg, 2014). This approach provides students with clear program maps, including, in part, semester-by-semester scheduling and simplified decision-making. CCRC describes guided pathway reform as a systemic redesign of the student experience from intake to completion (Bailey, Jaggars, & Jenkins, 2015).

Miami-Dade College demonstrates the guided pathway philosophy in its reform efforts, intended to improve student outcomes. The transformation came about in part by developing structured program pathways for students that clearly lead to career outcomes. The transformation also included strengthening students' transition from developmental education into college-level programs with contextualized and modularized offerings linked to diagnostic information about student skill gaps (Rodicio, Mayer & Jenkins, 2014). The AY! model follows the intent of the guided pathway reform as demonstrated by Miami-Dade College and is designed to shape the student experience from intake, utilizing contextualization within high-impact practices to transition students who do and do not demonstrate at-risk characteristics into the college culture. This approach seeks to empower students with research-support teaching and learning approaches.

Learning communities. Learning communities have held an important position in higher education for some time (Braxton, et al., (2014). Most recognizable is the residential learning community found on university campuses, by nature requiring full-time enrollment, yet the concept has spread beyond residential settings. Now learning communities include paired courses, small cohorts, team-taught courses, and communities for special populations on campuses (Fink & Inkelas, 2015). Often the learning community model requires full-time

enrollment, a factor linked to increased rates of persistence and completion (Braxton, et al., 2014). With these varied forms of learning communities, the concept has come to be recognized as a best practice to promote student engagement and success (Braxton, et al., 2004; Braxton, et al., 2014).

The learning community structure provides a way of addressing the varied needs of students as well as a point of collaboration for faculty and potentially student affairs. First, students taking more than one class together are likely to build stronger relationships that can carry over beyond the classroom. Secondly, for learning communities to work effectively, faculty must work closely together "to ensure linked courses provide a coherent, shared learning experience" (Tinto, 2012c, p. 260).

By promoting full-time engagement through the guided pathway structure and placing students in communities for the purpose of learning, the institution is promoting student integration into the campus culture. This guided pathway learning community structure supports learning experiences that lead to the development of self-efficacy through performance, learning, social influences, and environmental stimuli (Betz, 2014, p. 409).

First year experiences. First year experience courses (FYE) are intended to facilitate students' transition to college life thereby promoting student success and retention (Braxton, Brier, & Steele, 2007). FYE courses generally provide new students with information typically associated with an orientation to the college in a manner that is more applicable to the students' needs because the information is typically spread through the first semester when new students are in need of it (Braxton et al., 2014; Cuseo, n.d. The empirical case; Association of American of Colleges and Universities, n.d.). Cuseo (n.d.) asserts first year experience course can act as an anchor, providing a new student orientation, a venue for academic advisement, a link in a

potentially fragmented curriculum, and a source of data for institutional assessment (Cuseo, n.d., Target areas for development). Keup and Barefoot (2005) found first year experience seminars vary in structures and objectives across the country, yet their study provided evidence that first-year seminars "represent a valuable curricular intervention for first-year students during the transition to college" (p. 38). Braxton, Brier & Steele (2007) assert that first year experience courses positively impact persistence. Toms (2016) found the first year seminar was generally an enjoyable experience for students, yet students wished to see a greater link between the course and their needs. FYE course content needs to be as relevant to the students' courses as possible to promote self-regulated learning and transfer of information from the FYE course to students' other academic experiences. The AY! model includes FYE 105: Achieving Academic Success as a required first semester course for new students entering Applied Technologies programs, designed to support students in the college transition.

Contextualized teaching and learning. Baker, Hope & Karandjeff (2009, Oct.) define contextualized teaching and learning (CTL) as "the concept of relating subject matter content to meaningful situations that are relevant to students' lives" (p. 1). The same authors in an earlier report for the California Community Colleges discuss CTL as an effective strategy to engage students in the learning process (Baker, Hope, & Karandjeff, 2009, Spr.). Mazzeo, Rab & Alssid (2003) call CTL a central intervention within the career pathway model, which is true of the AY! model.

Mazzeo, Rab & Alssid (2003) contend the concept of contextualized learning can vary in meaning. Essentially, CTL connects curriculum content, such as math skills, to students' future career goals. Some CTL approaches also emphasize that the skills are taught using constructivist and student-centered approaches. In studying several community colleges utilizing

contextualized teaching learning, the authors found that colleges “struggled to balance” (p. 16) effective content and pedagogy with student engagement.

Baker, Hope & Karandjeff (2009) identified two categories of CTL delivery: stand-alone classrooms and linked courses/learning communities. Within the stand-alone classrooms are infused academic classrooms, individual courses focused on academic skills, and infused occupational classrooms, occupational classes with academic skills taught within the vocational competencies (p. 15).

The original AOKY design utilized the infused occupational classroom model and omitted separate academic skills courses; math was not taught separately, rather contextualized in the technical classes. In the AY! model, linked courses/learning communities is utilized. This format links two or more courses and contextualizes the basic skills instruction according to the goal of the structure, usually according to students’ career goals or diversity objectives (Baker, Hope & Karandjeff, 2009, p. 16). The AY! model organizes contextualization around students’ academic and career goals.

In addition to contextualizing the basic math skills needs for the technical programs, the AY! model utilizes online instructional math modules to support the math skills needed in the technical courses. Davidson and Petrosko (2015) found that students persisted at a higher rate for in-person math courses that had online components. The authors could not identify how specifically the online components were utilized; however, “that delivery method resulted in a statistically significant impact on persistence” (p. 170).

Redesign of developmental math. Rates of academic under-preparedness range from half to two-thirds of community college students (Bailey, Jeong, & Cho, 2010; Jaggars, Hodara, Cho, Xu, 2015), yet traditional developmental education models show little success in addressing

the skills deficits (Edgecombe, 2011; Hodara & Jaggars, 2014). Post-secondary institutions have begun exploring varied redesigns of math curriculum sequences in an effort to improve student success rates, including acceleration and compression models, which both seek to move students through developmental sequences more quickly (Cafarella, 2016). Typically, acceleration models merge two or more developmental courses into a single semester, thereby accelerating students through the developmental sequence (Jaggars, Hodara, Cho, & Xu, 2015). Studies have shown acceleration approaches improve probability of students advancing to college level math (Hodara & Jaggars, 2014; Jaggars, Hodara, Cho, & Xu, 2015). Hodara and Jaggars (2014) state, "Our study suggests that experimentation with acceleration through shorter sequences is a good starting point in order to improve access to college-level coursework and potentially students' overall college success" (p. 271).

The AY! model does experiment with the acceleration concept. Using the AOKY model of advancing adult education students into college credit-bearing classes while working on their GED, the AY! model advances students who score a few points below the placement test benchmark and qualify for developmental math sequences to a college level math course with supports in place to address the skills deficits. Hodara and Jaggars (2014) call this "a more radical reform" by integrating "basic skills instruction into college-level coursework while providing supplemental academic and nonacademic supports" (p. 271). This approach does not delay students' access to college level course work, as traditional developmental education sequences do, while also developing "their quantitative and academic literacy skills," according to Hodara and Jaggars (2014).

Discussion of Institutional Responses to Student Departure

Engberg and Allen (2011) argue the importance of colleges and universities working toward greater social equality by improving opportunity for at-risk students. Multi-faceted approaches to closing opportunity gaps potentially address multiple risk factors for students, from being first generation to entering college with skills deficits (Kuh et al., 2006; Morrison & Silverman, 2012).

Support initiatives discussed, including learning communities, first year experience courses/seminars, guided pathway models, and redesign of developmental math sequences, utilize institution level approaches to address student departure through initiatives that have been shown to promote student success. Within the literature on student departure and best practices are the recurring interconnected factors of institutional commitment and the role of faculty development in the effective implementation of initiatives to promote student success (Tinto, 2012b; Braxton, et al., 2004; Tinto, 2016).

An institution's commitment to student success establishes the context for actions the institution takes, establishing tone for policies, procedures, and practices (Tinto, 2012c,) as well as faculty development. To do so, Tinto (2016) states, "Institutions have to adopt the student perspective and ask not only how they should act to retain their students but also how they should act so that more of their students want to persist to completion" (n.p.). The community college student perspective reveals, in part, student need for greater assistance in navigating the college experience (Bailey, 2015; Jenkins, 2014; Spalding, 2012). This assistance can be developed through social capital relationships as Moschetti and Hudley (2015) describe. For example, Pascarella et al. (2004) found consistent evidence that first-generation college students make "smaller increases in the highest degree they planned to obtain" (p. 277) than those

students with parents with college credentials, which may be attributed to parents with college credentials communicating the importance to their children—an impact of social capital (Pascarella et al., 2004), making institutional efforts to build student capital more important. Institutional representatives can impact students' social capital through relationships that provide students with information and encouragement.

Particularly important is the role of faculty and faculty development at commuter institutions because the classroom is likely the only campus setting in which students engage with the institutional representatives on a regular basis (Tinto, 2012c, p. 260). Moschetti and Hudley (2015) found the better institutional representatives understood needs of at-risk students, the more likely the college is to improve persistence and completion (p. 248). Tinto (2012a) asserts retention does not happen from just actions, rather retention happens through the organization of actions taken as retention strategies. The effectiveness of retention strategies is not necessarily in the initiatives themselves. The effectiveness derives from how well initiatives are aligned and managed (Tinto, 2012a).

Potential Impact of Institutional Responses on Personal Qualities

Yeager and Dweck (2012) contend that educational reform has focused on increased rigor without attention to the resilience students will need to face the challenge; consequently, educators will not see the improvements they seek. Yeager and Dweck (2012) demonstrated the importance of mindset interventions as well as study skill interventions for the greatest impact on outcomes. Consequently, the authors assert that their research and others demonstrate the value of redirecting student perceptions of their own intelligence through good strategies, support, and time, resulting in students increasing their abilities to face the challenges.

Demonstrating the impact of using interventions on personal qualities, Baker, Hope and Karandjeff (2009) link contextualized learning to motivation theory. Essentially, by contextualizing basic skills within a career context, educators are increasing the "value of the learning to the learner" and increasing "the learner's self-efficacy with regard to the task" (p. 9). The authors also note contextualization as supporting transferable skills or the transfer of competencies from one context to another, suggesting that how instruction is delivered can impact personal qualities. Tinto (2016) contends that experiences shape students' motivation to persist, some of which institutions can influence. Central to students' motivation to persist, according to Tinto (2016) are "self-efficacy, sense of belonging and perceived value of the curriculum."

Duckworth and Yeager (2015) caution how personal qualities measurements are used for educational purposes. The authors specifically examine the measurement of personal qualities using self- and teacher-report questionnaires and performance tasks for within school and between school accountability, student diagnosis, and practice improvement. The authors conclude all measures of personal qualities have their benefits and limitations. A "plurality of measures" (p. 245-6) is the best approach, and there must be a recognition that measuring personality qualities is only one step. Measures can only be useful if they provide information that can lead to improvement. The authors end with their hope that the "broader educational community proceeds forward with both alacrity and caution, and with equal parts optimism and humility" in using measurements of personal qualities (p. 246).

Chapter 3: Methodology

"The most useful research typically results from appropriately applying both research paradigms, strategically combining their traditional approaches and methodologies to create knowledge in support of decision making." (Borland, 2001)

Introduction

West Kentucky Community and Technical College (WKCTC) has experienced low persistence and completion rates, particularly for developmental education students, though a bit higher than national trends. Integrated Postsecondary Education Data System (IPEDS) data report WKCTC has a 63% retention rate from fall 2014 to fall 2015 and a 42% overall graduation rate for first-time students beginning fall of 2013 (U.S. Dept. of Ed., n.d.). Institutional data at WKCTC show that 70-80% of first-time students demonstrated the need for developmental math (based on ACT, COMPASS, and/or TABE scores) prior to entering college-level math courses each year from fall 2011 through fall of 2015. Of those who were first placed in developmental math in fall 2011 through fall 2015, about 45% eventually took college level math. This low percentage suggests that less than half of students entering WKCTC with developmental math needs advanced to the math courses required for a credential. This rate is consistent with national trends (Hodara & Jaggars, 2014).

The Accelerate You! (AY!) model at WKCTC provides multiple layers of interconnected supports intended to address the varied factors influencing student persistence and completion. The model advances developmental math students past developmental courses into college-level math courses and contextualizes the math skills in the technical courses within learning community cohorts. In the first semester, the model provides weekly tutoring and online math modules to assist with the most challenging skills being taught, particularly math. "Success

coaches" act as team teachers in the math and technical classes and as tutors in the weekly tutoring sessions. The model also includes a first year experience course in the first semester to support the college transition.

This study explores and assesses the impact of the multi-layered AY! model on student success at WKCTC. For the purpose of this study, student success is defined by success rates for courses specific to the AY! model, specifically the required math course and two technical courses, and fall-to-fall persistence because these measures factor into progression toward the completion of a credential. A cumulative average of of "C" or higher is considered successful because 2.0 semester GPA is required to make *satisfactory academic progres*s for federal financial aid purposes. This study also assesses the impact of the AY! model on students' personal qualities, specifically mindset, grit, and self-efficacy, which correlate to improved academic success. To complement the quantitative measures, this study also includes qualitative data collection to capture student perspectives.

Assessing the efficacy of the AY! model in addressing student progress toward completion of credential could simply be done by comparing pre-AY! program data to post-AY! data, including student pass rates and credential completion rates within Applied Technologies programs. Only examining data before and after AY! implementation, however, could gloss over underlying factors in persistence and completion. State and national data show numerous factors influencing retention, including but not limited to first generation status and developmental education needs (Braxton, et al., 2014; Jenkins, 2014; Moschetti & Hudley, 2015; Spalding, 2012), and retention is a greater challenge in the community college setting (U.S. Dept of Ed., n.d.).

The structure of the AY! model seeks to address multiple risk factors addressed in the literature (Braxton, et al., 2014; Jenkins, 2014; Spalding, 2012) in a multifaceted design that supports social and academic integration. Therefore, the AY! model presents an opportunity to explore how multi-layered college support structures can integrate at-risk populations into the social and academic environment of the campus and classroom and impact changes in personal qualities that correlate to positive academic performance. If correlations can be drawn between support structures (learning communities, first-year experience courses, contextualization, and team teaching) and positive change in non-cognitive skills or personal qualities (self-efficacy, implicit theories of intelligence or mindset, and grit), educators will have evidence to develop future instructional models with the intent of making long-term change in how students think and function not only as students but also as future employees.

Setting and Background

West Kentucky Community and Technical College (WKCTC), located in Paducah, Kentucky, is one of 16 community and technical colleges in the Kentucky Community and Technical College System (KCTCS), a consolidated community college system formed as a part of Kentucky's Postsecondary Education Improvement Act of 1997. According to Carnegie Classification of Institutions of Higher Education, WKCTC is classified as a two-year institution offering associate's degree programs with high concentration of career and technical programs to a population of 6402 students as of fall of 2014. Integrated Postsecondary Education Data System (IPEDS) data identifies WKCTC's student body as fall of 2016 as 6065, 63% of which are enrolled part-time and 95% receive some financial aid, including 62% of which receive Pell grants. Of the student population, 63% are under 24 years of age, 79% identified as White with

the next largest identified race/ethnicity as Black or African American at 6%; 4% are identified as Hispanic and 7% as race/ethnicity unknown (U.S. Dept. of Ed., n.d.).

The National Report Card on Higher Education's "Measuring Up 2008" identifies the national average retention rate at 55 percent (Spalding, 2012). According to IPEDS data WKCTC retained 63% of first-time full-time students from fall of 2014 to fall of 2015. IPEDS data show that WKCTC has a graduation rate of 43% and transfer out rate of 11% for first-time full-time students beginning in fall 2013 within 150% of normal completion time (U.S. Dept. of Ed., n.d.).

Description of Accelerate You! instructional model. In an effort to address the deficits in retention and credential completion, particularly for adult education students, KCTCS implemented the Accelerating Opportunities Kentucky (AOKY) initiative as part of a four year grant-funded state initiative. The goal of the initiative was to remove barriers that prevent adults from beginning and completing a college credential through integrating adult education needs with technical courses.

WKCTC was part of the initial phase of the grant and developed the initiative through the Adult Education program. Adult Education played a pivotal role in the initial design of the program as the grant required. The initial design at WKCTC followed the required Accelerating Opportunities (AO) structure, including a mixed cohort design with adult education students alongside students with the required college entry requirements (high school diploma, demonstrated skills on placement tests). Required math skills were contextualized within the technical courses with Adult Education staff team teaching within the technical courses. Online modules designed by Adult Education staff addressing the math skills contextualized in the technical courses were developed to support students throughout the semester. One hour a week

is dedicated to a “tutoring” time specifically for AO students. Essentially the AO model provided students who qualified for adult education the opportunity to enter credit-bearing courses and receive additional support through online modules, team teaching in challenging technical courses, and weekly tutoring sessions.

As the end of the grant neared, KCTCS mandated sustainability plans be developed to keep the initiative going on each campus beyond the grant. Initial data indicated the model was effective. Academic Affairs at WKCTC examined how the structure of the AO initiative at WKCTC could address some of the factors that potentially influence low student success rates across campus, particularly developmental education students. WKCTC was granted permission by KCTCS to rename the program Accelerate You! (AY!), and WKCTC continued the program in Applied Technologies with expanded support structures and the inclusion of students with high school diplomas but without the required placement scores needed to enter college-level math. Without the required placement scores on the ACT, COMPASS, TABE, or KYOTE exams, students were required to complete developmental education courses prior to entering college credit-bearing courses, particularly in math. The sustainable model of the Accelerating Opportunities initiative, AY! in Applied Technologies was designed to be open to all students, allowing developmental education students to bypass developmental course work and advance to a pathway to credential completion alongside other students who had demonstrated the skills needed to enter college-level courses.

The foundational design feature of the AY! model is the advancement of students who qualify for developmental coursework, specifically math, based on placement scores past the developmental education sequence directly into college level math courses. Since inception, the

AY! model has evolved to include a battery of support strategies to improve student success, particularly for those students who qualify for developmental math. Those supports include:

- a mixed cohort model in which all new students in programs in Applied Technologies take the same course sequence each semester reflecting guided pathways and learning communities research;
- a first-year experience course is required in the first semester, a nationally recognized high impact practice;
- success coaches (adult education and developmental education instructors) team teach in both the college-level math courses and technical courses, which is sometimes a component of contextualized teaching and learning;
- a weekly tutoring session for general education and technical course support with success coaches;
- math concepts taught in college-level math courses and contextualized in the technical courses reflecting contextualized teaching and learning research; and
- math modules reteach important math concepts required for the college-level math course and technical course.

This multifaceted approach intends to address students' varied needs to improve student success, retention, and completion.

Role of the researcher. The researcher in this study is a faculty member at WKCTC and must examine the impact of this relationship on the study design and findings. Peshkin (1994) explores the subjectivity of self for the researcher enveloped in the subject of the study, noting several factors both positively and negatively influencing the researcher's pursuit of objectivity when subjectivity can never fully be absent. Peshkin (1994) states, "Subjectivity operates

throughout the entire research process, beginning with the choice of what we study, including our methods for data collecting and our analysis of data, and ending with the conclusions we draw" (p. 50). Peskin notes that the stake the researcher has in the subject is linked to what the researcher cares about, which is normal for researchers in education, social sciences, and humanities. This sentiment is true of the current study. The researcher, as an employee of WKCTC, has a stake in the efficacy of the AY! model being studied.

As a new initiative at WKCTC intended to improve student credential completion, the AY! model is important to the future of the college. Yet positive findings alone cannot ensure improved student retention and completion; the researcher's findings must provide guidance to the college in strategically designing future instructional models to maximize impact on student success. Additionally, findings can provide some guidance to other community colleges because retention and completion rates are a national concern.

It is important to note several influencing factors: As a faculty member of WKCTC, the researcher works in close proximity to the faculty and staff involved in the AY! model as well as cares for the student population of WKCTC. Yet, the researcher does not teach or work within the AY! program or Applied Technologies. Furthermore, the researcher has not taught any students in the current study population and is not acquainted with students in the past cohorts who may be included in the data collected. Additionally, the researcher is a life-long resident of the region serviced by WKCTC and a first-generation college student. Some of the factors discussed in the literature influencing community college student persistence (Spalding, 2012; Braxton, et al., 2014; Jenkins, 2014; Moschetti & Hudley, 2015) are personally understood by the researcher.

These factors do influence the researcher's way of "seeing and comprehending" (Peshkin, 2001, p. 244-245). Peshkin (2001) explores his awareness as a researcher of his appreciation of macroaesthetics or "large phenomena" while gaining an "increasingly refined appreciation of microaesthetics," which he attributes to "becoming wiser and wiser about ways of perceiving" what is around him yet is "not customarily taken in" (p. 239-240). While the factors and characteristics of the researcher addressed previously could lead to a desensitized perception of the macroaesthetics of the study context and participants, these characteristics more so allow the researcher to adopt the emic lens (Peskin, 2001). With this lens, the researcher possesses respect that leads to "taking seriously what [research subjects] say, what they think they are doing, what they make of things" (Peskin, 2001, p. 244). This characteristic will be particularly important for the qualitative components of this study.

The researcher, following Peshkin (1994), placed less emphasis on the importance of how to monitor the role of herself, rather simply the importance of emphasizing self-monitoring and awareness. The researcher followed Peshkin's philosophy: "The purpose of learning about myself is not for the end of learning about myself but for facilitating learning about students, teachers, schools, ad infinitum" (Peskin, 1994, p. 56).

Research Design

Assessment of the efficacy of the multifaceted AY! model necessitates a multi-directional approach. Intersectionality, according to Griffin & Museus (2011), is examining people and their experiences at intersections of life, particularly, a term applicable to first-year college students who are at an intersection in their lives, particularly if they are first generation college students. This examination of intersections in life can also be applicable to non-traditional students returning to the classroom for retraining. Griffin & Museus (2011) identify

intersectionality as a "research paradigm rather than just a topic of study" (p. 15) and argue that mixed methods research better addresses the needs of intersectionality (Griffin & Museus, 2011). Though mixed methods research has arguably not been given enough attention, the approach provides benefits to higher education researchers to study intersectionality as well as post-secondary phenomena (Griffin & Museus, 2011, p. 15-16).

Quantitative data in the form of course grades, semester-to-semester persistence, and scores on personal qualities' measures gathered from survey data can provide some insight into the impact of the AY! model on student success. However, the performance measures and personal qualities scales alone cannot effectively communicate why AY! students are or are not traversing this intersection of their lives in a manner that will carry them beyond the structure of the AY! model. This study utilized qualitative data from focus groups with students in the AY! program to provide student perceptions that can lead to a deeper understanding of the numerical data. Focus groups were utilized because of their efficiency in eliciting opinions through planned discussion of the components of the AY! model (Morse & Niehaus, 2009).

Sweetman, Badiee, and Creswell (2010) assert that adopting new research approaches, specifically mixed methods research, leads to shaping "a more equitable society" (p. 441). This idea of effecting social change is supported by Mertens's transformative framework in which "knowledge reflects the power and social relationships within society, and the purpose of knowledge construction is to aid people to improve society" (Sweetman, Badiee, and Creswell, 2010, p. 442). The authors link this transformative framework lens to mixed methodologies research (p. 443). Sweetman, Badiee, and Creswell (2010) contend transformative mixed methods studies contain a plan for change, enabling the authors to transform the subject of study, rather than just report findings (p. 452).

The AY! model's multifaceted approach in addressing persistence factors, particularly within an at-risk population, prompts the need for analysis of potential impacts and the factors leading to the measured impacts. The quantitative measures provided concrete and generalizable insight into the efficacy of the program while the qualitative data allowed for exploration of the factors leading to the quantifiable impacts. Also, the quantitative data derived from a larger *n* than the qualitative data. This assessment of the AY! model took a quantitative dominant mixed approach, in which the objective numerical data, particularly the performance measures, was emphasized over the qualitative components (Onwuegbuzie, Johnson, & Collins, 2009) and the subjective self-reporting personal quality scales. These latter measures complement the performance data.

This research study sought to answer three research questions to better understand efficacy of the AY! model:

- RQ1: How does the Accelerate You! (AY!) model impact student success, as defined by course grades associated with the AY! model and semester-to-semester persistence?
    - Ho1: The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered before and in the AY! model.
    - Ho2: The AY! model demonstrates no impact on fall-to-spring semester student persistence.
- RQ2: Does an association exist between participation in the AY! model and changes in students' personal qualities, specifically mindset, grit, and study skills self-efficacy?
    - Ho1: The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy.

- RQ 3: What are students' perceptions of the AY! model's influence on their success?

Data Sources

Data were collected during the 2016-2017 academic year after Human Subjects Review Board approval was granted. Data utilized in this study were compiled through the researcher's access to the data storage platform PeopleSoft at WKCTC. Additionally, reports were shared with the researcher by the Office of Institutional Effectiveness and Research and the Director of Accelerate You! Institutional data reports were used to obtain course grades for compiling performance data and fall-to-spring persistence for cohorts from 2011 through 2016. Data compiled by the researcher for the target population, the 2016-2017 cohort of AY! students in Applied Technologies, were organized in an Excel document with 45 study participants and 14 variables.

Population and Sample

To answer research question 1, the researcher identified two Applied Technologies courses and the required math course needed for degrees in Applied Technologies programs. The AOKY model began with the Industrial Maintenance program in 2012. The AY! model was implemented in both the Industrial Maintenance program and the Electrical Technology program in 2015. Degrees in both of these programs require MAT 116; therefore, MAT 116 became part of the AY! model in 2015. Specifically, the Office of Institutional Planning, Research, and Effectiveness at WKCTC provided the researcher with course grades and persistence data for the each of the following courses for each of the fall semesters indicated:

- IMT 110 in fall 2011 (n=29), fall 2012 (n=29), fall 2013 (n=23), fall 2014 (n=11), fall 2015 (n=11), and fall 2016 (n=29),
- EET 119 in fall 2014 (n=17), fall 2015 (n=14), and fall 2016 (n=17); and

- MAT 116 in fall 2014 (*n*=32), fall 2015 (*n*=48), and fall 2016 (*n*=90).

To answer research question 2, the 2016-17 study population was identified with purposeful sampling from the AY! Applied Technologies programs beginning August 15, 2016, specifically students enrolled in the first year experience course (FYE 105) for Applied Technologies programs. The majority of the students who agreed to participate in the study from the 2016-2017 study population are male, specifically 44 males and one female. This is not consistent with IPEDS data that indicated 55% of the student population at WKCTC in fall of 2016 is female (U.S. Dept. of Ed., n.d.). The researcher learned from faculty and staff in the Applied Technologies division that the demographic makeup of a particular semester or year can be influenced by current economic factors in the region. For example, the researcher learned from focus group data for research question 3 that the 2016-2017 study population consists of a large number of former employees of a local paper mill recently closed. These unique characteristics of the Applied Technologies programs must be considered in data analysis and findings.

The purposeful sample of students from FYE 105 in Applied Technologies programs in fall 2016 was invited to participate in the study and was provided informed consent. All students in this purposeful sample who agreed to participate were asked to complete the Personal Qualities Student Survey in August 2016, late November/December 2016, and in late April/May 2017. Forty-five students initially agreed to participate and completed the Student Survey from a total enrollment for the three FYE 105 sections of 87 students; 51.7% agreed to participate and completed the survey in August.

To answer research question 3, from the purposeful sample of FYE 105 students in Applied Technologies, convenience sampling was used for three focus groups in

November/December 2016 and April/May 2017. Convenience sampling was used with the intention of gathering AY! students who wished to share their perceptions. This was also the recommended approach by the AY! faculty who are familiar with the student population. Three focus groups were held with volunteers from each of the three FYE 105 sections. One of the three FYE sections was held at a satellite campus where two Applied Technology programs are offered; that focus group was held at the satellite campus. The other two focus groups were held on the main campus. Ten students attended the first focus group held at the satellite campus; seven attended the second focus group; nine attended the third focus group. The three fall focus groups were held in November/December 2016 in the FYE 105 classrooms or nearby classrooms with a total of 26 participants.

The same 26 students identified through convenience samples for the first three focus groups were invited to participate in the second focus groups in April/May 2017. One of the 26 participants did not return for the spring semester. All participants in the fall focus groups were not enrolled in consistent courses. The researcher reviewed each focus group participant's spring schedule and identified common classes between participants. The researcher then scheduled focus groups convenient with the common schedules. The first focus group was scheduled to accommodate the schedules of seven students in varied Applied Technology programs. Of the seven students invited to this focus group, none attended. This was likely due to students' perception of inconvenient timing of the focus group meeting to their class schedules. Again one focus group was held at the satellite campus to accommodate the Applied Technology students with courses held exclusively at the satellite campus. Of the eleven students invited to participate, seven attended. The last focus group was coordinated with the electrical professor

who had seven participants in one of his classes, and seven attended. Spring focus groups included 14 participants.

Instrumentation

To address research question 2 and assess how the AY! model impacts students' personal qualities, mindset or implicit theory of intelligence, grit, and study skills self-efficacy were measured. The Student Survey of personal qualities used in this study is a combination of three measures, one for each personal quality, delivered via Survey Monkey. (See Appendix A.)

The electronic survey began with the informed consent (See Appendix B) providing participants with information about the purpose of the study. Participants were required to be 18 years of age. Participants who were at least 18 years of age and agreed to participate clicked *agree to participate* to advance to the survey. Those not identifying as 18 years of age or not agreeing to participate were disqualified and could not proceed to the survey items.

Once participants agreed, they were then asked to provide their names and student identification numbers. This information was collected to ensure consistency of survey submissions with class rosters for the Applied Technologies first-year experience courses. This identifying information also ensured consistent participation in each phase of the study. Student names and student identification numbers also assisted the researcher in retrieving course grades and semester-to-semester persistence. This information was only utilized to protect the integrity of the study population.

Additionally, participants were asked if anyone in their immediate families completed a college credential. The survey defined a first generation college student as a college student with no one else in the student's family with a college credential prior to the student becoming a college student. This question provided data on first generation status not maintained within

institutional data. Participants were also asked if they are first time college students this semester. Upon completion of this question, participants advanced to the survey questions.

The survey consisted of three parts. Each part began with instructions followed by survey items. The terms "mindset," "grit," and "self-efficacy" were not used at any point in the survey. The survey included a total of 20 items.

Mindset. The first part of the Personal Qualities Student Survey consisted of items addressing mindset. According to research spearheaded by Carol Dweck, a growth mindset leads to a desire to learn whereas a fixed mindset leads to the avoidance of learning challenges (Dweck, 1999; Dweck, 2006). This study utilized Dweck's Theories of Intelligence Scale--Self-Form for Adults provided in *Self-Theories* (1999, p. 178). The scale in this study was the abbreviated four item scale that measures an individual's self-perceptions of intelligence. The original form provided the rating scale above the items (Dweck, 1999, p. 178). The scale was derived from Dweck, Chiu, and Hong (1995) and Levy, Stroessner, and Dweck (1998). For this study's application in an electronic format, the rating scale of 1 meaning "strongly agree" to 6 meaning "strongly disagree" was provided below each of the four statements; however, the numbers were not visible to the respondents, only the descriptors. Dr. Dweck provided the researcher permission to use this instrument via email response.

Grit. Upon completion of the four mindset questions, participants advanced to the second part of the Personal Qualities Student Survey with questions addressing grit. Duckworth, Peterson, Matthews, and Kelly (2007) established the concept of grit through six studies that created the grit scale and identified grit as perseverance and passion in the pursuit of long-term goals. Through further research on grit, Duckworth and Quinn (2009) established "a more efficient measure of trait-level perseverance and passion toward long-term goals" (p. 172) or the

Short Grit Scale (Grit-S), which is utilized in this study. Duckworth and Quinn (2009) demonstrate through six studies that the Grit-S is shorter and psychometrically stronger than the 12-item grit scale (Grit-O). The authors provide evidence of predictive validity, consensual validity, and test-retest stability. Social desirability bias is also ruled out through objective measurement. The authors recommend the shorter scale, Grit-S, as "an economical measure of perseverance and passion for long-term goals" (Duckworth & Quinn, 2009, p. 174).

The Grit-S on the survey utilized in this study began with instructions that prompt respondents to compare themselves to "most people," not just those known well by the respondents. The Short Grit Scale for this study consisted of 8 items, each followed by a 5-point rating scale that begins with "very much like me" and ends with "not like me at all." For items that reflect gritty behavior, "very much like me" corresponds to 5, and for items that reflect less gritty behavior, "very much like me" corresponds to 1. The descriptors were only visible to the study participants, not the numbers in the rating scale. Dr. Duckworth's website states the instruments provided may be used for educational purposes. The researcher, additionally, received verification of permission to use via email response from the Duckworth Lab.

Study skills self-efficacy. Betz (2007) asserts that self-efficacy theory is behavior-domain-specific. For example, if research seeks to understand learning related to math, mathematics self-efficacy must be explored. Because general academic self-efficacy has proven too broad (Larson, et al., 2015; Zajacova, et al., 2005), this study sought to focus on domain-specific self-efficacy that could lead to improved persistence and credential completion. Research has shown that when students gain a sense of self-efficacy in particular learning contexts, they are more likely to continue the strategies previously used when faced with situations that prompt low sense of self-efficacy (Silver, Smith & Greene, 2001). The AY! model

utilizes the first-year experience course as well as embedded tutoring to demonstrate to students the study skills needed for success. To assess the AY! model's impact on study routines, this study utilized the study routines self-efficacy items from the Study Skills Self-Efficacy instrument developed by Silver, et al. (2001).

Silver, et al. (2001) adapted the scale from which this study drew items from the Study Skills Self-Efficacy Scale (SSSES) adapted by Silver, Gable and Smith (1995), designed for community college students. Silver, et al. (2001) note evidence from four studies for the scale's reliability and validity. Silver, et al. (2001) used common factor analysis, Rasch analyses, and MANOVA to test the dimensionality of their revised scale, which includes sixteen study routines items. Silver, et al. (2001) identified two items from the sixteen demonstrated more variability than expected.

Utilized in this study, the Study Skills Self-Efficacy instrument from Silver, et al. (2001) included items addressing text-based critical thinking, resource use, and study routines, totaling 32 items. Considering the researcher's intent to measure mindset and grit as factors impacting self-efficacy, the investigator identified study routines as most closely linked to the self-regulation needed for success beyond the AY! model support structure and for completion of a credential. Only the study routines items were considered for this study. From the sixteen study routines items, the two items found by Silver, et al. (2001) to have more variability than expected were omitted. The remaining fourteen items were reviewed for closest alignment with routines needed by students beyond the AY! support structure to complete a credential. Eight items were selected based on their alignment with the purpose of the AY! model. Items were identified that address setting aside study time on a regular basis (promoted by the structure of the AY! model with scheduled weekly tutoring time) and study skills (such as reviewing notes and balancing

study time between classes) as well as behaviors that reflect self-awareness (such as treating self for doing well on tests and taking study breaks). Selecting eight study skills self-efficacy items controlled the total number of items on the Personal Qualities Student Survey (total of 20 items) and focused the study skills self-efficacy part on key factors in continued success beyond the AY! support structure.

The Study Routines Self-Efficacy Scale, the third and final series of items in the Personal Qualities Student Survey, began with instructions for the respondents to rate the items according to their answer to "How much confidence do you have in doing each behavior?" The survey then consisted of 10 items that described study routines followed by a rating scale that began with "quite a lot of confidence" corresponding to 5 and ended with "very little confidence" corresponding to 1. The numbers corresponding to the ratings were not visible to respondents. The researcher received permission to use this instrument from Dr. Silver via email response.

Focus group instruments. The first semester focus groups were asked questions that prompted participants to share their perceptions of the challenges they faced during the semester as well as their perceptions of the individual support strategies used within the AY! model. The second semester focus groups were also asked about the challenges they faced; however, questions prompted the participants to contrast the second semester challenges to the first semester. Additionally, participants were asked about strategies or approaches learned in the first semester and utilized second semester. Focus group scripts and questions can be found in Appendix C.

Protection of Human Subjects

The researcher followed guidelines for conducting research studies including human subjects established by Murray State University (MSU) and the Kentucky Community and

Technical College System (KCTCS), to which West Kentucky Community and Technical College (WKCTC) belongs. The researcher reviewed procedures and guidelines, completed the required IRB certification training, and submitted Institutional Review Board (IRB) application to the coordinator of the IRB of MSU. The MSU IRB deemed approval unnecessary because the study population was limited to students enrolled within the AY! program and the AY! program was the focus of the study. MSU IRB recommended statements regarding participation in the study be placed in syllabi for AY! courses. The researcher also reviewed procedures and guidelines for KCTCS Human Subjects Review Board and submitted the KCTCS HSRB application to WKCTC President for approval. With WKCTC President's approval, the application was submitted to the KCTCS HSRB for approval. The researcher received approval from KCTCS Chancellor. (See Appendix D: HSRB Approval.)

All study participants were provided information about the study by the researcher in the informed consent (See Appendix B) preceding the Personal Qualities Student Survey (See Appendix A). The study participants were informed that all information submitted for this study would be retained by the researcher and was for the purpose of examining the efficacy of the AY! model on student success. Participant responses to the Personal Qualities Student Survey and in the focus groups would be utilized by the researcher for the purposes of this study only, and only final study findings would be shared with program faculty and others upon the completion of the study. No identifiable information would be associated with specific survey or focus group responses. Focus group participants were offered the opportunity to review transcripts from the focus groups.

The Personal Qualities Student Survey was administered and maintained via Survey Monkey. Survey Monkey access requires the college account login and password. After the

researcher administered and downloaded final responses from the Personal Qualities Student Survey in May of 2017, the survey responses were deleted. The researcher maintained electronic and print copies of responses to the Personal Qualities Student Survey in her locked office for the duration of the study until final approval of the dissertation. The researcher's computer is password protected.

Focus group sessions were video recorded to ensure responses were captured for accurate transcription. The researcher hired an undergraduate sociology major with previous experience in conducting focus groups and transcription to transcribe the focus groups. The focus group videos were uploaded to the researcher's YouTube channel as unlisted videos to allow access only with the URL the researcher provided, which was only provided to the transcriber. The transcriber was instructed not to share the videos with anyone and not to discuss the contents of the videos with anyone. Once transcription was complete, the researcher set the videos to private to prohibit any access to the videos without the researcher's YouTube login and password. The URLs provided to the transcriber no longer work for anyone but the YouTube subscriber who posted the video (the researcher for the focus group videos) once the videos are set as private. The focus group videos were maintained by the researcher for the duration of the study until final approval of the dissertation.

Data Collection and Analysis

This study sought to answer:

Research Question 1. How does the Accelerate You! (AY!) model impact student success, as defined by course grades in courses included in the AY! model and semester-to-semester persistence for AY! students?

Ho1. The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered before and in the AY! model, specifically [ELT 110 and EET 119, IMT 110, MAT 116]

To test Ho1, the researcher examined course grades for IMT 110 Industrial Maintenance Electrical Principles. Industrial Maintenance Technology was the first Applied Technologies program in the AOKY model beginning in 2012. The researcher obtained course grades for fall 2011, one year before AOKY implementation, through fall 2016. The AOKY support structure was omitted from IMT 110 in fall 2014 due to low enrollment. Then in fall of 2015 the AY! model launched in IMT 110 and continued through fall 2016. The AOKY model sought to accelerate students who were seeking a GED in to college level courses. These students were seeking certificates or diplomas, not associate of applied science degrees; therefore, they were not required to take a college level math course. The AOKY supports imbedded math instruction through team teaching in the technical courses.

The researcher also examined course grades for EET 119 Basic Electricity. Electrical Technology was not a program included in the AOKY model, but it was included in the AY! model when it launched in 2015. The researcher obtained course grades for fall 2014, one year prior to AY! implementation, through fall 2016.

The AY! model accelerated students without required benchmark placement test scores in math into college level math courses with varied supports in place to address math skills deficits. The researcher examined course grades for MAT 116 Technical Mathematics from fall 2014, one year prior to AY! implementation, through fall 2016.

It is important to note that the AY! model accelerated students who did not possess the required benchmark placement test scores in math into college level math. In 2015, for the first

time, students without required math placement test scores were taking IMT 110 or EET 119 and MAT 116.

The researcher converted course letter grades to numerals based on the standard grade point values, A=4, B=3, C=2, D=1, and E=0. WKCTC uses E to indicate failure of the course. The researcher also gave W, or withdrawn, a value of zero, W=0. Withdrawals were assigned 0 because withdrawing from the course does not indicate successful, timely persistence toward credential completion. The researcher examined the performance data using ANOVA to compare means for the six years of data for IMT 110, to compare means of three years of data for EET 119, and to compare means of three years of data for MAT 116. Statistically significant difference in means of course grades for each course can demonstrate the impact of the AY! model on student performance.

***Ho2*.** The AY! model demonstrates no impact on fall-to-spring semester student persistence.

To test Ho2, the researcher collected persistence data on student enrolled in the three courses examined for Ho1. Because MAT 116 is required along with IMT 110 or EET 119, students in this data set would appear in IMT 110 or EET 119 and MAT 116. The researcher examined each course's persistence data separately. The researcher used chi-squared (χ^2) to test Ho2 because χ^2 examines the differences between actual and expected rates of persistence. Statistically significant difference between actual and expected persistence rates can demonstrate the impact of the AY! model student persistence.

Research Question 2. Does an association exist between participation in the AY! model and changes in students' personal qualities, specifically mindset, grit, and study skills self-efficacy?

***Ho1*.** The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy.

To test Ho3, data collection consisted of 2016-2017 target population responses to the AY! Student Survey, regarding students' mindsets, grit levels, and self-efficacy. The personal qualities of mindset, grit, and self-efficacy are shown by researchers to have a positive impact on student performance and achievement of long-term goals (Yeager & Dweck, 2012; Paunesku, et al., 2015; Duckworth & Quinn, 2009; Zajacova, Lynch, & Espenshade, 2005; Silver, Smith, & Greene, 2001). Measurement of personal qualities took place before coursework began the first week of classes in August 2016, again at the end of the fall semester in November/December of 2016 after one semester of AY! interventions. Support strategies in the AY! model are decreased in the second semester of the model. Measurement of personal qualities also took place at the end of the spring semester, April/May 2017, to measure further potential changes in personal qualities as the support strategies were decreased from the first semester. These measurements would provide the researcher data that could suggest how the AY! model impacts students' personal perceptions of self.

Student responses were downloaded as an Excel document from Survey Monkey. In the survey results Excel document, average columns were created for each set of questions corresponding to the three personal qualities addressed. From Excel document containing responses, student averages for each personal quality were transferred to another Excel document consisting of all quantitative data, specifically 14 variables.

The researcher used the paired *t*-test to test Ho1. The paired t-test determines differences in means between paired observations. The researcher tested beginning means for mindset, grit, and study skills self-efficacy scores and end of fall semester scores. Then the researcher tests

beginning means for mindset, grit, and study skill self-efficacy scores and end of spring semester scores. By testing mean differences from beginning of the AY! model to end of first semester and again at end of the year, the researcher can identify the impact of the AY! model on students' personal qualities, specifically mindset, grit, and study skills self-efficacy.

Research Question 3. What are students' perceptions of the AY! model's influence on their success?

This study utilized a mixed methods design that included primary quantitative data collection described in the preceding paragraphs as well as qualitative data collection intended to "enrich or expand" understanding (Morse & Niehaus, 2009). This study utilized qualitative methods, specifically focus groups, because quantitative research is "not optimal for answering why and how questions" (Frels & Onwuegbuzie, 2013, p. 185) and focus groups, a form of qualitative research, efficiently provides participant opinions through planned discussions (Morse & Niehaus, 2009). Because the quantitative measures cannot adequately identify *why* the AY! model impacts course averages, retention, and personal qualities in the manner the quantitative data suggest. The researcher conducted focus groups at the end of the fall 2016 semester and spring 2017 semester to collect further data on the students' perceptions of the AY! model and specific interventions to identify how the AY! model impacts students success and personal qualities.

Of the study population, convenience sampling identified three focus groups, one of which from each FYE 105 class in the fall semester. In the spring semester, three focus groups inviting the first focus group participants to return to share perceptions were scheduled to accommodate student schedules and were held at the end of the spring semester. During the focus groups, the researcher asked students for their perceptions of the interventions provided in

the AY! model and the impact components of the model had on their academic performance, motivation to persist, and ability to continue academic work without the AY! interventions in place.

Focus group sessions were video recorded to ensure responses were captured for accurate transcription by a hired undergraduate sociology major with previous experience in conducting focus groups and transcription. To allow access for the transcriber, the focus group videos were uploaded to the researcher's YouTube channel as unlisted videos. Unlisted videos are only accessible when the URL is provided. The researcher provided the focus group video URLs to the transcriber only. Once transcription was complete, the researcher set the videos to private to prohibit any access to the videos without the researcher's YouTube login and password.

To answer research question 3, focus group transcripts were analyzed. According to Glaser & Laudel (2013), "In order to arrive at explanations of social situations or processes, we need to systematically reduce the complexity of the information we generated in the qualitative data collection" (p. 7). The researcher examined the three focus group transcripts from the fall and the three from the spring separately by attaching codes to key ideas captured in respondents' remarks. The following codes were used to analyze the focus group data (Bogdan & Biklen, 1992; McMillan, 2008):

- "Setting" or context code captured participants' remarks addressing the components of the AY! model, including first year experience course, team teaching, math modules, completion coaches, and weekly tutoring.
- "Definition of the setting," within the setting code, captured participants' understanding of the components of the AY! model design.

- "Perspectives held by participants" code captured the more specific ways of thinking the participants held regarding the components of the AY! model.
- "People or objects" captured the participants' references to particular people, titles, or roles.
- "Process" code captured the words or phrases that reflect sequencing. This could be beneficial in understanding participants' understanding of learning process relevant to growth of skills and personal qualities or the lack of.
- "Activity" code captured participants' references to regularly occurring events or behaviors. This would be relevant to understanding the development of study skills self-efficacy.
- "Strategy" code captured what participants do to influence their actions or behaviors.

According to Glaser and Laudel (2013), "pattern recognition is recognizing characteristic combinations of data, which is most easily achieved when we try groupings of data and look at them" (p. 12). From the selection and rearranging of groupings based on the needs in answering the research question, patterns evolved, leading to the integration of patterns and further rearranging to identify more patterns (Glaser & Laudel, 2013). This process included more than simply coding, sorting, and sifting data from focus group transcripts. Rather, the process included analysis of data literally, interpretively, and reflexively (Chowdhury, 2015). The researcher identified themes within the three fall focus group transcripts as they related to the sociological and psychological perspectives on student departure by categorizing codes according to institutional level factors and student level factors, aligning with Braxton, et al. (2014) and Tinto (2012b). Institutional level factors include adjustment, difficulty, incongruence, and isolation (Braxton, et al., 2014); themes included academic challenge, problems experienced, and people to categorize the codes. Student level factors include academic skills, motivation, personal qualities, and student development theories; themes included motivation, background,

and people to categorize the codes. This further reduction allowed themes identified with the codes to be categorized to institutional factors or student factors.

The last step in analyzing data gather to address research question 3 was triangulation of findings from data analyzed for research questions 1 and 2. Triangulating quantitative measures of student success and personal qualities coupled with focus group responses provided a clearer understanding of how the AY! model impacts students. This step in analysis followed conjunctive mixed methods/triangulation as explored by Howe (2012). This allows for between-methods triangulation to answer the research questions, which seeks to identify A-causation between the AY! interventions and student success.

The quantitative data collection provides concrete measures of performance that can easily be quantified and deemed successful, yet student perceptions, as the literature demonstrate, influence academic performance (Tinto, 2012a; Tinto, 2012b; Tinto, 2012c; Braxton, et al., 2014). Consequently, this study sought to understand the impact of institutional practices on personal qualities or an A-causal relationship. A-causal explanations identify or account for "processes of human behavior in terms of norm-governed institutions and practices" (Howe, 2012, p. 90). Both the quantitative and qualitative data collection, including the individual performance measures as well as student survey and focus groups, provided rich sources of information from which to formulate an answer. Linking themes from the focus groups with personal qualities and performance measures reveals a clearer understanding of how institutional level efforts impact student level factors.

Summary

This study examined the impact of the multi-layered instructional design of the AY! model at WKCTC on student success, specifically course grades and persistence from fall to

spring as well as student personal qualities. This study, through a mixed methods design, provides a deeper understanding of how the layered interventions impact students' performance as well as students' perceptions of self and the institution. Findings can inform future decision-making at WKCTC and provide insight for other community colleges seeking intervention strategies to improve student retention and completion.

Chapter 4: Data Analysis

> Mixed methods research is not necessarily just an exercise in testing findings against each other. Instead, it is about forging an overall or negotiated account of the findings that brings together both components of the conversation or debate. (Bryman, 2007, p. 21)

Introduction

This study evaluated the impact of the multi-faceted, evolving Accelerating Opportunities Kentucky/Accelerate You! model on student performance. The AOKY model began to advance adult education students to credential pathways as well as support students with low math placement test scores at WKCTC. The model evolved into AY! to address the needs of students without required math placement test scores in pursuing credentials requiring college level math. Specifically, this study examined how multiple support structures in one instructional model impacted student performance and student personal qualities. Findings from this study can provide West Kentucky Community and Technical College, as well as other community colleges, data that can inform future decision-making that will lead to improved student retention and completion.

Following a mixed methods design, this study examined three sets of data including multiple years of students' course grades in three courses in Applied Technologies programs, 2016-17 target population self-reported responses to the Personal Qualities Student Survey, and focus group data collected from convenience sampling of the target population at two points in the 2016-2017 school year. These data provided the researcher information to answer three specific questions about the impact of the AY! model on student success.

- RQ1: How does the Accelerate You! (AY!) model impact student success, as defined by

course grades associated with the AY! model and semester-to-semester persistence?

- RQ2: Does an association exist between participation in the AY! model and changes in students' personal qualities associated with academic performance, specifically mindset, grit, and study skills self-efficacy?
- RQ 3: What are students' perceptions of the AY! model's influence on their success?

The chapter proceeds by presenting data collected to answer each research question in the order listed above.

Research Question 1

This study sought to first answer: How does the Accelerate You! (AY!) model impact student success, as defined by course grades for courses included in the AOKY/AY! model and semester-to-semester persistence for AOKY/AY! students? The researcher established two null hypotheses for RQ1:

- Ho1: The AOKY/AY! model demonstrates no impact on student academic performance as defined by students' course grades in Applied Technologies courses offered prior to and in the AOKY/AY! model, specifically [IMT 110, EET 119, MAT 116]**.**
- Ho2: The AY! model demonstrates no impact on fall-to-spring semester student persistence.

Sample. To answer this research question and test the two null hypotheses, the researcher identified Applied Technologies courses offered consistently in fall semesters beginning the year prior to AOKY implementation/AY! model implementation and through the evolving AY! model to the most recent academic year, 2016-2017. Applied Technologies courses included in the AY! model have expanded through the years of the model's evolving implementation at WKCTC. The researcher identified two technical courses and the required math course as

consistently offered prior to the AOKY/AY! implementation and offered each fall from implementation through fall of 2016.

Industrial Maintenance was the first Applied Technologies program in the AOKY program in spring of 2012. IMT 110 Industrial Maintenance Electrical Principles utilized the support structures of the AOKY program beginning in fall of 2012, continued in fall of 2013, and was omitted from the AOKY program due to low enrollment in fall of 2014. The AOKY model in its original form advanced adult education students (those seeking a GED) into industrial maintenance certificate programs. Students were not required to take a math course but were provided supports for math in the IMT 110 course with the goal of improving placement test scores to enable students to take college level math. IMT 110 was then included in the fall of 2015 implementation of the AY! model, the expanded AOKY model that included students who did not meet math benchmarks and utilized the expanded support structures to meet the math skills needs. The focus of AY! was placed on advancing developmental math students to college level math and putting students on the pathway to Associate of Applied Science degrees in with math supports in the math course and the technical courses.

Electrical Technology programs were not part of the original AOKY program in 2012. In 2015 when the AOKY model expanded to become AY! EET 119 Basic Electricity was included in the AY! program, including students who did not meet placement test benchmarks in math. Electrical Technology was included in the AY! model because of its consistent student interest in the program and data that suggest it is a program that interests a number of students who do not meet the required math benchmarks to enter the college level math course required in the program.

Data collection for this study included control group data for the fall semester prior to the implementation of the support structures in IMT 110 and EET 119 and each subsequent fall semester with the AOKY model and/or the evolving AY! model implemented. Data collected included course success rates in three specific courses and fall-to-spring semester persistence for students enrolled in those specific Applied Technologies courses and the required math course for the Applied Technologies programs. The courses consistently offered each fall were:

- IMT 110 in fall 2011, fall 2012, fall 2013, fall 2014, fall 2015, and fall 2016 (with the omission of support structures in the fall of 2014), and
- EET 119 in fall 2014, fall 2015, and 2016; and
- MAT 116 in fall 2014, fall 2015, and fall 2016.

Ho 1. The researcher established Ho1: The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered prior to and in the AY! model, specifically IMT 110, EET 119, and MAT 116. ANOVA can detect statistically significant differences between means of students grades in each course selected for this study.

IMT 110. IMT 110 Industrial Maintenance Electrical Principles is a required course for various certificates and Associate's degrees in Industrial Maintenance Technology programs. The course was first offered as part of the AOKY program in the fall of 2012. IMT 110 continued as part of AOKY in the fall of 2013. In the fall of 2014 IMT 110 enrollment fell and AOKY resources were shifted to another Applied Technologies program in the fall of 2014. In the fall of 2015, AY! launched, an expanded version of AOKY targeting students who did not meet placement test benchmarks in math. IMT 110 was part of the AY! program in the fall of 2015 and fall of 2016.

The researcher was provided letter grades and success rates for IMT 110 for the study period, fall 2011 through fall of 2016. The researcher converted the letter grades to numerals based on the standard grade point values, A=4, B=3, C=2, D=1, and E=0. The researcher also gave W, or withdrawn, a value of zero, W=0, because withdrawing from the course does not reflect persistence toward credential completion. Table 1 identifies descriptive statistics for IMT 110 from fall 2011 through fall 2016. The table demonstrates a decrease in mean in 2012 (*M*=1.88), which coincided with AOKY implementation in IMT 110. Again in fall 2013 (*M*=1.74) a further decrease in mean is indicated from fall 2011 (*M*=3.14). The mean then increases in fall 2014 (*M*=2.27), when enrollment dropped and AOKY supports were removed, and further increased and remained consistent for 2015 (*M*=2.91) and 2016 (*M*=2.90). Fall of 2015 coincides with the AY! model implementation.

Table 1

Descriptive Statistics for IMT 110

	2011	2012	2013	2014	2015	2016
M	3.138	1.88	1.739	2.273	2.909	2.897
SE	0.261	0.291	0.290	0.574	0.343	0.315
Mdn	4	2	2	3	3	4
Mode	4	0	3	4	3	4
s	1.407	1.453	1.389	1.902	1.136	1.698
S	1.980	2.11	1.929	3.618	1.291	2.882
Kurtosis	1.177	-1.283	-1.537	-2.045	4.255	-0.582
Skewness	-1.583	-0.040	-0.267	-0.370	-1.789	-1.144
Range	4	4	4	4	4	4
Minimum	0	0	0	0	0	0
Maximum	4	4	4	4	4	4
Sum	91	47	40	25	32	84
n	29	25	23	11	11	29
CI (95.0%)	0.535	0.600	0.601	1.278	0.763	0.646

For each fall group, 2011 through 2016, Levene's test for homogeneity of variance found variances are equal, $F(5, 122)=2.14$, $p=0.07$, using an α level of 0.05 ($p<0.05$). The researcher used ANOVA to compare means for the six years of data for IMT 110. The researcher found a statistically significant difference between groups (fall 2011 through fall 2016), $F(5, 122)=3.65$, $p=0.04$, using an α level of 0.05 ($p<0.05$). The researcher tested effect size using $R^2=SS_M/SS_T$ and found effect size to be a medium effect, $r=0.36$. Because the sample sizes for each of the fall semesters examined varied, the researcher conducted a Hochberg GT2 post hoc test. Post hoc comparisons reveal a significant difference between fall 2011 ($M=3.14$) and fall 2012 ($M=1.88$), $p=0.04$, and between fall 2011 ($M=3.14$) and fall 2013 ($M=1.74$), $p=0.02$, both using an α level of 0.05 ($p<0.05$). The drop in mean in fall 2012 coincides with implementation of AOKY and its continued implementation in fall 2013.

EET 119. EET 119 Basic Electricity is required to begin the career pathway to varied certificates and an Associate's degree in Electrical Technology. Electrical Technology programs were not part of the original AOKY program in 2012. When the AOKY model expanded to become AY! in fall of 2015, EET 119 Basic Electricity was included in the AY! program, including students who did not meet placement test benchmarks in math.

The researcher was provided letter grades for students in EET 119. To examine the grades using ANOVA, the researcher converted letter grades to numbers following standard grade point average numbers (A=4, B=3, C=3, D=1, E=0). The researcher also assigned zero to withdrawals because withdrawing from the course does not reflect persistence toward credential completion. Table 2 displays descriptive statistics for course grades EET 119 from fall 2014, the last semester prior to AY! implementation, through fall 2016.

Table 2

Descriptive Statistics for EET 119

	2014	2015	2016
M	1.765	2.929	2.588
SE	0.359	0.355	0.344
Mdn	2	3	3
Mode	0	3	3
s	1.480	1.328	1.417
S	2.191	1.764	2.007
Kurtosis	-1.429	2.206	-0.153
Skewness	-0.066	-1.689	-0.950
Range	4	4	4
Minimum	0	0	0
Maximum	4	4	4
Sum	30	41	44
n	17	14	17
CI (95.0%)	0.761	0.767	0.728

For EET 119, Levene's test for homogeneity of variances found variances are equal, $F(2, 45)=0.92$, $p=0.41$, using an α level of 0.05 ($p<0.05$). The researcher used ANOVA to compare means for the three years of data for EET 119 that reflect one year prior to AY! implementation and two years of AY! implementation. The researcher found no statistically significant difference between groups (fall 2014 through fall 2016), $F(2, 45)=2.840$, $p=0.07$, using an α level of 0.05 ($p<0.05$).

MAT 116. As with all college level math courses at WKCTC and generally all colleges, students must demonstrate a benchmark math skill level on specified assessments, such as the ACT or COMPASS. The AOKY model from fall 2012 through spring of 2015 targeted adult education students and students who did not obtain placement scores to enter college level math courses who were pursing certificates in Applied Technologies programs. Certificates did not

require a college level math course, though the technical courses did have math content. The AOKY support structure focused on supporting math skills in the technical courses. In fall of 2015, the AY! model expanded to target students without required placement tests scores but wished to pursue Associate of Applied Arts degrees in Applied Technologies programs that require MAT 116 Technical Mathematics. Prior to fall 2015, all students enrolled in MAT 116 were required to have met or exceeded the specified assessment score to enroll in the course. If students did not meet the specified score, the students were required to complete a sequence of developmental math courses to prepare for college level math courses, including MAT 116. Beginning in the fall of 2015, students in the AY! program were allowed to take MAT 116 with the AY! model providing layered supports to address math skills deficits.

Enrollment in MAT 116 any semester can include students from programs other than Applied Technologies because MAT 116 is required for numerous programs. The AY! sections of MAT 116 included both AY! students and non-AY1 students; however, all students in the MAT 116 classes in the AY! model had access to the team-teaching support structure in MAT 116. The researcher was provided letter grades for students in MAT 116. To examine the grades using ANOVA, the researcher converted letter grades to numbers following standard grade point average numbers (A=4, B=3, C=3, D=1, E=0). The researcher also assigned zero to withdrawals because students who withdrew did not receive credit for the course. Table 3 identifies performance data for MAT 116 from fall 2014, prior to the AY! implementation which allowed students who had not met placement test benchmarks to enter MAT 116, through fall 2016.

Table 3

Descriptive Statistics for MAT 116

	2014	2015*	2016*
M	2.031	1.938	2.278
SE	0.264	0.211	0.158
Mdn	2	2	2
Mode	0	0	4
s	1.492	1.465	1.499
S	2.225	2.145	2.248
Kurtosis	-1.324	-1.378	-1.311
Skewness	-0.243	-0.100	-0.306
Range	4	4	4
Minimum	0	0	0
Maximum	4	4	4
Sum	65	93	205
n	32	48	90
CI (95.0%)	0.538	0.425	0.314

*Includes student who did not meet benchmarks to enter college level math.

Levene's test for homogeneity of variances found variances are equal, $F(2, 167)=0.19$, $p=0.82$, using an α level of 0.05 ($p<0.05$). The researcher used ANOVA to compare means for the three years of data for MAT 116 that reflect one year prior to AY! implementation and two years of AY! implementation. The researcher found no statistically significant difference between groups (fall 2014 through fall 2016), $F(2, 167)=0.92$, $p=0.40$, using an α level of 0.05 ($p<0.05$).

Summary for Ho1. Examination of course grades for three courses within the AY! model demonstrate mixed results. An ANOVA test on six years of data for IMT 110, including one year prior to AOKY implementation through AY! implementation, reveal a statistically significant difference between course grades in 2011 and 2012 and course grades in 2011 and 2013. Fall of 2012 and fall of 2013 were the two years in which the AOKY model was

implemented in IMT 110, targeting adult education students and students without demonstrated math skills on placement tests required of college level math though not taking a math course. The researcher inquired to staff who work within the AOKY model in 2012 and 2013 and learned that none of the students enrolled in IMT 110 were adult education students. ANOVA tests on course grades for EET 119 and MAT 116 reveal no statistically significant differences in means from fall 2014, prior to AY! implementation, through fall 2016. The researcher inquired with AY! staff and learned that enrollment in the fall of 2015 included seven students who did not possess the required placement score for MAT 116 and 25 students in the fall of 2016 who did not possess the required placement score for MAT 116. Though the enrollment in fall of 2015 and fall 2016 included students with math skills deficits as reflected by placement test scores, the means of the course grades did not demonstrate statistically significant differences.

Ho2. The researcher used chi-square test (χ^2) to test the null hypothesis: The AY! model demonstrates no impact on fall-to-spring semester student persistence. The χ^2 test examined differences between the actual persistence and departure rates and the expected rates. Differences between actual and expected rates can demonstrate the impact the AY! model has on student persistence.

To answer this question the researcher compiled persistence data for students enrolled in the two technical courses examined for Ho1, specifically IMT 110 and EET 119, for fall semesters of each year prior to AOKY/AY! implementation through 2016. The researcher also complied persistence data for MAT 116 during the years examined for Ho1, including fall 2014, prior to AY! implementation, through fall 2015 and fall 2016 when students who had not met placement test benchmarks were allowed to take MAT 116 in the AY! program. The researcher identified that some students were enrolled in both IMT 110 or EET 119 and MAT 116. The

researcher examined persistence data for each course individually. Statistically significant differences in persistence data for a course could suggest the AOKY/AY! support structure impacts student persistence. A statistically significant increase in persistence rates would suggest the AY! positively impacts student persistence.

IMT 110. IMT 110 was first offered as part of the AOKY program in the fall of 2012. IMT 110 continued as part of AOKY in the fall of 2013. In the fall of 2014 IMT 110 enrollment fell and AOKY resources were shifted to another Applied Technologies. In the fall of 2015, AY! launched, an expanded version of AOKY targeting students who did not meet placement test benchmarks in math. IMT 110 was part of the AY! program in the fall of 2015 and fall of 2016. Table 4 demonstrates persistence data examined for IMT 110. The table identifies fall 2011 as prior to AOKY implementation.

Table 4

Persistence Data for IMT 110

Year	Persisted	Departed	Total	Rate
2011 (prior)	26	3	29	89.7%
2012 (AOKY)	19	6	25	76.0%
2013 (AOKY)	17	6	23	73.9%
2014 (no AOKY)	7	4	11	63.6%
2015 (AY!)	8	3	11	72.7%
2016 (AY!)	19	10	29	65.5%

The researcher conducted a χ^2 test, a non-parametric test used with counts of categories, to examine frequency of students who persisted from fall to spring to the frequency of students who departed before the spring semester with an α=.05 as criterion for significance. The χ^2 resulted in a no significant difference (χ^2=(5, N=130)5.54, p=0.35) between actual and expected persistence from 2011 to 2016 for students taking IMT 110. Rates of persistence varied in the academic years represented in the study. Prior to AOKY implementation the persistence rate was

89.7% in 2011. With the implementation of AOKY, persistence rate dropped to 76% in 2012, dropped again to 73.9% in 2013, and further dropped to 66.7% in 2014, when enrollment in the industrial maintenance program was low and the AOKY model was removed from IMT 110. AY! was implemented in 2015 and the persistence rate increased to 72.7% then dropped while still in the AY! model in 2016 to 65.5%. Though there is no statistically significant difference detected, this pattern of persistence rates does suggest a negative impact on persistence.

EET 119. EET 119 Basic Electricity is required to begin the career pathway to varied certificates and an Associate's degree in Electrical Technology. Electrical Technology programs were not part of the original AOKY program in 2012 but were part the AY! model beginning in fall of 2015 and included students who did not meet placement test benchmarks in math. Table 5 demonstrates persistence data examined for EET 119 beginning in 2014, one year prior to AY! implementation, through fall 2016.

Table 5

Persistence Data for EET 119

Year	Persisted	Departed	Total	Rate
2014 (no AY!)	15	2	17	88.2%
2015 (AY!)	12	2	14	85.7%
2016 (AY!)	14	3	17	82.3%

The researcher conducted a χ^2 test, a non-parametric test used with counts of categories, to examine frequency of students who persisted from fall to spring to the frequency of students who departed before the spring semester with an α=.05 as criterion for significance. The χ^2 resulted in more than 20% have expected counts less than five, violating the assumption that less than 20% will have expected counts less than five. The researcher used the Likelihood ratio in determining statistical significance. The researcher found no statistically significant difference

(χ^2=(5, *N*=48)0.24, *p*=0.89) between actual and expected persistence from 2014 to 2016 for students taking EET 119. Though the difference is not statistically significant, the pattern of persistence rates for EET 119 does decrease each of the three years examined and suggests the AY! model does negatively impact persistence.

MAT 116. In fall of 2015, the AY! model expanded to encompass students without required placement tests scores in math but wished to purse Associate of Applied Arts degrees in Applied Technologies programs that require MAT 116 Technical Mathematics. Prior to fall 2015, all students enrolled in MAT 116 were required to have met or exceeded the specified assessment score to enroll in the course. If students did not meet the specified score, the students were required to complete a sequence of developmental math courses to prepare for college level math courses, including MAT 116. Beginning in the fall of 2015, students in the AY! program were allowed to take MAT 116 with the AY! model providing layered supports to address math skills deficits, including team teaching in MAT 116. Table 6 demonstrates persistence data examined for MAT 116 from fall 2014, one year prior to AY implementation, through fall 2016.

Table 6

Persistence Data for MAT 116

Year	Persisted	Departed	Total	Rate
2014 (no AY!)	20	12	32	62.5%
2015 (AY!)	34	14	48	70.8%
2016 (AY!)	68	22	90	75.6%

The researcher conducted a χ^2 test, a non-parametric test used with counts of categories, to examine frequency of students who persisted from fall to spring to the frequency of students who departed before the spring semester with an α=.05 as criterion for significance. The χ^2 resulted in a significant difference (χ^2=(2, *N*=159)11.07, *p*=0.004) between actual and expected persistence

from 2014 to 2016 for students taking MAT 116 with an α=.05 as criterion for significance. Cramer's V indicates a moderate relationship with V=0.26. This statistical significance is reflected in the increasing persistence rate for each academic year represented: 2014 at 62.5% increasing to 70.8% in 2015 and again increasing to 75.6% in 2016.

Summary for Ho2. Examination of persistence rates for IMT 110, EET 119, and MAT 116 using the χ^2 test did not detect statistically significant differences in actual and expected rates of persistence in IMT 110 and EET 119. Persistence rates in IMT 110 and EET 119 reflect a decrease under the AY! model, suggesting a negative impact on persistence rates. The χ^2 test did detect a statistically significant difference in actual and expected rates of persistence in MAT 116. The study population for MAT 116 includes both AY! students and non-AY! students because MAT 116 is required of multiple programs, though all students in the MAT 116 classes examined did have access to team-teaching as part of the AY! model. The AY! students in the study population for MAT 116 were also enrolled in either IMT 110 or EET 119, though persistence rates for both of these courses did not reflect a statistically significant difference. Therefore, the researcher fails to reject Ho2.

Summary for Researcher Question 1. The researcher began by asking: How does the Accelerate You! (AY!) model impact student success, as defined by course grades in courses included in the AOKY/AY! model and semester-to-semester persistence for AY! students? The researcher established two null hypotheses: Ho1, The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered prior to and in the AY! model, and Ho2, the AY! model demonstrates no impact on fall-to-spring semester student persistence.

To test Ho1, the researcher used ANOVA test to examine course grades in the specified Applied Technologies courses. ANOVA detected statistical significance in the difference in means for years tested for IMT 110. Post hoc test reveal difference is between 2011 and 2012 and between 2011 and 2013. These years coincide with the AOKY implementation. The researcher found no statistical significance for EET 119 and MAT 116. The researcher failed to reject Ho1: The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered prior to and in the AY! model. Though there was statistical significance detected for IMT 110, those differences coincided with the AOKY model, the model that provided the basis for the AY! model. This study is focused on the AY! model. The IMT 110 findings demonstrate the impact of the AOKY model.

To test Ho2, the researcher used χ^2 to compare actual and expected rates of persistence and departure in three courses associated with the AY! model. The χ^2 reflected no statistical significance between actual and expected rates of persistence and departure for IMT 110 and EET 119. The χ^2 reflected a statistically significant difference in persistence rates for MAT 116 with a moderate relationship detected. With two of the three courses in associated with the AY! model reflecting no statistically significant differences in expected and actual persistence rates, the researcher failed to reject Ho2: The AY! model demonstrates no impact on student academic performance as defined by course grades and course success rates in Applied Technologies courses offered prior to and in the AY! model, specifically [IMT 110, EET 119, and MAT 116]. Though a statistically significance difference was detected in persistence rates for MAT 116, enrollment in MAT 116 includes non-AY! students. The AY! students included in the MAT 116 data are also enrolled in either IMT 110 or EET 119. There was no statistically significant difference detected in the IMT 110 and EET 119 data. Further examination of the impact of the

AY! model I is needed to determine more clearly its correlation to these mixed persistence findings.

Research Question 2

This study also sought to answer: Does an association exist between participation in the AY! model and changes in students' personal qualities, specifically mindset, grit, and study skills self-efficacy? This question required quantitative analysis of the 2016-2017 study population self-report responses on the Personal Qualities Student Survey.

Sample. The 2016-17 study population was identified by purposeful sampling from the AY! Applied Technologies programs beginning August 15, 2016, specifically students enrolled in the First Year Experience course (FYE 105) for Applied Technologies programs. FYE 105 is a required course for all new first semester AY! students in Applied Technologies beginning the fall 2016. New Applied Technologies students in the fall of 2016 were in enrolled in one of three sections of FYE 105. These three sections are exclusively for students in AY! This provided the researcher access to the study population in the fall semester.

Beginning enrollment for all three sections of FYE 105 was 87. This purposeful sample from FYE 105 students in Applied Technologies programs was invited to participate in the study to provide the researcher with data relating to personal qualities and student perceptions of the AY! model. Self-report responses on the Personal Qualities Student Survey could provide the researcher with data that demonstrate potential correlations between the AY! model and students' personal qualities that are correlated to academic performance (Braxton et al., 2014; Duckworth, 2013; Duckworth & Eskreis-Winkler, 2013; Dweck, 2010; Panunesku et al., 2015; Shell & Husman, 2001; Zajacova, Lynch, & Espensdad, 2005; Yeager & Dweck, 2012).

The researcher visited each of the three FYE 105 sections in the first two weeks of classes in August of 2016 to provide an overview of the study and ask for student participation. This purposeful sample was provided a Survey Monkey link via email message from the researcher sent to their student email accounts. The researcher explained that participants would be asked to continue participation throughout the academic year. The Survey Monkey link began by providing potential study participants the informed consent for the study (See Appendix B). After the informed consent, potential participants were asked to participate if they were 18 years of age.

All students in this purposeful sample who agreed to participate by affirming they are 18 years of age and agreeing to study participation were asked to complete the Personal Qualities Student Survey. Participants who began the study were asked again to complete the survey in late November/ early December 2016 and in late April/early May 2017. Each request to continue to participate in the study was sent via email from the researcher to the students' email accounts.

Forty-five students initially agreed to participate and completed the Student Survey when the study began in early August. Twenty-two of the initial 45 participants completed the Student Survey in late November/early December. Twenty-eight of the initial 45 completed the Student Survey in late April/early May of 2017. Eighteen of the initial 45 completed the Personal Qualities Student Survey at all three data collection points.

Ho1. The researcher used paired *t*-tests to test the null hypothesis: The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy. The paired *t*-test determines mean differences between paired observations. The researcher paired responses on the Personal Qualities Student Survey from August with responses on the same survey at the end of the first semester and with

the responses at the end of the second semester. The researcher identified only the students who participated at two data points, specifically 22 participants who participated in August and at the end of the first semester in Nov/Dec and 28 participants who participated in August and at the end of the spring semester in Apr/May.

The AY! model is intended to improve student performance leading to improved persistence and completion rates. Tinto (2012b) suggests a greater understanding of the psychological factors of student departure should inform institutional policy. Duckworth and Yeager (2015) also emphasize the need for a greater understanding of non-cognitive factors or personal qualities and their influence on learning. Testing students' personal qualities at the beginning of their AY! college experience, after the first semester in the AY! program, and at the end of their first year of college could provide insight into the potential impact the AY! model has on personal qualities linked to academic performance, specifically mindset, grit, and study skills self-efficacy.

The *t*-test allows for testing one group with two sets of scores to determine statistically significant differences. By comparing the group mean from responses from the first data collection point to the responses at end of the first semester and again responses from the first collection point to the responses at the end of the second semester, the researcher could identify statistically significant differences as students progressed through their first year of college.

The initial data collection point in August, labeled Aug, resulted in n=45. Table 7 provides descriptive statistics for Aug scores for all three personal qualities included on the Personal Qualities Student Survey.

Table 7

Aug Descriptive Statistics for Personal Quality Scores

	Mindset-Aug	Grit-Aug	Self-Efficacy-Aug
M	4.698	3.625	3.2
SE	0.145	0.068	0.094
Mdn	5	3.75	3.2
Mode	5	3.75	3.5
s	0.970	0.453	0.629
S	0.941	0.205	0.395
Kurtosis	-0.167	0.195	1.070
Skewness	-0.583	-0.435	0.633
Range	3.75	2	2.9
Minimum	2.25	2.5	2.1
Maximum	6	4.5	5
Sum	211.4	163.125	144
n	45	45	45
CI (95.0%)	0.292	0.136	0.189

Aug scores (*n*=45) on Dweck's mindset scale (*M*=4.69, *SD*=0.97), with a range of 1 to 6 with a lower score indicating a fixed mindset and a higher score indicating a growth mindset, included four participants who scored 3 or below, indicating a mixed mindset of both fixed and growth mindset qualities or mostly fixed mindset. Of those four participants who scored 3 or below on the mindset scale, one qualified for developmental coursework, indicating that the student did not demonstrate the required skill level in math to begin college-level course work in math. Eleven total of *n*=45 qualified for developmental coursework. All four of those participants who scored 3 or below on the mindset scale persisted and completed the year.

Aug scores (*n*=45), on Duckworth's short grit scale (*M*=3.63, *SD*=0.45), with a range of 1 to 5 with a lower score indicating less grit and a higher score indicating more grittiness, included three participants who scored 2.75 or below and they were not the same participants who scored

low on Dweck's mindset scale. Of the three who scored at 2.75 or below on Duckworth's short grit scale, one did not complete the fall semester and did not return in the spring. The other two completed the year. Four of *n*=45 did not persist to the spring semester.

Aug scores (*n*=45) on the study skills self-efficacy assessment (*M*=3.2, *SD*=0.63) included a range of 1 to 5 with a lower score indicating less study skills self-efficacy and a higher score indicating more study skills self-efficacy.

Not all of the original *n*=45 who responded in Aug consistently completed the Personal Qualities Student Survey at the end of the fall semester and at the end of the spring semester. Therefore, inferential statistics could not be reported on the original Aug (*n*=45) scores at the other two data collection points. Inferential statistics are reported and the null hypothesis was tested for each personal quality with the study population that provided responses in August and in November/December, labeled FallEnd (*n*=22). Some participants did not provide responses at the April/May data collection point, while some who did at the November/December point did not continue in April/May. Inferential statistics are reported and the null hypothesis was tested for responses provided responses in August and in April/May and are labeled SprEng (*n*=28).

FallEnd Personal Qualities Data. Table 8 provides descriptive statistics for FallEnd mindset scores (*n*=22). FallEnd (*n*=22) mindset scores were tested for normal distribution using the Shapiro-Wilk normality test. The researcher found FallEnd mindset scores in Aug (*M*=4.74) to have normal distribution, W=0.96, *p*=0.27, using an α=.05 as criterion for significance, and FallEnd mindset scores in Nov/Dec (*M*=4.60) to have normal distribution, W= 0.92, *p*=0.69, using an α=.05 as criterion for significance.

Table 8

FallEnd Descriptive Statistics for Mindset Scores

	Mindset-Aug	Mindset-Nov/Dec
M	4.738	4.602
SE	0.184	0.222
Mdn	4.875	5
Mode	5	5
s	0.864	1.04
S	0.747	1.081
Kurtosis	-0.048	-0.502
Skewness	-0.27	-0.411
Range	3.25	3.5
Minimum	2.75	2.5
Maximum	6	6
Sum	104.25	101.25
n	22	22
CI (95.0%)	0.383	0.461

A paired *t*-test was conducted to compare the mean of Aug mindset scores with the mean of Nov/Dec mindset scores to determine whether a statistically significant difference was present in students' mindset scores prior to the AY! program and students' mindset scores after one semester in the AY! program. Table 9 reports the *t*-test results.

Table 9

FallEnd Mindset Analysis Using Paired t-*test*

	Mindset-Aug	Mindset-Nov/Dec
M	4.739	4.602
Variance	0.747	1.081
n	22	22
Pearson Correlation	0.531	
Hypothesized Mean Difference	0	
df	21	
t Stat	0.684	
P(T<=t) one-tail	0.251	
t Critical one-tail	1.721	
P(T<=t) two-tail	0.501	
t Critical two-tail	2.08	

The paired *t*-test results demonstrate no statistically significant difference between mindset scores reported in Aug and mindset scores reported in Nov/Dec ($t(21)=0.68$, $p=0.25$, using an $\alpha=.05$ as criterion for significance). Cohen's *d* tested effect size for this analysis. The effect size was found to be a medium effect, $d<.50$, $d=.32$ (Lakens, 2013).

Table 10 provides descriptive statistics for FallEnd grit scores ($n=22$). FallEnd ($n=22$) grit scores were tested for normality using the Shapiro-Wilk normality test. The researcher found FallEnd grit scores in Aug ($M=3.60$) to have normal distribution, $W=0.98$, $p=0.93$, using an $\alpha=.05$ as criterion for significance, and FallEnd grit scores in Nov/Dec ($M=3.64$) to have normal distribution, $W= 0.93$, $p=0.11$, using an $\alpha=.05$ as criterion for significance.

Table 10

FallEnd Descriptive Statistics for Grit Scores

	Grit-Aug	Grit -Nov/Dec
M	3.602	3.642
SE	0.096	0.092
Mdn	3.625	3.625
Mode	3.75	3.625
s	0.449	0.431
S	0.202	0.186
Kurtosis	0.159	1.078
Skewness	-0.088	0.148
Range	1.875	1.875
Minimum	2.625	2.625
Maximum	4.5	4.5
Sum	79.25	80.125
n	22	22
CI (95.0%)	0.199	0.191

A paired *t*-test was conducted to compare Aug grit scores with Nov/Dec grit scores to determine statistically significant difference in students' grittiness prior to the AY! program and students' grittiness after one semester in the AY! program. Table 11 reports the *t* test results.

Table 11

FallEnd Grit Analysis Using Paired t-*test*

	Grit-Aug	Grit Nov/Dec
M	3.602	3.642
Variance	0.202	0.187
n	22	22
Pearson Correlation	0.708	
Hypothesized Mean Difference	0	
df	21	
t Stat	-0.553	
P(T<=t) one-tail	0.293	
t Critical one-tail	1.721	
P(T<=t) two-tail	0.586	
t Critical two-tail	2.08	

The paired *t*-test results demonstrate no statistically significant difference between grit scores reported in Aug and grit scores reported in Nov/Dec ($t(21)=-0.55$, $p=0.29$). Cohen's *d* tested effect size for this analysis. The effect size was found to be a small effect, $d<0.2$, $d=-0.09$ (Lakens, 2013).

Table 12 provides descriptive statistics for FallEnd study skills self-efficacy scores ($n=22$). FallEnd ($n=22$) study skills self-efficacy scores were tested for normality using the Shapiro-Wilk normality test. The researcher found FallEnd study skills self-efficacy scores in Aug ($M=3.16$) to have abnormal distribution, $W=0.89$, $p=0.02$, using an $\alpha=.05$ as criterion for significance, and FallEnd study skills self-efficacy scores in Nov/Dec ($M=3.52$) to have normal distribution, $W= 0.95$, $p=0.31$, using an $\alpha=.05$ as criterion for significance.

Table 12

FallEnd Descriptive Statistics for Study Skills Self-Efficacy

	Self-Efficacy-Aug	Self-Efficacy-Nov/Dec
M	3.159	3.518
SE	0.152	0.150
Mdn	3.1	3.5
Mode	3.5	3.6
s	0.711	0.707
S	0.505	0.5
Kurtosis	1.911	0.174
Skewness	1.098	0.565
Range	2.9	2.7
Minimum	2.1	2.3
Maximum	5	5
Sum	69.5	77.4
n	22	22
CI (95.0%)	0.315	0.313

Because of the abnormal distribution, the researcher conducted the Wilcoxon signed rank test, rather than the paired *t*-test, to compare Aug study skills self-efficacy scores with Nov/Dec study skills self-efficacy scores to determine statistically significant difference in students' study skills self-efficacy prior to the AY! program and students' study skills self-efficacy after one semester in the AY! program. The Wilcoxon signed rank test is a non-parametric alternative to the paired *t*-test that compares repeated measures to assess mean rank differences.

A Wilcoxon signed rank test revealed a statistically significant difference between study skills self-efficacy scores reported in Aug (*Mdn*=3.1) and study skill self-efficacy scores reported in Nov/Dec (*Mdn*=3.5), z=-3.04, p=0.02, using an α level of 0.05 (p<0.05). These results demonstrate a statistically significant increase from Aug study skills self-efficacy scores (*M*=3.16, *SD*=0.71) to Nov/Dec study skills self-efficacy scores (*M*=3.52, *SD*=0.71) with a small effect size ($Z/\sqrt{n}$) using Cohen's *d* criteria, r=-0.72.

Table 13 illustrates results for all three personal qualities for FallEnd. Inferential statistics illustrate no statistically significant changes in students' self-reported scores for mindset and grit. Only study skills self-efficacy results indicated a statistically significant difference. Though a statistically significant change was suggested in study skills self-efficacy, the *d* test demonstrated a small effect.

Table 13

FallEnd Personal Qualities and Statistical Analysis

	Mindset *n*=22		Grit *n*=22		Study Skills Self-Efficacy *n*=22	
	Aug	Nov/Dec	Aug	Nov/Dec	Aug	Nov/Dec
M(SD)	4.74(0.86)	4.60(1.04)	3.60(0.45)	3.64(0.09)	3.16(0.71)	3.52(0.71)
95% CI	0.38	0.46	0.199	0.191	0.32	0.31
	t =68, *p* =0.25		*t*=-0.55, *p*=0.29		Z=-3.04, *p*=0.02	
Effect size	*d* =0.32		*d*=-0.09		*r*=-0.72	

SprEng Personal Qualities Data. Table 14 provides descriptive statistics for SprEnd (*n*=28). SprEnd (*n*=28) mindset scores were tested for normality using the Shapiro-Wilk normality test. The researcher found SprEnd mindset scores in Aug (*M*=4.69) to have normal distribution, W=0.93, *p*=0.07, using an α=.05 as criterion for significance, and SprEnd mindset scores in Apr/May (*M*=4.65) to have abnormal distribution, W= 0.93, *p*=0.046, using an α=.05 as criterion for significance.

Table 14

SprEnd Descriptive Statistics for Mindset Scores

	Mindset-Aug	Mindset-Apr/May
M	4.687	4.652
SE	0.181	0.203
Mdn	5	5
Mode	5	5
s	0.959	1.074
S	0.92	1.154
Kurtosis	-0.649	-0.637
Skewness	-0.384	-0.367
Range	3.25	3.75
Minimum	2.75	2.25
Maximum	6	6
Sum	131.25	130.25
n	28	28
CI (95.0%)	0.372	0.417

Because of the abnormal distribution for Mindset-Apr/May, the researcher conducted a Wilcoxon signed rank test, rather than the paired *t* test, to compare Aug mindset scores with Nov/Dec mindset scores to determine statistically significant difference in students' mindset prior to the AY! program and students' mindset after two semesters in the AY! program. The Wilcoxon signed rank test is a non-parametric alternative to the paired *t*-test that compares repeated measures to assess mean rank differences.

A Wilcoxon signed rank test revealed no statistically significant difference between mindset scores reported in Aug (*Mdn*=5) and mindset scores reported in Apr/May (*Mdn*=5), *z*=-0.46, *p*=0.65, using an α level of 0.05 ($p<0.05$). These results demonstrate no statistically significant difference in mean rank from Aug mindset scores (*M*=4.69, *SD*=0.96) to Apr/May mindset scores (*M*=4.47, *SD*=1.39) with a large effect size ($Z/\sqrt{n}$) using Cohen's *d* criteria, *r*=-0.09.

Table 15 provides descriptive statistics for SprEnd. SprEnd (*n*=28) grit scores were tested for normality using the Shapiro-Wilk normality test. The researcher found SprEnd grit scores in Aug (*M*=3.57) to have normal distribution, W=0.97, *p*=0.62, using an α=.05 as criterion for significance, and SprEnd grit scores in Apr/May (*M*=3.66) to have normal distribution, W= 0.96, *p*=0.34, using an α=.05 as criterion for significance.

Table 15

SprEng Descriptive Statistics for Grit Scores

	Grit Aug	Grit-Apr/May
M	3.567	3.661
SE	0.088	0.103
Mdn	3.625	3.75
Mode	3.625	3.75
s	0.466	0.545
S	0.217	0.297
Kurtosis	0.326	-0.050
Skewness	-0.345	-0.251
Range	2	2.125
Minimum	2.5	2.5
Maximum	4.5	4.625
Sum	99.875	102.5
n	28	28
CI (95.0%)	0.181	0.211

A paired *t*-test was conducted to compare the mean of Aug grit scores with the mean of Apr/May grit scores to determine whether a statistically significant difference was present in students' grit scores prior to the AY! Program and students' grit scores after two semesters in the AY! Program. Table 16 represents the *t*-test results.

Table 16

SprEnd Grit Analysis Using Paired t-*test*

	Grit-Aug	Grit-Apr/May
M	3.567	3.660
Variance	0.217	0.297
n	28	28
Pearson Correlation	0.747	
Hypothesized Mean Difference	0	
df	27	
t Stat	-1.350	
P(T<=t) one-tail	0.094	
t Critical one-tail	1.703	
P(T<=t) two-tail	0.188	
t Critical two-tail	2.052	

The paired *t*-test results demonstrate no statistically significant difference between grit scores reported in Aug and grit scores reported in Apr/May ($t(27)=-1.35$, $p=0.09$, using an $\alpha=.05$ as criterion for significance. Cohen's *d* was used to test effect size with a small effect size detected using Cohen's criteria, $r=-0.26$.

Table 17 provides descriptive statistics for SprEnd. SprEnd ($n=28$) study skills self-efficacy scores were tested for normality using the Shapiro-Wilk normality test. The researcher found SprEnd study skills self-efficacy scores in Aug ($M=3.17$) to have abnormal distribution, $W=0.88$, $p=0.004$, using an $\alpha=.05$ as criterion for significance, and SprEnd study skills self-efficacy scores in Apr/May ($M=3.25$) to have abnormal distribution, $W= 0.91$, $p=0.02$, using an $\alpha=.05$ as criterion for significance.

Table 17

SprEng Descriptive Statistics for Study Skills Self-Efficacy Scores

	Self-efficacy-Aug	Self-efficacy Apr/May
M	3.171	3.253
SE	0.120	0.135
Mdn	3.1	3.2
Mode	3.5	2.6
S	0.634	0.713
S	0.401	0.509
Kurtosis	2.581	0.638
Skewness	1.201	0.912
Range	2.8	2.7
Minimum	2.2	2.3
Maximum	5	5
Sum	88.8	91.1
N	28	28
CI (95.0%)	0.246	0.277

Because of the abnormal distribution, the researcher conducted a Wilcoxon signed rank test, rather than the paired *t* test, to compare Aug study skills self-efficacy scores with Nov/Dec study skills self-efficacy scores to determine statistically significant difference in students' study skills self-efficacy prior to the AY! program and students' study skills self-efficacy after two semesters in the AY! program. The Wilcoxon signed rank test is a non-parametric alternative to the paired *t*-test that compares repeated measures to assess mean rank differences.

The Wilcoxon signed rank test revealed a no statistically significant difference between study skills self-efficacy scores reported in Aug (*Mdn*=3.1) and study skills self-efficacy scores reported in Nov/Dec (*Mdn*=3.2), z=-0.90, p=0.37, using an α level of 0.05 (p<0.05). These results demonstrate no statistically significant difference in mean rank from Aug self-efficacy scores (*M*=3.17, *SD*=0.63) to Apr/May self-efficacy scores (*M*=3.25, *SD*=0.71) with a medium effect size ($Z/\sqrt{n}$) using Cohen's *d* criteria, *r*=-0.17.

Table 18 demonstrates findings for all three personal qualities for SprEng (*n*=28). Inferential statistics reflect no statistically significant changes in students' self-reported scores for all three personal qualities tested.

Table 18

SprEnd Personal Qualities and Statistical Analysis

	Mindset *n*=28		Grit *n*=28		Study Skills Self-Efficacy *n*=28	
	Aug	Apr/May	Aug	Apr/May	Aug	Apr/May
M(SD)	4.69(0.96)	4.65(1.07)	3.57(0.47)	3.67(0.55)	3.17(0.63)	3.25(0.71)
95% CI	0.37	0.42	0.18	0.21	0.25	0.28
	z=-0.46, *p*=0.65		*t*=-1.35, *p*=0.09		*z*=-0.93, *p*=0.37	
Effect size	*r*=-0.09		*r*=-0.26		*r*=-0.17	

Summary for Research Question 2. The researcher asked: Does an association exist between participation in the AY! model and changes in students' personal qualities, specifically mindset, grit, and study skills self-efficacy? To answer this question, the researcher analyzed the 2016-2017 study population self-reported responses on the Personal Qualities Student Survey. The researcher used paired *t*-test and the Wilcoxon signed ranks test to test the null hypothesis: The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy. Initial study participation resulted in *n*=45; however, data collection in Nov/Dec resulted in *n*=22 and data collection in Apr/May resulted in *n*=28. Tests ran on FallEnd *n*=22 resulted in no statistically significant differences in mindset and grit scores and a statistically significant difference in study skills self-efficacy with a small effect size. Tests ran on SprEng *n*=28 demonstrated no statistically significant differences in mindset, grit, and study skills self-efficacy. The researcher failed to reject Ho1: The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy.

Research Question 3

Lastly, this study sought to answer: What are students' perceptions of the AY! model's influence on their success? This question utilized qualitative research methodology, specifically focus groups with the 2016-2017 study population. Through primarily focus groups, the researcher explored students' perceptions of the AY! model and themselves to gain an understanding of how the AY! model impacted students' performance, persistence, and motivation.

Sample for fall focus groups. Participants for focus groups came from the same sample used for research question 2 derived from the three AY! FYE 105 sections in Applied Technologies. Specifically, the 2016-17 study population was identified by purposeful sampling from the AY! Applied Technologies programs beginning August 15, 2016, from students enrolled in FYE 105 for Applied Technologies programs. As previously explained, FYE 105 is a required first semester course and all new AY! students in Applied Technologies for the fall 2016 were in enrolled in one of three sections of the course.

Three focus groups were held at the end of the fall semester in late November 2016 and early December 2016. This was the end of the study population's first semester in the AY! program. Focus group participants were sampled conveniently from FYE 105 students in Applied Technologies. Three focus groups were held with volunteers from each of the three FYE 105 sections, and the focus groups took place in late November and early December 2016. One of the three FYE sections was held at a satellite campus where two Applied Technology programs are offered; that focus group was held at the satellite campus and consisted of ten students. The other two focus groups were held on the main campus. Seven participants attended the second focus group; nine participants attended the third focus group. All participants were

male. The three fall focus groups allowed the researcher responses from a total of 26 participants, all of whom were male.

The first focus groups were formed by volunteers from the first focus groups. Participant names were recorded in the first focus groups to ensure the participants could be invited back to the second focus groups at the end of the academic year. However, the names were not assigned to responses provided in the focus groups. Participants are identified with a numeral and a letter. The numeral identifies the focus group. Individual focus group participants are identified by a letter that was assigned when viewing the focus group videos and were based on the order participants sat around the tables in the focus group sessions. 1A refers to the first participant to the researcher's left in focus group 1.

Themes from fall. Three transcriptions resulted from the fall focus groups, one for each focus group. The researcher began by applying codes according to Bogdan and Biklen (1992) and McMillan (2008) in each of the three transcriptions. These codes prompted the researcher to sort participant responses in general categories by codes provided by Bogdan and Biklen (1992) and McMillan (2008). The recurrence of particular codes revealed commonalities across focus groups. From the recurring codes, the researcher identified two general categories: institutional level factors and student level factors, which reflect Tinto (2012b) and Braxton, et al., (2014) as factors in student departure.

The researcher then sought to garner greater meaning by moving beyond coding, sorting, and sifting data from focus group transcripts to analyzing the focus groups literally and interpretively (Chowdhury, 2015), particularly the two categories that reflected departure literature. The researcher sought to understand what aspects of the AY! model impacted students' performance. The intent of the AY! model is to improve student retention and

completion rates. The focus group participants provided their perceptions of the AY! model in the focus groups reflecting their interactions with components of the model. The interpretative level of analysis revealed more nuanced understanding of codes and categories leading to themes. Interpreting student responses in consideration of departure literature by Tinto (2012b) and Braxton, et al. (2014) led the researcher to identify themes within the two categories. The researcher chose labels and descriptions for these themes that align with the terminology Tinto (2012b) used in labeling student departure factors. Tinto (2012b) asserted "adjustment," "difficulty," "incongruence," and "isolation" as important student departure factors at the institutional level and "intention" and "commitment" at the student level (p. 37).

Specifically, at the institutional level, the researcher identified two themes that align with Tinto (2012b): "Challenges" that derive from adjustment and difficulties and "Incongruences" between student expectations and student experiences within institutional components. The researcher was not able to directly identify a common theme relating to Tinto's (2012b) fourth institutional level factor in departure "isolation." However, the researcher observed frequent references to people in the participants' responses. The researcher identified the third institutional level theme as "people." The participants' responses suggest the people reference acted as agents that alleviated the students' sense of isolation, the fourth factor from Tinto (2012b).

Specifically, at the student level, the researcher identified one theme combining factors from Tinto (2012b). "Intention" reflects what students seek from the college experience or goals and "Commitment" reflects students' motivation or drive. Tinto (2012b) called intention and commitment "important personal dispositions with which individuals enter institutions of higher

education" (p. 37). The researcher sought to identify evidence of these student level factors in the student responses.

By identifying how focus groups discussed factors in student departure supported by the literature (Braxton, et al., 2014; Tinto, 2012b), the researcher could examine what components of the AY! model impacted student departure factors.

***Institutional level: Challenge*.** The researcher began the focus group discussion by asking participants about the degree to which they felt challenged in their first semester, prompting them to consider previous educational experiences and their expectations of themselves and the college. The intent of the question was to uncover what poses the greatest challenge to completion of a credential. Focus group 1 discussion began specifically with math.

1A began the discussion by stating: "Really the only challenge that I've faced so far is math. A lot of us probably agree on that, and it's nothing to do with the teacher." In focus group 1, the discussion of math led quickly to experiences with the online math modules. 1I added, "And besides that math, they added other math [referring to the math modules], and we were very much covered up." 1A stated, "…the answers are not even correct in it" [referring to the math modules]. And again 1I followed by stating, "They didn't even supply the whole information for you to answer the question." Then 1G added, "Diagrams were missing…" Though the researcher expected responses to relate to cognitive challenges, this discussion shifted from the cognitive challenge of math to the difficulty of using the online math modules.

Focus group 1 also expressed that the scheduling of the math class presented a challenge in retaining content. 1E stated, "From what time he had [the math instructor], he went through a lot of stuff." 1A described the math course content as "six months' worth of math material in four hours one day a week." This led to further discussion of age factoring into the challenge. 1B

stated, "…you have to throw in the fact that when we went to school you weren't allowed to use a calculator." 1A added, "Most of us did not even know how to use a scientific calculator at all," and 1J noted, "We had to be trained for it before I could even get started." As the discussion evolved, the researcher learned that eight of the ten participants in focus group 1 were recently displaced workers from a local paper mill that closed.

Focus group 2 began with the researcher asking participants how challenged they felt considering previous educational experiences. In response, focus group 2 discussion began with the challenge of older students returning to school after many years. 2C stated, "You gotta figure a lot of us have been out of school for a while. So it was hard to get those gears going again." 2F added, "I'm coming from straight out of high school so I am used to being around this kind of stuff." 2G noted, "We have…like in math, they have the new common core. And we didn't have that." 2D added that it had been "thirty plus years" since he had been in school. This discussion led focus group 2 to discuss their expectations about college and returning to the workforce. Three expressed their belief that they would not stay in college because jobs would become available. Focus group 2 included displaced workers from the paper mill as well, though fewer than focus group 1. Three students of the seven identified themselves as right out of high school. The displaced workers in the group shared the most ideas regarding challenge and aligned the challenge of math with the adjustment needed after being out of school for years.

Focus group 2 discussed the challenge of a particular technical course taught online. 2B stated: "I feel like it was a self-taught class, and the teacher is not a teacher. He is an administrator. That's what it felt like." And 2A added, "…so you're pretty much like teaching yourself out of the book." 2D said in response to 2A, "Right. I mean if you understand that, it's fine…I wanted to see somebody walk up here…and explain everything to me as they went." This

challenge appears to rise from a desire or need for face-to-face interaction in the learning process. 2B shortly later in this discussion noted, “I think it’s the generational gap. I talked to one of my instructors about it, and he said that school today is geared toward that generation. That’s how they learn. They sit in front of computer and gadgets and stuff, and us not so much so. We’re more hands-on, spent time, you know in the workshop.”

Focus group 2 did not discuss the math modules specifically until the researcher posed the planned question about the effect of the online math modules on student performance later in the discussion. 2B defined the modules as “a waste of time, busy work.” 2F noted, “A lot of the stuff on the modules wasn’t in the math class.” While others were less vocal, they did note their ability to see connections: 2G stated, “For me it tied to machining, and 2B noted, “It was tied to industrial maintenance.” These responses did not rise to the level of challenge expressed in focus group 1, but they do demonstrate some common elements. Students generally perceived the math modules as faulty either in content or alignment with course curriculum.

Focus group 2 also expressed some challenge in managing the scheduling of the AY! program. 2B expressed the challenge of expectations to be on-campus four days a week. 2B stated, “I mean if you’re a displaced worker. I have seven kids, so I mean I’ve got stuff. I’m busy. So we’ve managed to make it work, but it would be so much easier if we just have a full day Tuesday and a full day Thursday and then, to me, that would be awesome because that way you can work a side job. You know, I can’t be done every weekend and stuff.”

Focus group 3 responses to the question regarding the level of challenge they felt considering previous educational experiences began with identifying math as a challenge and, like participants in the other focus groups, made connections to age as a challenge. 3I stated, “…technical math. That was a whole new issue and me being older—and as well as a couple of

us in here—and, you know, when we were in school, they didn't teach that type of math. Math was taught differently." 3H said of math: "The class was pretty hard. We pretty much had to teach most of it ourself. We had to learn it on the computer." 3H went on to add regarding the teacher for the math course: "…he just didn't explain it good enough, didn't take enough time." This reference to time somewhat mirrors the time constraints identified in focus group 1 when 1A said six months of math was condensed to four hours once a week. Focus group 3 discussion continued with a focus on the math teacher with little else stated regarding challenges the participants felt.

Examination of all three focus group comments regarding challenges demonstrates that math content is perceived as a challenge for many students. None verbalized math as "easy." The challenges appear to derive from the adjustment needed for the level of difficulty of the content and the adjustment to college demands after being out of school for several years. The online math modules designed to support the challenge of the math content were not perceived as the same type of challenge, rather "busy work" for some and problematic for others. No participant noted at any point that the math modules positively impacted their understanding of content in the math course. 3H even noted near the end of focus group 3: "Do away with the modules."

Beyond math as a challenge, 1J noted in the discussion of the first year experience course that he and his classmates surprised the instructor with their inability to "sign on," referring to signing on campus computers with student logins. Participants in focus group 1 also indicated the difficulty they experienced with the calculators used in their math course. Also noted previously, focus group 2 indicated an online technical course as a challenge, expressing the sense that they had to teach themselves. Each of these difficulties are related to technology, potentially new technology to the participants. These perceptions as well as the expressed dislike

for the math modules, which are delivered via the college's online learning platform (Blackboard), suggest technology is a challenge for students.

Institutional level: Incongruences. The researcher noted that as students discussed challenges, students often identified difficulties they encountered as challenges. Analysis of the discussions of difficulties revealed student perceptions of incongruences between what they expected of their educational experience and what was actually occurring.

Focus group 1 discussion of math led quickly to the math modules, designed with the intent to support math instruction and math needs in the technical course. Though all three focus groups did not begin with a lengthy discussion of the math modules, all three focus groups linked the math modules to difficulties. As quoted earlier, respondents in focus group 1 noted missing information and unclear correct answers in the math modules prior to being directly asked about the math modules by the researcher, reflecting difficulties in completing the modules. Additionally, participants expressed limited identifiable connections between module and math and technical course content, stating "some of it" (1J) and "very small amount" (1E) connected. The researcher then asked if the online math module content could be used later. 1A responded, "Not unless any of us want to go for a…millwright or something," and 1B added "engineering."

Focus group 3 expressed frustrations with the math modules. 3I stated, "…the online modules did not help me," and 3H noted, "…there is some of them [math modules] that went over what we were doing in the math class. Well, most of it's like a review for what we did in high school." 3H went on to add that he saw "not much" of a connection between the modules and his electrical class. 3H was also critical of how the modules factored into grading, stating "I feel that this should be a bonus or learning thing." Two participants indicated that they would not have completed the math modules were the modules not connected to grades. 3I stated, "If it

would have been more of a learning situation for us, but it really wasn't a learning thing. It was a do it and get it done is all it boiled down to." 3B indicated he would have completed the modules just for a grade "because it wasn't like it was hard."

Focus groups 2 and 3 noted mixed perceptions of how the modules aligned with math and technical course scheduling and the modules' content and organization as well as how students were to work independently through the content. Participants in focus group 3 noted frustration with having to request the math modules be reset. 2F stated, "All was good except the modules. I felt like it was kind of busy work. 2D noted that he and some other students worked ahead in the modules, but then the math concepts were addressed later. 3I noted, "If you wanted to get a decent score in there [math modules] and as a learning process, it's the way they did it. If you miss some, then they went in there and reset to let you redo it again until you got it right…That was the learning part." 3H indicated that students would have to track success coaches down outside of class to reset math modules, adding "it'd be easier if you could just do it yourself instead of going and finding them."

The researcher noted from attending AY! faculty and staff meetings that the intent of the modules designed by developmental education faculty and adult education staff is to reinforce math concepts taught in the math course that are directly connected to the technical courses; therefore, the math modules are designed to address the challenge of the math content and improve work in the technical courses. Yet these focus group responses demonstrate incongruence between the intent of the modules and participants' perceptions of the modules.

Focus group 2 noted an online technical course as a challenge due to a sense of feeling the students were teaching themselves. The researcher observed that the online modules and the online technical course are comparable in delivery methods, specifically Blackboard as the

online learning platform. Participants' perceptions suggest that online delivery contributes to difficulties that the students experienced. Participants' responses suggest that "busy work," required instructor resetting to "redo" work for a better grade, and "a self-taught class" created experiences incongruent with the students' expectations. Participants' responses suggest they expect to see direct correlations to learning and ease of procedures to work and earn grades.

Participants' comments about the first year experience course provided mixed perceptions of the course's purpose and value to students. Focus group 1demonstrated understanding of the purpose of the course. 1G stated that he knew the intent of the course was "to teach us where to go to fix things on our own, and I haven't used that in four or five months so I'm not going to remember where to go." 1B added, "If you know where financial aid is, you can go to the office and find it…this is my third go around, and I'm like why am I doing this." Yet 1J noted, "We kind of blew her mind when we didn't know how to sign on [to the school computers]. She had her… job…cut out for her." This led to further discussion of the levels of computer experience the participants had prior to their fall semester in the AY! program.

Focus group 2 discussion of the first year experience course began positively. 2F stated that the first year experience course "helps you schedule classes, and it kind of teaches you how school and everything goes because I didn't know walking in here how college was gonna be…But like laying out a career pathway, and all that that's busy work." (The career pathway is the capstone project for the course that requires students to plan semester-by-semester their academic goals and objectives.) 2D added, "I think this class would be better suited to be like three or four days in the first week…I mean, it's finals week. Why do I need to know this for finals week?" (The focus group was held the last week of the fall semester, which was finals week.)

Focus group 1 also expressed some observations about the first year experience course that were incongruent with their expectations. 1J stated, in regard to the career pathway project, "Well, you gotta figure almost all of us are about to retire in 15 years." 1B added that the course is about knowing goals, weaknesses, "things you need to work on," and "…these are things that are basic knowledge…"

Focus group 3 discussion of the first-year experience course prompted more negative comments. The researcher asked, as with focus groups 1 and 2, what effect the first-year experience course had on student performance. 3A stated first, "I believe that class is totally useless." 3H followed: "I like [the teacher]. I like him. He's a good guy and I think he'd be a good teacher if he got more than three chances to teach." 3J added, "There's nothing in that class to help me be successful in other classes. I don't need a computer to tell me my personality." 3J referred to part of the first-year experience course curriculum that includes personality assessments designed to help students match their personal characteristics, interests, and strengths to career fields. 3G noted, "It tried to match me with a bus driver and motor boat mechanic, and I don't want to do either of those. I don't even think they offer courses here for bus driver." 3G repeated the comment regarding course offerings for a bus driver not being available, emphasizing his perception that the course content is incongruent with college programs. Then 3G added, "It's ok for people that don't know what they want to do when they're coming here." 3A stated, "You're already enrolled in your class here, and work. We're done with our first semester. What is the point of taking that to tell us what to do? We're already here." The criticism continued with two participants noting that the course content needed to be addressed in high school. Another participant expressed the time it took for the class, time that he "really didn't have." None of the participants in focus group 3 expressed satisfaction with the

first-year experience course, and it appears that they saw the first-year experience course incongruent with their expectations of what the first semester should include.

The researcher was able to ascertain from regular meetings with AY! faculty and staff that focus group 3 was part of a first-year experience course that did not take the required strengths assessment at the designated time of the semester due to miscommunication between faculty. The assessment was then added at the end of the semester, not the intended placement early in the progression of the course curriculum. This likely explains the perceived incongruence the students expressed.

Another incongruence rose from the focus group 3 discussion regarding the need for the weekly hour of tutoring. The researcher asked participants how effective the weekly hour of tutoring had on performance. 3H indicated that he went to ask the success coach to "reset my modules," referring to the math modules. 3B added, "I never went." The discussion then led to tutoring as a requirement. 3A asked, "I had to go to the tutoring class. I was assigned to go there. So why was I in the same class with these guys in math?" This discussion revealed that not all participants understood the purpose of the AY! design to accelerate some students into college credit bearing courses. 3I explained the program and added, "The only reason I found out was from the tutors." 3I also indicated the program had been explained before the semester began, but he said he did not believe "it was actually just given as a broad thing to everybody." 3I also indicated that he felt the program should have been explained more clearly to all students. Similarly, in focus group 2's discussion of problems with scheduling, 2G expressed his frustration with having a poor score on the math placement test while still being placed in the same math class with other students with higher placement scores. 2G said, "Well, first thing, they throw me in trig, geometry, and algebra. I've never done that, so it just made it, right off the

bat, it just made it hard." The researcher then asked if the AY! program design was explained to him. 2G replied, "If it was, I don't remember." Others in the group nodded affirming the program had been explained.

Examining participants' negative perceptions reveals that most negative perceptions derive from institutional factors that do not align with what the students expect in their first semester. The most common incongruent experiences for students were the math modules and the first-year experience course. However, the first-year experience course did receive some positive responses as well. From attending AY! faculty meetings, the researcher garnered that both components of the AY! model that elicited negative responses are components the faculty acknowledge are less than effective and have discussed ways to improve. The first-year experience course has been a part of the AY! model for two years. While the math modules have been a part of the AY! model longer.

Institutional level: People. All three focus group discussions of challenges and incongruences that participants experienced led many participants to reference people. With many references to people, the participants' described how the people's presence and actions assisted participants in addressing challenges and difficulties.

In focus group 1, 1A began the discussion by referring to the challenge of the math course, a consistently mentioned component of the AY! model, which led 1A to comment on the teacher: "…it's nothing to do with the teacher. He is an excellent person, is a very smart individual." Then 1C noted his easier experience with the math course because of his recent completion of high school, and 1J noted in response to 1C: "And he's a very good tutor, too," followed by several laughs from the group. Shortly after this response, the researcher redirected the group to the original question about the challenge experienced, specifically was the challenge

at a level expected. 1J responded, “I don’t know about anybody else, but I was close to saying bye to school.” The researcher then asked what kept the student in school. 1J replied, “Well, I got better, and better, and better.” The researcher followed with, “How did you get better?” And 1J stated, “I don’t know—help from my friends.” 1B followed by stating, “Pretty much the tutors helped a lot… the general consensus from all us guys is that math is just this added stress to what you’re coming out of being stressed from starting a whole new chapter of your life.”

Later in the discussion of team-teaching, specifically the presence of the success coach in the math class, 1A noted that the absence of the team teaching “would’ve made [1C] quit school.” Later, 1C stated that he helped the other students with math at their lunch breaks. This discussion revealed that 1C, a traditional student entering college right out of high school, played a role in supporting other older members of his cohort at the satellite campus face the academic challenges and adjustment to college. The researcher observed in the dynamic of this focus group that generational diversity appears to have become a strategy for addressing challenges.

In addition to the assistance from fellow students, participants noted the role of the success coach available in the math course and the weekly tutoring session. When asked explicitly about the effect of the weekly tutoring assistance, focus group 1 had several positive comments. 1B stated: “That had a lot of effect in a positive way because you had someone there to give you direction as far as where to go, how to work a certain problem, things like that. That took a lot of stress away.” 1J noted how the success coach was able to alleviate problems with the math modules because the success coach wrote the material for the modules. 1J said, “He kind of told us, you know, we’re looking to see what you can and can’t do, and then see if you can learn it throughout the course.”

The researcher then followed by asking which of all the facets of the AY! program "provided the greatest support for you and why." 1G stated, "I'm going to say for me, probably the most significant was the tutoring. Well, we say the tutoring—the help because it kind of helped your confidence when hadn't been in school so long you didn't have confidence." 1D followed by stating, "[Instructor's name] class, our orientation to college [referring to the FYE course]. That helped me quite a bit. It helped me learn to navigate on the computer." 1J added, "She was individually coming to each one of us." 1E stated, "The tutoring also helped me." Though both 1D and 1E note components of the AY! program (the first-year experience course and weekly tutoring), their discussion of those components links the people who lead those components.

Similar to focus group 1, focus group 2 responses demonstrated the use of each other to cope with challenges. 2B stated, "A lot of us older guys, we help each other…I think we helped each other as much as the teachers helped us." 2F added, "That class [weekly tutoring] is good because it, kind of, brings all those guys together." The researcher responded by asking, "So you created a kind of community?" Several responded affirmatively. Though focus group 2 noted the influence of others in their classes as supports, they did not note relying on younger students as focus group 1 did.

2A added his difficulty in attending tutoring due to his work schedule. 2A then noted, "She was gonna work with me if I could make it to her office… I just couldn't ever make it." 2C noted another teacher's willingness to assist, stating, "I bring my book…and [instructor's name] would show me something to help. You know, on the side."

Focus group 3 also identified the impact of people. The first response to the researcher's first question about challenges led 3I to state: "As far as people in Accelerate You!, they helped.

Big time. Those counselors [referring to success coaches] were a big help. That's all I can say about that." In reference to the math modules, 3I stated, "The teachers helped me more than modules did. By far."

Focus group 3 expressed their frustration with the first-year experience course, particularly how it addressed content several participants did not see congruent with the needs of the first semester in an Applied Technologies program. In that discussion, 3H stated, in reference to the FYE instructor, "I like him. He's a good guy, and I think he'd be a good teacher if he got more than three chances to teach."

When the researcher explicitly asked about the impact of the weekly tutoring in focus group 3, 3I again stated, "We went twice a week just for extra study time…but they were, as I said earlier, a big help. That's all I can say. They were just good at what they do." When this group was asked what component of the AY! program "provided the greatest support," 3G replied, "Tutors probably…I can't remember the guy who come in our electricity class…He really knows what he's talking about. You can ask him just about anything, and he'll make sense for you."

Student level: Intention and commitment. Because the researcher sought student perspectives on the components of the AY! model, most of the participants' responses provided insight into how the students interacted with institutional level factors. Within some responses, students revealed factors about themselves that influenced how they interacted with the institutional factors. Tinto (2012b) asserted that "individual intentions are important predictors of the likelihood of degree completion" (p. 38) and that commitment or "a person's willingness to work toward the attainment of his/her goals is an important component of the process of persistence" (p. 42).

Focus group 1 discussion revealed little about the participants' intention for seeking a college credential, but a few responses revealed some insight into what the participants intended to do in college. In the discussion of the first-year experience course and, specifically, the career pathway project, 1J noted, "You gotta figure almost all of us are about to retire in 15 years. We won't be working." 1E added, referencing course content in FYE 105, "The PowerPoint skills… you know, I hadn't done anything with it. I kind of like fooling with it. I'd always wondered about it, but had never really had the opportunity." Following focus group 1's discussion of the challenge faced in their first semester, the researcher asked participants how successful they felt at the end of the first semester. 1A stated, "Myself, as far as anything to do with the diesel program itself, it's great. I can't say anything bad about it." 1B added, "I know more now on motors, engines, and how they work than I did when I first come in here, and it's been an eye-opening situation. I've been working on cars all my life. So, this first semester, I'm actually eager to…well of course, I've got one more math class before I can focus on the actual trade I'm going for."

While discussing team-teaching, focus group 1 conversation shifted a bit. 1J noted that some in their cohort missed diesel class at times to work on math. The researcher asked if that hurt their learning. 1J responded, "The older you get, I think, the easier it gets just to study…We're grown." 1B added, "Your bedtime stories become your homework."

These remarks from primarily displaced workers, the majority of focus group 1, implied the students sought training in a skilled field they enjoyed and would benefit them until retirement (as well as the added value of new learning experiences).

Focus group 2's discussion of generational factors revealed influences on intention and commitment. 2F indicated that the differences in experiences in the AY! model could be

attributed to the length of time out of high school, stating, “I am used to being around this kind of stuff.” 2C later added, “I wasn’t prepared. I didn’t really know what I was getting myself into. I didn’t know if I’d stay in it or not, I didn’t really, you know, but as it went on.” 1E indicated he did not know if he would “stick with it” either. 2B stated, “I came in with the expectation that jobs would open up and I would go back to work. So it’s just kind of buying time the way I looked at it coming in. I didn’t see it as a waste of time. I looked at it as a way to utilize time while I’m off, but also I want to go back to work.” 2A added, “I’m staying in school. I’m tired of laying block.” 2C stated, “I mean, I’d like to get a really good education, but if a good, a really good paying job come along.” 2A added again, “I don’t care if I fail every semester, I am going to keep going…because I’m tired of laying block.”

The researcher then asked participants to clarify their meaning of a “good paying” job. 2C said, “My top out that I made was just a little over $17, so if I find a job making $21, $22 an hour then I’d go.” 2G said, “I am older, so if I could find the $17 an hour job I’m gone. I am on the downhill slide.” 2D said, “Well right now, with the small chance of the mill reopening, I would have to say if I’m going to go somewhere else, I’m going to go to somewhere where this education would help me. So if it’s not $30 an hour, I might as well finish school first and then look for a $30 an hour job.” 2A added, “Yeah, I already make about $15.” 2F stated, “I definitely want to stay in school because, like my dad told me, you know you got the rest of your life to work so might as well go to school for these two years and get that out. Honestly, learn what you can, but you after that, you got your whole life to work.” 2B and 2D nodded in agreement. 2E added, “I think basically the same thing. I think school is just basically a good investment.”

Focus group 2 discussion revealed a greater focus on obtaining a “good paying” job for the displaced workers in the group. Also, family demands appear to influence their intention for and commitment to college.

Early in the discussion of challenges with focus group 3, 3B noted that the math course was “your own effort, for sure. It was all on you,” leading to a discussion of the role of the teacher and the success coaches. 3B said in reference to the math modules and their impact on grades: “I would have done it just for the grade.” Near the end of focus group 3, participants shared a statement one of their instructors made to the class, and the participants followed with a brief exchange about how they were “throwing him under the bus” in reference to the instructor. The researcher followed this exchange by affirming that the purpose of the study was to understand what keeps students advancing toward a credential and to identify what does not work. The researcher then asked the group: “Do you all plan to continue in the spring?” And when several replied “yes,” the researcher asked: “What’s your motivation?” 3A replied, “Money.” 3I added, “I don’t want to be broke the rest of my life.”

These remarks from focus group 3 suggest many in this group are driven by getting grades needed to get a credential for a desirable job. The researcher sensed some of the requirements to get the grades were perceived as “hoops to jump” to get the credential that could lead to the job they desired.

Sample for Spring Focus Groups. The same 26 students who participated in the three focus groups in the fall were invited to participate in a second focus group held in late April or early May 2017. The researcher was not able to access the participants in the same manner as the fall semester because all students were not consistently enrolled in a common course as they had

been enrolled in FYE 105 in the fall. The researcher reviewed student schedules and identified the most efficient manner to schedule focus groups.

The researcher sought from the focus group discussions student perceptions of the impact of the AY! model on student success. Maintaining the same student voices in both focus groups from fall to spring allowed the researcher to compare and contrast the student experiences from first semester to second. The AY! has fewer supports in place second semester. Ideally, students would learn strategies from first semester from the layer supports and transfer those to second semester. The focus groups provided data to draw comparisons and contrasts.

As with the fall semester, three focus groups were scheduled. One focus group was again held at a satellite campus where two Applied Technologies programs are offered consistent with the fall semester focus group scheduling. The other two focus groups were schedules on the main campus. One of the main campus focus groups took place directly before an electrical class that consisted of several of the fall focus group participants.

Of the 26 fall focus group participants, one did not return to college for the spring semester. Email invitations were sent to 25 study participants, reminding participants of their focus group participation in the fall and inviting them to participate in a specific second focus group to complete the study. Participants were invited to a specific scheduled focus groups that was most convenient for their schedules. Reminder emails were sent the day before the focus group and the day of the focus group.

None attended the first focus group planned on the main campus. Seven participants attended the second focus group held at the satellite campus. Seven participants attended the third focus group planned on the main campus. A total of 14 participants contributed to the spring focus groups.

The researcher believes the lack of attendance in the first focus group was due to the inconvenience students felt with the focus group meeting time and place. That focus group was the only one not scheduled immediately before or immediately after an Applied Technologies course with multiple participants. The two focus groups with attendance were scheduled around Applied Technologies courses that had high participant enrollment. The instructor of the course was able to remind participants about the focus group and the researcher was able to arrive and speak to the class prior to the focus group to encourage attendance. Applied Technologies faculty noted that their student population is not likely to spend any extra time on campus due to work and families.

Themes from spring. The three spring focus groups resulted in two transcripts because focus group one had no attendees. The researcher intended for the second set of focus groups at the end of the students' first year in the AY! program as a continuation of the focus groups from the fall semester. Questions focused on how the first semester shaped the students' abilities to successfully complete the second semester. The researcher initially sought to identify the same themes. The researcher coded the transcripts following the same coding process as followed for the fall focus group transcripts. Upon coding and analyzing codes and categories, the researcher affirmed that similar themes arose. The researcher identified three institutional level themes, specifically challenges, incongruences, and people. The research also identified one student level theme that combines student intention and commitment. Participants are labeled using the same method as the fall focus groups. The number indicates the focus group for the spring. The letter indicates the participant as they were seated in relation to the researcher. 1A from the fall is not the same participant as 1A from the spring.

***Institutional level: Challenges*.** The researcher began the second focus groups by asking participants how their academic experience differed in the spring semester from the fall semester. The AY! model provides the most supports in the fall semester. Ideally, students would gain confidence and learn strategies in the fall to carry over to the spring. Focus group 2, which was at the satellite campus, include the large number of displaced workers from the paper mill. Their discussion in response to differences between the fall and spring semester began with a focus on technology and ENG 101, the required writing course for Applied Technologies programs.

2C began by addressing the weekly access to the success coach, which he felt was not planned well. 2C explained that the success coach came a day or two after assignments were due. This brief complaint was followed immediately with a focus on computer usage. 2C stated, "We gonna have to take digital literacy sometime and we should have already done that. We could maneuver through these computer things easier. At our age, I been out 44 years and it's been pretty tough. It even took us a while to learn to use the calculator in math." This comment was followed by laughter around the table. Then 1C continued: "We weren't allowed them back in my day." More laughter followed.

The researcher then prompted clarification: "So this semester it was computer usage that caused you the most difficulty?" 2B replied, "Probably. Yeah." 2G: added, "Stuff we need to do for writing papers." And 2B added, "The formatting." 2A responded by referring to Microsoft Word usage being the issue, saying "We all struggled."

Later, the researcher asked, "In contrast to the fall semester, how challenged did you feel this semester?" 2B and 2A responded, "More." 2E responded, "I'd say equally." 2F added, "Math absolutely terrified me, but English, once I got into it, I thought math wasn't nothing compared to this crap." 2E responded similarly, "I never have gotten used to writing essays." 2A

elaborated, “The English is more difficult because there are many more variables in English and writing than there are in math.” The researcher asked for clarification, “You say this semester is more challenging because of the English?” 2A replied, “Mostly. We are learning more complex stuff in diesel, too.” 2C added, “That’s out of our comfort zone” [apparently referencing ENG 101].

Later 2G added, “See a lot of it, too, is that when we were in school everything wasn’t so technically advanced…You know, like computers and stuff. You take a class hands-on, you’re like in class one-on-one with a person. I don’t wanna be stuck in front of a computer. But then that’s what you’re doing.” 2B stated, “Spent a lot of time in front of my computer.” And 2C agreed. 2B added, “Lotta hours with the door shut behind me and the tv off.”

When the researcher asked how successful participants felt at the end of their second semester, discussion led to general education classes. English was expressed as a challenge and 2F called general education classes, “crappy courses.” When focus group 3 was asked about the level of challenge they felt the second semester in contrast to first semester, discussion led to general education courses, and focus group three responses mirrored focus group 2 in reference to general education courses. 3E noted he felt “way less” challenge because “I didn’t take near as hard classes this semester as I did last semester. I got lucky. I’m not taking any gen eds anymore. I’m just in electrical classes.” The researcher asked, “So would you classify the gen eds as hard?” 3B replied, “Depends.” 3A added, “We’re in a technical field.” And 3F added, “I’m not here to learn to write a paper.” 2C stated, “We’re not interested in the gen ed topics.” 3B added, “I had art my first semester and it was ridiculous. I didn’t care.”

***Institutional level: Incongruences*.** Focus group 2 began with a discussion of the challenges they felt using Microsoft Word and writing papers for ENG 101. This discussion then

evolved into a long discussion of the incongruences they felt between ENG 101 content and the needs for the students' program of study and the incongruences between ENG 101 content and online content delivered via the textbook company's online platform called MindTap. 2E identified ENG 101 as the focus of the success coach help in the spring semester. 2F responded with "Which was horrible." 2C added, "It was a lot more than we need for what we are doing." 2G stated, "We are not going to be writing novels or short stories or books…They don't realize how much reading we have between two classes as far as you're reading a lot of chapters. You can be in multiple chapters in one. And then try to keep with your modules and MindTap stuff. But truthfully if they just got rid of MindTap it would probably be easier." 2B added, "MindTap was two hours a week."

The researcher then asked participants about the impact of MindTap. 2G called parts of it "just refresher" and other parts prompted him to ask, "Why am I reading poetry when I'm not going to have anything to do with poetry?" 2E then added, "Just about everything in MindTap she touched on in our classes." 2D noted that scheduling of class assignments and MindTap content did not align, adding, "That would have been nice if it was." 2D, 2C, and 2G agreed. 2A then referenced "the online library," referring to an online library orientation faculty can use to assist in exposing students to library resources. 2A added, "Figure out yourself how to navigate to get articles…and it was pretty confusing and so they could have probably had a little more maybe of a class to help everybody understand that…Some people got really aggravated trying to find stuff."

At the end of focus group 2, the researcher added unplanned questions that addressed student level factors. The discussion led back to institutional factors and ended with three participants expressing discontentment over their feeling misled. The participants expressed they

had been told a CDL license would be earned within their program; however, the school did not follow through by providing the equipment to allow that to happen. 2E referred to equipment for a program to be started, but it is not ready. 2F noted that the school has equipment but lack funding to purchase needed supplies to use the equipment. The researcher is unaware of the facts of these situations; however, what is notable is that both 2A and 2E indicated that the situations appear incongruent with what they say they were told and the result could "discourage" students "very quickly."

In focus group 3, participants expressed dislike for general education courses as they discussed the challenge those courses presented. In response to the apparent dislike of general education courses, the researcher added an unplanned question: "Why do you think those are part of your program requirements?" 3E replied, "To make you more well-rounded as a person." And 3F added, "To promote social and personal responsibility." This response reflects exact language from the general education learning outcomes that guide all general education courses at WKCTC. 3A elaborated, "The English is just dealing with other people. Speech. Essay writing. Psychology. That has nothing whatsoever to do with anything that any of us are doing. That is in left field. Completely…It doesn't make sense. It is just a money factor for the school." 3E nodded in agreement.

When prompted to identify the greatest challenge in the spring semester, 3E stated, "Picking where I wanted to eat lunch every day." Laughter followed. 3A added, "The lobes of the brain. That was not fun." 3D identified digital literacy as the greatest challenge. 3B identified blueprint reading, which 3E agreed. The researcher prompted elaboration. 3B explained, "It was all machining, and we're not even in machining trades." 3E clarified that the blueprint reading course was an elective and the discussion revealed it was offered online. 3A explained that he

has a background in blueprint reading and felt he would not have a problem when he takes it; however, he stated, “Them walking into it, I can understand why they’re saying what they’re saying because unless you are taught you are not going to know what you are looking at.” 3B noted he made zeros on five assignments and dropped the course. When the researcher asked how those who took the course faced the challenges, 3C stated, “Find the answer online. Teach yourself” and 3E stated, “Hopefully you get a good book where someone’s been kind enough to write the answers.” Laughter followed. At this point in the discussion, the participants explained the course is online and the teacher “didn’t teach anything,” according to 3C. 3E stated he would not recommend taking the course online if given the choice. 3E also stated that he did not learn it “at all.” 3C indicated that he learned “some parts of it” and 3E stated, “I learned some.”

Institutional level: People. In focus group 2’s discussion of managing the challenge of the work load and struggles with ENG 101, 2A added, “Now we do have someone at this table…[student’s name] is down there, of course, is a whole lot younger than all of us. He might not have as much of a problem because he hasn’t been out of school like us. But [he] has been a real help to us. A big help.” 2E nodded in agreement. Later, 2A added, “We made it through, like I said, helping each other and having someone…younger than us guiding us older ones through it.” The researcher then asked if participants used any strategies or approaches that they learned in the fall to help them face challenges in the spring. 2A expressed lack of clarity with the question, but then 2F stated, “We just got help through people that knew exactly what to do.” 2D, the younger student 2A referred to, added, “They did learn how to use the email, so that was a big help.” Laughter followed from many around the table in response.

In focus group 3’s discussion of feeling discouraged, particularly with math in the fall semester, 3D noted, “Like I knew after the first couple of classes with [instructor’s name], I

knew we had a good…teacher and I knew that'd be good. And then when we go to math it kinda worried me." 3A added, "Yeah, the teachers will make a really big difference." 3D then added, "Also I think it's us as a class. We've been together since the beginning of this year. And we've all kind of helped each other, I think." 3A stated, "We do work together well as a class." 3D continued, "As a class, I like it. Also, I wouldn't want to take class with anybody else than the people I'm with right now." The researcher asked, "You kind of built a community?" 3A replied, "Oh yeah. No doubt about that." 3D and 3F nodded in agreement. The researcher then asked if community is a factor in continuing. 3A said, "Yeah." 3D added, "I think so. It's one of the bigger factors I think." 3A elaborated, "I think pretty much the whole class except for maybe one will or two will graduate together. Every one of us will, will be in the full think together." 3F nodded in agreement.

When asked whether they would have been able to complete two semesters without the AY! model in place, 3F nodded affirming he would, 3D stated, "I think so," and 3A speculated "at least half to three quarter would." When asked if other agreed with 3A, 3B explained, "With the math, the team teaching was great." 3F added, "I don't think any of us would have made it through that math class without team teaching." 3A stated, "Everybody sticking together." 3B stated, "Yeah, and [success coach], that come in here to help. He helped us a lot last semester. This semester he just made us write a couple of papers. He didn't really help." 3D added, "I don't think he was as good at helping as he was last semester." 3A stated, "As far as those tutors are concerned, there hasn't been a time that they will not stop, and I don't care what you ask them, they will stop and help you. They are an amazing support crew. That is the best way I can put it." 3D added, "I think they are great."

At the end of focus group 3, the researcher asked for final comments on the AY! model. 3D responded, “I think they should keep doing it cause some kids, or some people, may not benefit from it, but other will.” When asked which component was most valuable, 3D added, “Probably the team-teaching.” 3B agreed, “The team teaching.” 3A added, “I stick with my same belief as I did last semester. Those people do an excellent job on it…They helped us a lot when we had a problem and asked them. They walk you through it where the math teachers just didn’t have the time to do that.” 3B stated, “Yeah, the two teachers is probably the best.” 3E explained, “Everybody teaches different and you learn different, so with having more minds in there, you know, as far as teaching goes, one kid may not be getting this and he’s trying to explain it. A different teacher walks up and tells me in a different way.”

Student level: Intention and commitment. The researcher asked participants how successful they feel at the end of their second semester. 2F replied, “I’m tickled…I feel on top of the world right now. Getting all this behind me.” He then referred to history class, which participants explained is the next general education course they will take. 2F referred to the general education classes as “all them crappy courses.”

2E followed with, “This summer we gotta have two courses. See we’re here, all of us older ones, are here for one reason. We’re here to get an education, but we’re here to get paid too. We was displaced workers; we’re out of work and the only way we can get our benefits is full time in school. So we chose it. A lot of our fellow workers did not choose this route. They went on back to work. Different areas. Different places. But we chose this.” The researcher prompted elaboration on this idea by asking what keeps the students here. 2E replied, “We’re trying to make a good situation out of a bad situation.” 2C, 2G, and 2 B nodded in agreement. The researcher asked for clarification of “good situation.” 2E replied, “Getting an education” and

2F replied, “A job.” 2A added, “A credential when you go somewhere.” 2G explained that others who went back to work had to “pack up and move,” whereas going to school “gives you a little time to plan that out and then…you’re going to have your credentials.” 2 E added, “It looks a lot better on a resume,” referring to college credentials. The researcher asked how they knew that credentials on resumes had a positive impact. 2E replied, “We know that. A fellow classmate went to work…this year. He said when he slid his grades, his transcript, over to them, they looked at him and seen his grades. They didn’t ask him another question.” 2E added that the classmate referenced had not completed the credential, but had several classes completed and good grades.

2G stated, “Anybody can look good on a resume…Your credentials, your certificates, they back up what you are putting down on paper” 2A added, “They see 4.0 or close they like that, and they know if you were able to obtain that you are a worker, an achiever.” 2G stated, “You are less likely to be one of those people who calls off and not shows up to work too.”

The researcher later asked if participants were planning to return in the summer or fall semester. 2E stated, “We’ve already got our schedules.” Several nodding in agreement. 2A added, “We are far enough into it now we are not quitting.” 2G stated, “That’d be pointless.”

At this point in the discussion, the researcher added an unplanned question: “Listening to you brought this to me. What makes you different from those who are not in this program? Those that you talked about who went to other jobs, rather than choosing the education route. What makes you different?”

2E replied, “We may not be as real different. They already had education in certain fields. They’ve been to school. Some of these people, they went through apprenticeship program for maintenance. They was able to go get another job pretty easily.” 2F noted, “They was younger

than us too. And you gotta figure who's gonna want to hire a 55 year old man." 2A added, "That's still even a concern when we do get done with this. At least we'll have something to back it up."

The researcher asked another unplanned question: "What would you say is the most important factor in completing a credential? What must be present in order for a student to complete?"

2G stated, "Interest," and 2E stated, "To be determined." 2A added, "And that's within us. But now you're talking about within a program or other things. It's anything that helps us comprehend. I don't know what those are. But I know we have a tutor and these computer programs are designed to help and they do, but it's pretty stressful."

Focus group 3 expressed their dislike of general education classes in the discussion of challenges, and that discussion led to a discussion of an Associate's degree versus a certificate, in which participants noted the need for general education courses for Associate's degrees. 3B noted the general education requirements for an associate's degree, stating "we could come and take these classes but without these classes we wouldn't have an Associate's degree. We'd have a certificate." The researcher then asked about the value of the Associate's degree. 3B stated, "It definitely looks better on a job resume." 3D and 3F nodded in agreement. The researcher prompted participants for elaboration. 3D explained, "It shows you did more in college," and 3B added, "Committed." 3E continued, "Yeah. Shows you are committed. Shows you are willing to do more at a job. Not lazy." 3A agreed, "That's what it is all for. Everything they said, and it's true." Though the participants expressed dislike of the general education requirements, several participants recognized a value in the more rigorous structure of the Associate's degree

curriculum. Some participants were able to see that students who persevered the rigor of the general education requirements earned a credential that carried greater value to future employers.

Later in the discussion the researcher asked participants about how successful they felt at the end of their second semester. 3A noted that he had learned a great deal, particularly in his electrical courses. Then he explained, “I found being older I have more patience in studying. My grades are probably better than they’ve ever been in any course or class I’ve ever taken in my span of life of being in school. My age helps me a lot…Them being younger…their brain works faster so they have that advantage over me.” 3D stated, “I see it as half way there or a little under half way there right now.” 3A indicated that he felt discouraged last semester due to math.

When focus group 3 discussed the community they had created by being together for two semesters, the researcher asked an unplanned question about those who had dropped out, specifying not to use names. 3A indicated that the group had lost one classmate to death. Others had dropped out due to “other reasons…not just the fact that they couldn’t do the courses. It was life experiences.” 3F indicated one who dropped out got a job. 3A indicated another had a parent pass away and he “pretty much has money to survive on right now so he just dropped out.”

The researcher then asked if anyone else had been tempted not to continue due to a job. 3D indicated that he “thought about it…but I was like a job can be there and then a month later it cannot be there so might as well have my degree.” Later the researcher asked what the biggest factor is in deciding to return in the summer or fall to continue. 3B indicated, “Whether I get into the union or not.” 3D indicated his son as the biggest factor, stating “to be able to support him I need to get this degree…then when he looks back and is about to graduate high school, he can look and I can tell him he probably need to go to college.” 3D continued by explaining his father not go to college and his mother did, and “seeing what [his father] does isn’t the kind of work”

3D wants. 3A stated, “I’m a goal person. I set goals and I shoot for them.” The researcher then returned the discussion to 3B’s mention of the union. This led to a discussion of the benefits of an associate’s degree versus union credentials. No one in the group felt the associate’s or the union credential outweighed the other in value, though 3D, 3F, and 3B indicated the combination of the two could be valuable in the job market. 3B explained his ideal to be accepted into the union and take general education courses at the college, earning the requirements for an associate while learning and earning in the union.

Summary of Focus Groups. The researcher planned and approached the focus groups as an opportunity to pinpoint particular components of the AY! model that impacted student success more than others. Planned questions addressed components of the AY! model, all institutional factors. Themes reveal primarily student perceptions of the individual components of the AY! model. The math modules were addressed more often and received more negative responses than other components. The first-year experience course also received negative responses, though some participants did express positive perceptions as well.

The math modules in their current form are not perceived as beneficial to the learning process by any participants. Team teaching and regular access to the success coaches are perceived as a beneficial to learning and student success. Yet participants’ responses suggest more than these general findings.

More specifically, the math modules may be ineffective because of the delivery method. Participants expressed challenges and difficulties with technology related issues, such as the online blueprint reading course that prompted students to feel they were teaching themselves. The blueprint reading course and the math modules are both delivered via Blackboard. Also, the calculator used for math prompted students to feel they needed a class on how to use the

calculator. In the spring focus groups, some students expressed dissatisfaction with the online program used in the English course. Some of the participant responses regarding the online English program mirrored perceptions of the math modules.

Additionally, responses consistently identified the team teaching and access to the success coaches valuable to the students' performance. Contrasting this to the repeated negative commentary on online experiences suggests that online delivery is viewed negatively because it denies interaction between people. Success coaches provide interaction in the classroom and in weekly tutoring.

Examination of all focus group responses demonstrate that general education courses tend to provide the greatest academic challenge, yet responses also demonstrate an awareness of the value of the general education courses to the program curriculum. Participants' perceptions demonstrate that the presence of the success coach in addressing the challenge of the general education courses was important to students.

Lastly, though the researcher did not plan questions to address student level factors, participants' responses suggested factors that influenced students' intention and level of commitment. Responses suggest intention and commitment are impacted by students' backgrounds. Older, displaced workers seek an education yet are forced to weigh the needs of a regular income to meet family demands against the benefits the college credential can provide later. Younger students appear to be influenced by family and financial demands in different ways. Younger students see long-term financial demands as a motivation to earn a credential now and family members with and without college credentials motivate students to seek credentials.

The researcher observed that older students tended to engage in the focus group discussion more often than the younger students. The researcher did not observe that younger students' perceptions were not valued but cannot determine if the students felt their perceptions were not welcomed by the older students. The researcher cannot ascertain whether the demographics of the focus groups accurately reflect the demographics of the complete AY! enrollment for 2016-2017. However, there are female students enrolled in Applied Technologies programs, yet none volunteered to participate in the focus groups. This lack of female participation leads the researcher to believe there is a potential that the focus groups do not accurately reflect demographics of the courses that used the AY! model beyond the characteristic of gender.

Summary.

This study sought to examine the impact of the AY! model on student success by answering three research questions. Data collected and analyzed in this mixed methods study included performance data from courses offered consistently before and in the AY! program, student responses to the Personal Qualities Student Survey from a sample of the 2016-2017 Applied Technologies AY! student population, and student perspectives shared in focus groups held two times in the 2016-2017 academic year. Data analysis of performance data indicate that the AOKY model had a statistically significant negative impact on course means, yet course means during AY! implementation suggest a positive impact in two of the three courses examined, though not statistically significant. Data analysis of scores from the Personal Qualities Student Survey demonstrate a statistically significant difference in fall study skills self-efficacy scores only. Low and inconsistent participation in the Personal Qualities Student Survey limited the researcher's ability to analyze findings. Data analysis of student perspectives shared in the

focus groups demonstrates students experienced challenges, incongruences between expectations and institutional performance, and the valuable role of people in the AY! experience. More specifically, challenges were most often experienced with the general education courses: math in the fall and English in the spring. Technology also presented challenges for students, particularly students who identified as older and out of school for what they considered a long length of time. Students identified online components of the AY! model as challenges, but their commentary suggest those challenges resulted in part from incongruent expectations and actual experiences. Students expect to learn from a teacher, and online content made some students feel as if they were teaching themselves. Incongruences between what students experienced in course content and their expectations for learning related to occupational needs were expressed as well. Students did identify student level determination as a factor in persistence. They also expressed that institutional level efforts to support learning were factors in persistence as well.

Chapter 5: Conclusions

> If we hope to make significant gains in retention and graduation, institutions must focus on the classroom experience and student success in the classroom and align classrooms one to another in ways that provide students a coherent pathway that propels them to program completion. (Tinto, 2012a, p.125)

Introduction

The present study assessed the impact of the AY! model on student success by answering three research questions. This chapter draws conclusions based on findings from data collected to answer these questions. Conclusions are drawn for each of the study's three research questions from findings. Limitations are explored for each research question and findings. Further conclusions are drawn based on triangulation of data collected and analyzed for all three research questions. Recommendations are made specific to the institution studied and generalized to similar populations at the community college setting.

Research Question 1 Conclusions

Research question 1 asked: How does the Accelerate You! (AY!) model impact student success, as defined by course grades associated with the AY! model and semester-to-semester persistence? The researcher failed to reject Ho1: The AY! model demonstrates no impact on student academic performance as defined by course grades in Applied Technologies courses offered prior to and in the AY! model, specifically IMT 110, EET 119, and MAT 116. Grades in one course, IMT 110, demonstrated statistically significant differences in means but only under the AOKY model, and grades in the other two courses, EET 119 and MAT 116, demonstrated no statistically differences in means.

An examination of course grades for IMT 110 detected a statistically significant difference between groups using ANOVA with a medium effect size. Post hoc tests revealed the

significant differences between fall 2011 (*M*=3.14) and fall 2012 (*M*=1.88) and between fall 2011 (*M*=3.14) and fall 2013 (*M*=1.74) when the AOKY model was in place. These findings support that the AOKY model negatively impacted academic performance. These findings suggest that advancing students who have not yet earned a GED into college-level courses does not result in a positive impact on student performance.

However, these findings cannot specifically identify what aspects of the model impacted students' academic performance. However, it is important to note that AOKY was designed to accelerate students who had not yet earned a GED in to college level coursework leading to certificates and diplomas. The researcher found that no students in IMT 110 in 2012 or in 2013, the statistically significant years with low means, were GED seeking students. The intent of the AOKY model to accelerate students without an earned GED to college courses is not met in the student enrollment in 2012 and 2013. The low mean of course grades in IMT 110 in 2012 and 2013 cannot be attributed to GED seeking students unprepared for the demands of college courses.

When the researcher inquired to faculty and staff working in the AOKY/AY! program at WKCTC regarding student enrollment during the AOKY and AY! model implementation, faculty and staff reported that the student enrollment during 2012 and 2013 did not include GED seeking students because a financial aid option called Ability to Benefit ended. This grant program allowed GED seeking students to secure federal financial aid. AOKY/AY! staff attribute the absence of GED seeking students in the AOKY program to the lack of access to financial aid. However, the AOKY model in 2012 and 2013 did seek to address the needs of students who had high school diplomas or GEDs but did not have the needed placement test scores to take college level math courses. Without the needed placement scores, those students

could only seek certificates in Applied Technologies programs that did not require college level math courses. Unlike the AY! model that addressed math skills in a math course and a technical course, the AOKY model addressed math skills in the technical courses only, limiting exposure to effective teaching of math concepts. IMT 110 findings suggest the AOKY model was not effective in achieving desired objectives; however, other factors outside of design features, specifically financial aid availability, hindered student access to the AOKY model.

An examination of course grades for EET 119 detected no statistically significant difference between groups using ANOVA, though the mean in 2014 was 1.74 and increased in 2015 to 2.93 and remained higher than 2014 in 2016 with 2.59. Means for course grades in EET 119 and IMT 110 followed similar patterns. Means in both courses increased in 2015 and remained higher in 2016 than 2014. The increase in means of course grades for IMT 110 and EET 119 in 2015 correlate to the launch of the AY! model with its multi-layered supports. Though not statistically significant, this increase could correlate to the supports being implemented. Both courses implemented the AY! supports, specifically team teaching, weekly tutoring for math concepts, and learning community structure, in 2015 and continued those supports in 2016. These findings for IMT 110 and EET 119 suggest the implementation of the AY! model was effective in supporting student performance and the AY! model is more effective than the AOKY model.

An examination of course grades for MAT 116 detected no statistically significant difference between groups, and means of course grades in MAT 116 did not follow the same pattern as IMT 110 and EET 119. In fall 2014, mean of course grades for MAT 116 was 2.03 and the mean dropped in 2015 to 1.94, the first year of the AY! model with seven students in the study population having not met placement score benchmarks for math. The mean increased to

2.29 in 2016 with AY! still in place and 25 students in the study population having not met placement score benchmarks for math. The decrease in mean in 2015 correlates with the inclusion for the first time in MAT 116 of seven students who did not meet the prerequisite placement test score, which reflects a deficit in math skills needed for the course. As a first year of implementation, faculty and staff in the AY! model likely learned lessons from first year experiences and were able to make changes in the second year of implementation and potentially leading to an increase in mean.

The objective of the evolving AY! model is to accelerate students who do not meet required college placement scores needed for college-level courses. Means of courses grades in two of the three courses included in this study did not demonstrate statistically significant differences. Statistically significant differences detected in IMT 110 were found to be in years of AOKY implementation, not AY! implementation. IMT 110 data suggest the AOKY model was not effective in addressing challenges to student academic performance. IMT 110 and EET 119 data suggest the AY! model is effective in addressing challenges to student success with increasing means for courses grades, though not statistically significant. MAT 116 data demonstrate that accelerating students past developmental course work into college level math did impact means of course grades for the first year of implementation; however, the impact was not statistically significant. The second year of implementation demonstrates an increase in mean to higher than the mean of the last year prior to AY! implementation. It is also important to note that more students who did not meet benchmark placement scores were enrolled in 2016 than 2015 and the mean of course grades increased in 2016. This finding suggests that those students who did not meet benchmarks in math yet taking the college level math class can perform comparably to those students who did meet benchmarks, supporting the use of this

"more radical reform" approach to developmental education (Hodara & Jaggars, 2014, p. 271) that accelerates students who do not demonstrate placement test benchmark scores into college level math. It is important to note that, though the students did not meet the required benchmark, they were within a few points of the needed score.

The researcher also failed to reject Ho2: The AY! model demonstrates no impact on fall-to-spring semester student persistence. An examination of persistence data, specifically persistence rates for the students enrolled in three courses examined previously for Ho1 (IMT 110, EET 119, and MAT 116), by using χ^2 detected no statistically significant differences for persistence in two of the three classes.

The researcher detected a no statistically significant difference in persistence rates in IMT 110 and EET 119. Rates of persistence for IMT 110 varied in the academic years represented in the study. This fluctuation in persistence rates makes it difficult draw any correlations between the instructional models in place in IMT 110 in the years within the study. The data does suggest the AOKY model in IMT 110 did not positively impact persistence because the rates dropped in those years (2012 and 2013), yet the rate also dropped in 2014 when AOKY was removed, though it was removed due to very low enrollment in IMT 110. The persistence rate did increase with AY! implementation in IMT 110, yet it fell in 2016 to a rate lower than AOKY implementation and lower than 2014, when enrollment was low. The persistence rates for students enrolled in EET 119 dropped from 88.2% in 2014 to 85.7% in 2015 and further dropped to 82.3% in 2016. EET 119 data demonstrate that the AY! model correlates to a negative impact on persistence, though not statistically significant.

Contrary to findings for IMT 110 and EET 119, the researcher detected in a significant difference between actual and expected persistence from 2014 to 2016 for students taking MAT

116. This statistical significance is reflected in the increasing persistence rate from 2014 at 62.5% to 70.8% in 2015 and again increasing to 75.6% in 2016. Because MAT 116 enrollment includes AY! students who did not meet benchmarks in math and students who did meet benchmarks in math, this statistically significant difference in persistence rates in MAT 116 cannot be solely attributed to the AY! model. AY! students included in the MAT 116 data examined here are also enrolled in either IMT 110 or ET 119 and are, therefore, included in the persistence data for one of those courses as well. This finding, however, does suggest correlation between access to team-teaching and increased persistence. All students in MAT 116 had access to two teachers in the classroom during instructional time. Ho2 is rejected because data for IMT 110 and EET 119 suggest a no impact or a negative impact on persistence. However, the positive correlation in MAT 116 suggest team teaching was beneficial to students beyond the AY! model who had the same access to the support provided by the additional teacher in the classroom.

Findings for Ho1 based on performance data and Ho2 based persistence data suggest that accelerating students who do not meet placement test benchmarks past developmental coursework to college level math can lead to academic performance at comparable levels as students who demonstrate college readiness and enter college-level courses when mixed cohort classes with team-teaching are utilized. These findings do support acceleration as an institutional strategy to address poor completion rates for traditional developmental education sequences. The data from this study do not demonstrate a negative impact on academic performance under the AY! model when developmental education students are accelerated. Further study is needed to identify clearer correlation between the AY! model and academic performance and persistence.

Limitations. Specific limitations for research question 1 include the examination of course grades utilizing ANOVA, which compares means. Comparison of only means of course

grades for specific courses does not demonstrate if individually students without the benchmark scores and not considered college ready are performing comparably to those who have the scores and are considered college ready. Furthermore, students in this study who did not meet benchmark scores were within a few points of the required score, so accelerating all students who qualify for developmental math sequences is not supported by this study. This study supports the acceleration of students who score near the required benchmark.

Examination of persistence rates in IMT 110, EET 119, and MAT 116 do not demonstrate a positive correlation between the AY! model and persistence; however, the MAT 116 persistence rates do suggest the need for further examination to identify if the improved persistence occurs within the population of students who did not meet placement tests benchmark. Data do suggest team teaching positively impacts persistence, yet it is unclear which students are benefitting from the team teaching support in the classroom. Again, it is unclear which students—those without required placement scores or those with—are benefitting from team teaching. This study did not identify the percentage of students who qualified for developmental math and successfully completed MAT 116 and persisted.

This study examined fall-to-spring persistence. Fall-to-fall persistence needs to be examined to gain a better understanding of the impact of the AY! model on persistence. Fall-to-spring rates for the two technical courses examined demonstrate no impact on persistence, yet the MAT 116 data suggest some correlation to the team-teaching component of the AY! model. A closer examination of the students in the cohorts examined for MAT 116 to determine persistence for fall-to-fall could reveal further understanding of the impact of team teaching in math courses on student persistence.

These mixed results suggest some positive impacts from the implementation of the AY! model, but the performance data reflect mixed findings. This could be attributed to the limited number of years of implementation of the full model. Additionally, within the few years of implementation, refinements in implementation were made by faculty and staff as well as enrollments fluctuated and were impacted by external economic factors. For example, the 2016-2017 cohort possessed several non-traditional students who were displaced workers from a local paper mill. This enrollment nuance became apparent to the researcher through focus groups. The researcher was not able to identify any other nuances in enrollment from previous years reflected in the performance and persistence data examined.

Research Question 2 Conclusions

Research Question 2 asked: Does an association exist between participation in the AY! model and changes in students' personal qualities, specifically mindset, grit, and study skills self-efficacy? The researcher failed to reject Ho1: The personal qualities scores of students in the AY! model demonstrate no shift in mindset, no increase in grittiness, and no increase in study skills-self-efficacy. The researcher only identified a statistically significant difference in students' responses on the Personal Qualities Student Survey for FallEnd (Aug and Nov/Dec) in study skills self-efficacy.

The researcher detected no statistically significant difference in FallEnd (n=22) mindset from Aug (M=4.74) to Nov/Dec (M=4.60 and no statistically significant difference for SprEnd (n=28) mindset responses from Aug (M=4.69) and Apr/May (M=4.65). Though not statistically different, beginning mindset scores do decrease slightly from Aug to later data collection points. If the AY! model positively impacted academic performance, the AY! could impact students' mindsets. These self-report responses, however, suggest a negative impact with mindset scores

dropping slightly from the beginning of the academic year to the end of the first semester and the end of the academic year.

The researcher detected no statistically significant difference for FallEnd (*n*=22) grit responses from Aug (*M*=3.60) to Nov/Dec (M=3.64) and no statistically significant difference between for SprEnd (*n*=28) grit responses from Aug (*M*=3.57) and Apr/May (*M*=3.66). Analysis of means does suggest small increases in grit scores from Aug to the later data collection points, suggesting potentially some impact on students' level of grit, though not significant. Because research findings suggest correlations between report card grades and grit (Duckworth, et al., 2012), if the AY! model positively impacted academic performance, grit levels would likely increase as well. However, the increases represented in this study are small.

The researcher detected a statistically significant difference for FallEnd (*n*=22) study skills self-efficacy from Aug (*M*=3.16) to Nov/Dec (*M*=3.52) with a small effect size and no statistically significant difference for SprEnd (*n*=28) study skills self-efficacy responses between Aug (*M*=3.17) and Apr/May (*M*=3.25). Though FallEnd study skills self-efficacy scores demonstrated a statistically significant difference from Aug to Nov/Dec, the SprEnd study skill self-efficacy scores demonstrated no statistically significant difference from Aug to Apr/May. These data do suggest students' study skills self-efficacy was positively impacted in the fall semester when the AY! academic supports were most concentrated, but the students were not able to transfer the study skills to the spring semester without the full scope of AY! supports in place.

While data do demonstrate that the AY! model has no impact on students' mindset and grit, the data do show an increase in study skills self-efficacy scores from the beginning of the fall semester to the end of the fall semester. The AY! model support strategies are concentrated

in the first semester (fall semester), labeled FallEnd in the personal qualities data. In the first semester of the AY! model, AY! students have access to success coaches in the math course and a technical course as team teachers. They also have access to the same success coach during weekly tutoring. Items on the study skill self-efficacy self-report measure include application of specific study strategies, some of which could describe the weekly tutoring with the success coach, such as "having a regular place to study" and "having regular, weekly review periods." Having regular access in weekly tutoring to study math concepts could have influenced how the students responded to the study skills self-efficacy items. Betz (2014) asserts that learning experiences lead to the development of self-efficacy, specifically through learning and social and environmental influences. However, these findings suggest that students did not possess as strong a sense of study skills self-efficacy in the second semester when fewer academic support strategies were in place as they did in the first semester. The academic supports of the first semester were intended to assist students in the college transition and equip them with skills as they progressed. Yet these findings suggest the students did not feel the same level of study skill self-efficacy without the full AY! support structure in place as they did with the full support structure.

Limitations. For research question 2, the inconsistent and low participation in the Personal Qualities Student Survey created significant limitations in understanding how personal qualities measures could be used to understand the student population and potential impact of academic support strategies. Of the original n=45 respondents in Aug, 11 qualified for developmental math sequence prior to entering MAT 116; however, performance data provided by the Director of the AY! model indicates 25 students in the 2016-2017 cohort qualified for

developmental math sequence. The researcher could draw no conclusions about personal qualities and developmental education.

Furthermore, this study examined personal qualities using a self-report measure consisting of three separate measures already tested in previous studies (Dweck, 1999; Silver, Smith, & Greene, 2001; Duckworth & Quinn, 2009), one for each personal quality addressed in this study. Duckworth and Yeager (2015) assert that research supports the use of self-report measures when respondents have answers they can provide. Yet the process that respondents follow to answer self-report measures calls on them to recall memories and make a judgement based on a summary of memories. Moreover, individuals tend to believe themselves to be consistent over time, which influences what is recalled in order to make the judgement and choose an answer (Duckworth & Yeager, 2015). Students' responses on the Personal Qualities Student Survey could be based on a narrow scope of memories that reflect consistent demonstration of qualities addressed on the survey.

Reference bias can also affect self-report measures based on the norms held by respondents (Duckworth and Yeager, 2015). Because of these limitations to self-report measures, Duckworth &Yeager (2015) caution against using self-report measures for program evaluations, arguing that reference bias could produce results that are opposite of the truth for "within program effects" (p. 243). Duckworth and Yeager (2015) cautions educators in using personal quality measures because those measures can only be on step in improving educational initiatives. For program evaluations, the authors recommend performance measures as the optimal choice for measuring personal qualities (Duckworth & Yeager, 2015). The researcher cannot assert that because of no movement in personal qualities scores the AY! model does not impact students' mindset, grit level, or study skills self-efficacy.

Because the same study participants did not respond to both the Nov/Dec (*n*=22, *M*=3.52) and Apr/May (*n*=28, *M*=3.25) survey administration, the researcher cannot accurately compare means from these two collection periods. It is interesting to note the decrease in means from Nov/Dec (*n*=22, *M*=3.52) to Apr/May (*n*=28, *M*=3.25). However, the researcher cannot draw valid conclusions from this difference because the *n* is not the same because of inconsistent participation in survey administration.

Additionally, the study skills self-efficacy items taken from Silver, Smith, and Greene (2001) did not undergo validity and reliability testing prior to incorporation into the Personal Qualities Student Survey. Silver, Smith, and Greene (2001) did examine validity and reliability for their complete instruct. This study utilized items associated with study skills. By omitting the other items from the original instrument, validity and reliability could be affected.

The fall focus groups utilized to answer research question 3 were held in late November and early December after the Personal Qualities Student Survey was administered the second time for FallEnd analysis. The Personal Qualities Student Survey was administered again at the end of the spring semester in late April and early May for the SprEnd analysis. The fall focus groups, though held approximately four months prior to the last administration of the Personal Qualities Student Survey for SprEnd, could have influenced students' perceptions expressed in the spring focus groups.

Research Question 3 Conclusions

Focus groups provided rich data from which the researcher identified themes that generally demonstrate alignment with the literature on student persistence and departure, specifically institutional factors and student level factors addressed by Tinto (2012b) and Braxton, et al. (2014). Themes reflecting institutional level factors included: challenges students

experienced, incongruences students felt between their expectations and their experiences in the AY! model, and people who impacted the experience. Themes reflecting student level factors included intention and commitment.

Challenges. Data from both fall and spring focus groups demonstrated students were most challenged by general education courses, specifically math in the fall and English in the spring. These challenges stemmed from the content and from scheduling. Students expressed the need for more time to understand math concepts and more time with the success coach to work on essays. Challenges also included the design of the math modules, particularly as an online instructional strategy. Challenges with online experiences were also expressed regarding a fully online technical course and the online content that supported the English course in the spring. Students, particularly non-traditional students, also expressed difficulty with technology, such as using Microsoft Word for writing English essays and the graphing calculator for math. The researcher concluded technology a challenge to non-traditional students.

Incongruences. In analyzing the challenges students expressed, the researcher identified some challenges stem from incongruences between what the students expected and what they experienced. Much of the complaints about the math modules centered on incorrectness issues or a disconnect between the modules and the content of the math and technical courses. The discussion of the online supplement in the English course also consisted of complaints about a lack of connection between online content and course content. Students felt content in the online supplement was not relevant to their majors, specifically industrial maintenance, diesel technology, etc. Some students also expressed difficulty in seeing the value of the first-year experience course. Other comments about the online technical course revealed that students felt they were teaching themselves. Students expressing discontent about feeling as they were

teaching themselves suggests they expect to be taught by a teacher, and the online supplements do not offer the teaching experience students expect.

People. Examining the challenges and incongruences led the researcher to see the important role people play in students' academic experiences. People, both peers and faculty, particularly the success coaches, played an important role in students' integration, which primarily took place during class time and weekly tutoring time. Access to the success coaches during two classes in the fall semester and during an additional hour of tutoring provided more time and interaction to promote academic integration. As Crisp and Mina (2012) point out, integration for community college students primarily happens immediately before, during, and immediately after class. The inclusion of the success coaches in the AY! model provided consistent and repeated exposure to an institutional representative that communicated interest in the student, creating a "supportive psychological context, " as Braxton, et al., (2014) would describe it.

Beyond faculty and staff, peers play an important role in academic integration, and learning community structures allow for students to have more than one class together and, as a result, build stronger relationships. Focus group commentary included referencing how particular members of the cohort played important roles in helping others students. One participant at the end of the fall semester expressed that he improved with "help from my friends." One participant in the spring noted, "I think it's us as a class. We've been together since the beginning of this year. And we've kind of helped each other, I think…I wouldn't want to take classes with anybody else than the people I'm with now." This idea was affirmed by others in the group. These responses provide evidence that the learning community structure of the AY! model allowed strong bonds to develop between students or arguably a sense of belonging. Tinto (2016)

argues that a sense of belonging can motivate students to engage in the college experience while lack of motivation can lead to students withdrawing from peers and faculty.

Intention and commitment. Data from the focus groups support weaknesses in the AY! model that derive from students experiencing incongruences between their expectations for their college experience and what they actually experience in the AY! model. Understanding these experiences as incongruences is important because Tinto (2012b) asserts that how students' intention and commitment interact with college experiences are often more influential in student departure than any other factor. Focus group responses indicate that the math modules present incongruence. The modules are designed to further math instruction to support closing math skills gaps. Furthermore, Davidson and Petrosko (2015) found that online content that complemented in-person math courses led to higher student persistence. Yet the students' responses in focus groups did not indicate they saw the modules as improving math skills or promoting a positive experience that would encourage persistence. In fact, some students expressed they only did the modules to fulfill the requirement, going so far as to say the modules should no longer be a part of the AY! model.

However, because of other negative commentary about online classes and the online supplementary material in English, the students' discontent is likely derived more from the delivery method than the content. Participants expressed numerous times the value of the people in the AY! model while their greatest discontent is with the modules, an online tool absent of human interaction. The researcher concludes the online platform does not provide the kind of learning experience students in the Applied Technologies programs desire. This finding could be influenced by the focus group population that appears to be weighted in non-traditional students

who do not come to the college experience with the level of technology experience younger students typically have.

Generally, the incongruences students experienced support research that demonstrates a student's perceived value of the learning experience is central to students' motivation (Tinto, 2012b). Participants' commentary communicated less motivation to complete the components that they found incongruent with their expectations, such as the first-year experience course for some participants, in part because of the limited time to teach, and the math modules for many participants because of a disconnect between the content of the modules and classroom learning. The negative comments contrasted to the positive comments demonstrate that students felt AY! components that involved people were valuable learning experiences. Research supports that frequent exposure to effective teaching skills leads to perceived academic development (Braxton et al., 2014). Though Braxton et al. (2014) identify first year student orientation as an organizational force that positively influences academic development, the first-year experience course in the AY! model does not appear to have the desired impact. Focus group commentary identifies the limited time for instruction as problematic as well as the content incongruent with expectations. The researcher concludes that misaligned content in the math modules, the English course, and the first-year experience course hinder the other positive elements to the AY! model. In fact, the positive impact of people often offset the negative perceptions of the incongruences that students experience.

Students in the spring focus groups identified student level factors as the most important factor in completing a credential. Specifically, some noted that they entered college believing jobs would open up and they would return to work. They were essentially "buying time." Others expressed their strong desire to finish the credential, and some expressed the value of the

education but a “good paying” job could be of greater value. Duckworth, et al. (2007, 2009) found that those who purse meaning over pleasure tend to be grittier, which suggests greater persistence when goals are grounded in deeper personal meaning. Though colleges seek to retain students and define student success as retention and completion, this focus group data demonstrate that success has different meaning for different community college students. No student defined going to college as pleasure. Students expressed meaning for the college experience, but not all placed the greatest meaning on credential completion. These comments captured the value students placed on the college experience, a student level factor that institutions must consider when examining student persistence factors. Tinto (2012a) acknowledges that students choose to leave due to “a variety of forces, not all of which are amenable to institutional action” (p.118-9). Tinto (2012a) goes on to note that a student can have an “entirely satisfactory” experience with an institution, yet still choose to leave due to external forces (p. 119).

Limitations. The researcher approached the focus groups as an opportunity to clarify which component(s) of the AY! model was most effective. The focus groups did reveal that students found the greatest value in the success coaches and the peer relationships that resulted from common student schedules that created learning communities. Because the researcher was focused on institutional factors, planned questions focused predominantly on the multiple strategies of the AY! model. The researcher did not effectively plan questions that addressed student level factors. The lack of questions focused on student level factors became apparent in the spring focus groups when the natural progression of conversation in one focus group led to student level factors. The researcher did probe further and found the participants’ comments

reflect the research on institutional and student level factors. However, exploration of the student level factors was limited in the focus groups due to the scope of the preplanned questions.

Additionally, focus groups in the spring were poorly attended, with one scheduled focus group having no participation. The researcher believes the lack of attendance in the first spring focus group was due to inconvenience to students in the scheduling and location for the focus group meeting time and place. Focus groups that were held directly before a regular class meeting resulted in better attendance. Considering commentary from the focus groups, this reflects the participants' motivation to earn a credential in a focused trade and move into the trade quickly.

Triangulation of Findings from the Research Questions

Performance data examined for research question 1 demonstrate that students in the technical courses examined during the study period performed comparably with the AY! model in place as without the AY! model in place. This comparable performance suggests that students who had not met placement score benchmarks were able to perform comparably to those who had met benchmarks. Persistence rates were only found statistically significant for MAT 116, a course that included team teaching and students who are not part of the AY! model. Personal qualities data demonstrate an impact on study skill self-efficacy in the first semester of the AY! model only. Focus group data also demonstrate that students found the success coaches, who are the team teachers in the technical and math courses, as the most beneficial component of the AY! model. Students had the most exposure to the success coaches in the fall semester, which is FallEnd in personal qualities data collection. Triangulation of these findings support Tinto (2012c) and Braxton, et al. (2014) that faculty and good teaching create a positive environment that promotes academic and intellectual development, particularly important for commuter

students who spend limited time on campus. Though faculty and good teaching approaches were likely present before the AY! model was implemented, the model added more purposeful strategies to improve teaching and learning, specifically team teaching, weekly tutoring, and learning community structure. These strategies emphasize student integration in the classroom (Tinto, 2012c; Braxton, et al., 2014), providing positive experiences with institutional representatives, further enhanced by the sense of belonging that peer relationships offered (Tinto, 2016) through the learning community structure (Tinto, 2012c; Betz 2014).

Baker, Hope, and Karandjeff (2009, Spr.; 2009, Oct.) assert that contextualizing skills within a career context increases the value of learning for students, which then increases the students' self-efficacy on related tasks. Yet, limited movement in study skill self-efficacy scores on the Student Survey in only the fall semester suggests little impact of the AY! model on personal qualities. However, it is important to note that Duckworth and Yeager (2015) do not support the use of self-response instruments for program evaluation, rather performance assessments would be more effective. This study did not use a performance measure for personal qualities; however, performance measures in this study, specifically an examination of means course grades in two technical classes, do not indicate a statistically significant increase. A small increase in means is present in the years of AY! implementation in both EET 119 and IMT 110. This increase in performance measurement suggests a positive impact of the AY! model on students' abilities to perform academically. Though this did not translate to consistent changes in mindset scores, grit scores, and study self-efficacy scores, an increase in course means does suggest a positive impact on students' abilities to perform academically.

Negative focus group responses regarding the math modules and online English content also suggest that contextualization did not effectively occur in the design of the math modules

and the selection of the English content. The lack of alignment between classroom content and occupational needs as well as difficulty in navigating the online content undermined the positive environment created by the impact of the success coaches, faculty, and peer relationships. Peers and success coaches provided support through faculty-student interaction and cooperation between students to compensate for the frustration experienced in fulfilling the math module requirement. Beyond compensating for frustrations experienced with challenges and incongruences, the faculty-student interaction and peer relationships created college-linking networks (Engberg & Allen, 2011) for the AY! students. The interaction with teachers in the classroom *and* the interaction with success coaches in two classrooms and weekly tutoring presented an expanded potential for students to acquire "the norms and patterns of behavior to the integration" (Tinto, 1988, p. 444) into the college. The experiences with the success coaches, in particular, appear to help alleviate stress from the college transition (Tinto, 2012b) and provide the potential to develop social capital through the network (Perna, 2006) the institution provided with institutional representatives (success coaches) in the AY! model.

The perceived value of the curriculum, central to students' motivation (Tinto, 2016), appears to have been diminished by misaligned content. Focus group responses identify specific alignment issues with math and English, but responses also indicate course sequencing misalignment. Some students expressed the need to take a required digital literacy course earlier in the pathway sequence. This need appeared particularly important to the non-traditional students who lacked technological skills of traditional students.

Though the institutional representatives and peer relationships were able to offset the incongruences experienced, other data suggest students were not able to transfer study skills as effectively as desired by the AY! faculty and staff who designed the model to concentrate

important strategies in the first semester to promote skills needed for academic success. Weekly tutoring and the first-year experience course are designed to promote study skill and academic planning and success. Though the 2016-2017 cohort did have access to a success coach for weekly assistance in the spring semester, they did not have access to the success coach as a team teacher in two classes. In focus group interviews, participants noted the support provided from the success coach in the spring was not as effective as it was in the fall semester. Focus group commentary does suggest that the concentration of support strategies did emphasize study strategies, but the personal qualities data also suggest that students were unable to apply those strategies as effectively without the concentration of support strategies in place.

Study Limitations

Limitations to this study as a whole work are attributed primarily to the study population. This study is set in a two-year institution that offers associate's degree programs with a concentration of technical programs (The Carnegie Classification of Institutions of Higher Education). The researcher planned the study to examine student success and persistence without consideration to unique characteristics of student enrollment in particular programs. However, the student enrollment in this study, particularly of the 2016-2017 study population central to research questions 2 and 3, is not reflective of WKCTC student enrollment or of general community college student populations. The AY! program at WKCTC began in Applied Technologies programs and has since expanded to Health Science Technology programs and will further expand to Business and Computer Related Technologies. This study focused on Applied Technologies because multiple years of data were available. Applied Technologies program enrollment is generally male. Of the 2016-2017 original study population (those who agreed to participate in the Personal Qualities Survey in Aug) 2% were female. Yet, IPEDS data from fall

of 2016 indicate 55% of student enrollment is female. Additionally, the 2016-2017 study population includes displaced workers from a recently closed paper mill in the college's service area. The ratio of traditional college students to older students fluctuates based on regional economic factors. The researcher could not ascertain the number of displaced workers and traditional college age students in the study population nor in the enrollment for the performance data examined to draw conclusions about student success for research question 1. A more detailed understanding of the study population would allow for more defined conclusions to be drawn about student success and persistence.

A limitation expressed for research question 3 included low participation. Higher participation in focus groups that were scheduled convenient for students, either directly before a class or directly after, suggest that students represented in this study are motivated by specific factors directly linked to their personal needs. Focus group data also support that students in this study are motivated by interests in acquiring training in their chosen fields. Participation in the study was likely viewed as an unnecessary component to the students' career pursuits. Participation levels demonstrate more about intention and commitment, rather than specific personal qualities the researcher sought to measure.

Furthermore, the researcher must acknowledge subjectivity factors present throughout this research process (Peskin, 1994). As the researcher began to draw conclusions from the data, the focus group data dominated her thought process. As Peskin (2001) gained greater appreciation for the details of broader trends through research, the researcher gained a greater appreciation for the details of the AY! experience from the shared experiences of the participants in the focus groups. The researcher became self-aware of the empathy developed for the participants and realized that this empathy can limit researcher objectivity. Conversely, the

researcher's empathy could also lead to a greater understanding of the student experience that may receive inadequate attention. With the emic lens, the researcher gained a greater respect for participants' academic experiences as well as life stories; however, the participants' experiences must not dominate the conclusions the researcher draws. The participants' stories were compelling as many participants were older displaced workers, yet the stories provide narratives for the quantitative components of this study.

Recommendations

This study supports the utilization of team teaching in math as a means of improving student performance in math and potentially eliminating developmental math sequences for students who score within a few points below required placement test benchmarks. Community college faculty should explore redesigned structures of developmental math sequences that omit developmental courses for students who score near required benchmarks. This acceleration approach with team teaching could improve the performance and retention of students who come to college with math skills deficits.

This study also demonstrates the value that people hold, both institutional representatives and peers in the classroom, in motivating students to engage in the learning experience. Both the success coaches and peer relationships were identified as important factors in the learning experience. Additionally, this study demonstrates that learning community structures that provide similar schedules for students in the same or similar majors promote peer relationships and a sense of belonging that can influence performance and retention (Tinto, 2016).

The study demonstrates the need for support strategies, such as online supplemental instruction, to be clearly linked to classroom content and occupational needs and easy to navigate. As Davidson and Petrosko (2015) found, online content that complements in-person

instruction improved persistence. Math modules used to support math instruction should be examined closely for alignment to course content.

Tinto (2012c) emphasizes the importance of faculty and faculty development because commuter students' access to institutional representatives in the classroom is important to retention. This study demonstrates the need for community college faculty to utilize professional development opportunities to instruct faculty on the impact of student-faculty and peer relationships on academic integration as well as the value of curriculum alignment as a retention strategy. The already established learning community structure and regular meetings between AY! faculty and staff do facilitate a more coherent experience for students (Tinto, 2012c) and provide the ideal setting for more purposeful professional development to further refine the AY! model and address the incongruences that students experience. Conversations between general education faculty and technical faculty can open lines of communication to better link course content in a manner that gives greater meaning, particularly to general education content. Bickerstaff and Edgecombe (2012) provide evidence that collaboration between faculty with a focus on curriculum alignment and opportunities to improve can lead to faculty learning and using new teaching methods. From this study, the researcher, as a general education faculty member, gained a greater awareness of the importance of clear links between course content and future application of content for both transfer and technical degree-seeking students.

Lastly, this study demonstrates the value of multi-faceted retention strategies and the need for coherent alignment between the strategies. According to Tinto (2012a), retention does not occur only due to the individual retention strategies, rather effective retention is the result of well aligned and managed efforts. The AY! model demonstrates promise in positively impacting student success; however, this study uncovered weaknesses that can be remedied with clearer

alignment. The faculty and staff in the AY! model already have regular communication mechanisms in place to discuss experiences and data that provide the setting for purposeful utilization of the data and literature to refine and improve the AY! model. Tinto (2012a) argues that alignment of classroom experiences provides students with coherency that "propels them to program completion" (p. 125). The mechanism is in place to address alignment weaknesses; therefore, steps to align content should be the next phase in the evolving AY! model. This alignment can happen with technical faculty sharing occupational math and communication needs with general education faculty and designers of online supplemental content. Together the content experts can find commonalities and negotiate best practices to ensure alignment, quality, and consistency.

Beyond the specific community college setting of this study, findings offer all community colleges evidence to support acceleration past developmental course sequences with team teaching, learning community structures to promote peer relationships and faculty collaboration, and the need for a focus on alignment of retention strategies at the classroom and program level.

Further Research

This study demonstrates that the AY! model is a promising retention strategy. Data suggest some positive impacts on student performance. Further research should explore how the model specifically impacts students who do not have the required placement test benchmarks. This study demonstrates in the most recent year studied an increase in the mean of course grades for math. Though not statistically significant, the increase prompts the need for further exploration to determine if that increase is consistent and positively impacts the students who did not meet placement test benchmarks.

Though the researcher did not expect to explore needs for non-traditional students, this study suggests the need to explore academic support needs for non-traditional students. This study demonstrated through focus group data that non-traditional students seek more assistance with technology and prefer face-to-face instruction over online learning experiences.

Summary

This chapter draws conclusions from both quantitative and qualitative data gathered to answer three research questions about the impact of the AY! model on student success. Findings from data analyzed to answer the three questions suggest the AY! model has the potential to positively impact student success and further research is needed to fully understand the impact of the model.

This study demonstrates that the AY! model does not impact academic performance; however, this study does demonstrate that students who qualify for developmental math sequences can perform comparably to students who demonstrate the prerequisite skill level for college level math when those students with qualify for development math are accelerated to college-level math and are provided extra teaching and learning support. The study supports acceleration in developmental math. The study also demonstrates that the AY! model has no impact on student persistence because two of the three tests conducted resulted in no statistically significant difference. However, of the persistence rates examined for the three courses targeted in this study, a statistically significant difference in MAT 116 suggests that the team-teaching dynamic does positively impact persistence.

This study demonstrates that the AY! model has no significant impact on personal qualities associated with academic performance as tested. The limited and inconsistent

participation in the Personal Qualities Student Survey presented significant limitations that hindered valuable conclusions from the data.

The qualitative data from this study supports the important role that people play in academic integration, specifically success coaches as team teachers in the math course and peers who were able to create strong bonds in the learning community structure.

The researcher concludes that the AY! model is an instructional strategy that has potential to positively impact student success, particularly because the model provides extensive interaction with institutional representatives through team teaching and allows for peer relationships to grow through the learning community structure. The researcher concludes that faculty development focused on effective student-faculty interaction is important in promoting student persistence and development of social capital needed for students to effectively integrate into the college. The AY! model utilizes research-supported strategies that with greater alignment could more effectively complement the positive impact of team-teaching and the learning community structure. Faculty development must also focus on aligning curriculum and retention strategies for coherent academic experiences for students. Community college student populations, which typically spend limited time on campus, can benefit from multiple strategies utilized in the AY! model that emphasize experiences in the classroom to promote academic integration and, thereby, improve student success.

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Appendix A: Accelerate You! Student Survey (Survey Monkey Delivery)

Part One: Using the scale provided, please indicate the extent to which you agree or disagree with each of the following statements by writing the number that corresponds to your opinion in the space next to each statement.

1. You have a certain amount of intelligence, and you can't really do much to change it.
    - 1 Strongly Agree
    - 2 Agree
    - 3 Mostly Agree
    - 4 Mostly Disagree
    - 5 Disagree
    - 6 Strongly Disagree

2. Your intelligence is something about you that you can't change very much.
    - 1 Strongly Agree
    - 2 Agree
    - 3 Mostly Agree
    - 4 Mostly Disagree
    - 5 Disagree
    - 6 Strongly Disagree

3. To be honest, you can't really change how intelligent you are.
    - 1 Strongly Agree
    - 2 Agree
    - 3 Mostly Agree
    - 4 Mostly Disagree
    - 5 Disagree
    - 6 Strongly Disagree

4. You can learn new things, but you can't really change your basic intelligence.
    - 1 Strongly Agree
    - 2 Agree
    - 3 Mostly Agree
    - 4 Mostly Disagree
    - 5 Disagree
    - 6 Strongly Disagree

Scoring:
Total responses and divide by four. High scores indicate growth mindset. Low scores indicate fixed mindset.

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Part Two: Here are a number of statements that may or may not apply to you. For the most accurate score, when responding, think of how you compare to most people -- not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!

1. New ideas and projects sometimes distract me from previous ones.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

2. Setbacks don't discourage me.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

3. I have been obsessed with a certain idea or project for a short time but later lost interest.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

4. I am a hard worker.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

5. I often set a goal but later choose to pursue a different one.
   Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

6. I have difficulty maintaining my focus on projects that take more than a few months to complete.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

7. I finish whatever I begin.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

8. I am diligent.
    - Very much like me
    - Mostly like me
    - Somewhat like me
    - Not much like me
    - Not like me at all

Scoring:

1. For questions 2, 4, 7 and 8 assign the following points:
   5 = Very much like me
   4 = Mostly like me
   3 = Somewhat like me
   2 = Not much like me
   1 = Not like me at all

2. For questions 1, 3, 5 and 6 assign the following points:
   1 = Very much like me
   2 = Mostly like me
   3 = Somewhat like me
   4 = Not much like me
   5 = Not like me at all

   Add up all the points and divide by 8. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty).

Duckworth, A. L. & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment, 91*(2), 166-174.

Part Three: Please rate the following items according to your answer to "How much confidence do you have in doing each behavior?"

1. Reviewing and revising my notes shortly after taking them
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

2. Rewarding myself for studying by taking a break.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

3. Having a regular place to study.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

4. Maintaining a daily schedule of study hours.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

5. Having regular, weekly review periods.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

6. Having a place to study without distractions.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

7. Treating myself after doing well on a test.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

8. Balancing my study time according to demands of different classes.
    - 5 Quite a lot of confidence
    - 4 A lot of confidence
    - 3 Some confidence
    - 2 Little confidence
    - 1 Very little confidence

Scoring:
Total responses and divide by eight. The higher the score, the great study skills self-efficacy the student has.

Silver, B. B., Smith, E.V., & Greene, B.A. (2001). A study strategies self-efficacy instrument for use with community college students. *Educational Psychological Measurement 61*(5), 749-865.

Appendix B: Informed Consent (Survey Monkey delivery)

You are being asked to participate in a study administered by Tyra F. Henderson, Assistant Professor, West Kentucky Community and Technical College and Doctoral Student, Murray State University, under the guidance of Dr. Ben Littlepage, Assistant Professor for Postsecondary Education Administration, at MSU.

Purpose: The purpose of the study is to better understand the impact of the Accelerate You! instructional model on student success and personal qualities.

Duration: Data will be collected beginning August 2016 through May 2017.

Procedures: If you agree to participate, you will complete a survey in August 2016, December 2016, and May 2017. Additionally, select students will participate in focus group interviews in December 2016 and again in May 2017.

Benefits: These data will help faculty make decisions on how to best offer instructional support for student success.

Risks: No risks are foreseen. This is not an evaluation of you, nor is it an evaluation that negatively affects your course grade. Responses on the survey and in the focus groups will be seen and heard by Tyra F. Henderson. Responses will be provided in summary to faculty and administration without personally identifiable information.

Confidentiality: All responses will be kept confidential within the limits allowed by law.

Contact: If you have questions about the study, please contact Tyra F. Henderson at 270-534-3396 or tyra.henderson@kctcs.edu.

Voluntary Participation: You must be at least 18 years of age to participate. You are encouraged to contact Tyra F. Henderson if uncomfortable about participating in the study. She is happy to offer further explanation about the study as well as protecting your privacy and maintaining confidentiality. You can also elect to decline participation and not complete the survey.

Costs: There are no anticipated costs to the participant.

Findings: All participants may receive a copy of the research findings once the analysis is complete. Participants wishing to receive a copy must submit a request in writing to the e-mail address previously listed.

Click the appropriate choice below. By clicking the first choice, you are affirming that you are at least 18 years of age and wish to participate in the study and continue with this survey. By agreeing to participate, you agree to release your survey responses to Tyra F. Henderson for the purpose of this study. Additionally, you agree to participate in focus group interviews if selected.

- I am at least 18 years of age and agree to participate in this study.
- I am not at least 18 years of age.
- I do not agree to participate in this study.

1. Please type your name as it appears on class rosters in the box below.

2. Please type your student ID number in the box below.

3. Are you a first generation college student? (First generation college student means that no one in your family has earned a college credential prior to your becoming a college student.)
   - Yes, I am a first generation college student. No one in my family has earned a college credential.
   - No, I am not a first generation college student. One or more family members has earned a college credential.

4. Are you a first-time college student this semester?
   - Yes, this is my first semester of college.
   - No, I am not a first time college student. I have been enrolled in college previously.

Appendix C: AY! Student Focus Group Interview Questions
End of Fall 2016 Semester

Thank you for participating in this focus group session as part of my study of the Accelerate You! program. I have provided you with a copy of the informed consent form you completed in August 2016 and again today prior to completing the AY! Student Survey. All data gathered through this study will provide me with information that can demonstrate the impact the AY! program has on student performance, persistence, and completion of program requirements.

In this focus group session, you will be asked a series of questions. I will video record this session to ensure I capture your responses accurately. The recording will be used only to ensure accuracy of responses. I will also take notes as you respond.

1. Considering previous educational experiences, how challenged did you feel this semester?
    a. What were your expectations of yourself, the institution, the faculty at the beginning of the semester? Did you feel prepared? What did you hope from the college and faculty?
    b. How did you, the institution, the faculty fulfill or not fulfill your expectations? Were you challenged and able to meet the challenges due to your own effort, college and faculty assistance?
2. How successful do you feel now at the end of the first semester?
    a. Do you feel you learned what you needed to learn to advance to the next semester? To advance toward your career objective?
    b. What do you attribute your sense of success to? Yourself? The college? The faculty?
3. What effect did the team-teaching dynamic in your math class have in your performance this semester? By performance, I mean completing assignments, understanding concepts and assignments, your grades earned, your level of learning.
    a. The instructor and a success coach present in math.
4. What effect did the online modules have in your performance? By performance, I mean completing assignments, understanding concepts and assignments, your grades earned, your level of learning.
    a. The additional work with math concepts online.
5. What effect did the first year experience course have on your performance this semester? By performance, I mean completing assignments, understanding concepts and assignments, your grades earned, your level of learning.
    a. The course with Ms. Milliken/Mr. Dickerson.
6. What effect did the weekly hour of tutoring assistance have on your performance this semester? By performance, I mean completing assignments, understanding concepts and assignments, your grades earned, your level of learning.
    a. The additional time with your success coach.
7. Of the team-teaching, online modules, first year experience course, and weekly hour of tutoring, which provided the greatest support to you this semester? Why?

8. Could you have successfully completed this semester at the level you have without the AY! structure in place (team-teaching, online modules, first year experience course, and weekly hour of tutoring)? Why or why not?

Thank you for providing your responses to my questions. I will transcribe your responses and combine them with other data collected in this study. Your personal information will not be shared with any data collected in this study. I can provide you with a copy of the transcript to check the accuracy of my transcription. Would anyone like a copy?

AY! Student Focus Group Interview Questions
End of Spring 2017 Semester

Thank you for participating in this focus group session as part of my study of the Accelerate You! program. I have provided you with a copy of the informed consent form you completed in August 2016 prior to completing the AY! Student Survey. All data gathered through this study will provide me with information that can demonstrate the impact the AY! program has on student performance, persistence, and completion of program requirements.

In this focus group session, you will be asked a series of questions. I will audio/video record this session to ensure I capture your responses accurately. The recording will be used only to ensure accuracy of responses. I will also take notes as you respond.

1. How did your academic experiences this semester differ from last semester with the AY! team teaching, online modules, first year experience course, and weekly tutoring no longer utilized?
2. In contrast to the fall semester, how challenged did you feel this semester? Less challenged? More challenged? Equally challenged? To what do you attribute this level?
3. What caused you the greatest challenge this semester? And was this a challenge you faced last semester?
4. How did you handle your greatest challenge?
5. Did you utilize any strategies or approaches learned last semester this semester? What were they and how did they work for you?
6. Explain how successful you feel now at the end of your second semester.
7. Could you have successfully completed this semester at the level you have without the first semester AY! structure in place (team-teaching, online modules, first year experience course, and weekly hour of tutoring)? Why or why not?
8. Do you plan to return in the summer or fall to continue your studies? Why or why not?

Thank you for providing your responses to my questions. I will transcribe your responses and combine them with other data collected in this study. Your personal information will not be shared with any data collected in this study. I can provide you with a copy of the transcript to check the accuracy of my transcription. Would anyone like a copy?

Appendix D: HSRB Approval

300 North Main Street
Versailles, KY 40383
Telephone: (859) 256-3100
Website: kctcs.edu

5/20/2016

Tyra Henderson
West Kentucky Community & Technical College
4815 Alben Barkley Dr.
Paducah, KY 42002

RE: Impact of Accelerate You! Instruction Model on Student Success

Dear Tyra:

After careful consideration of your application to the KCTCS Human Subjects Review Board, I have determined that you are eligible for exemption from federal regulations regarding the protection of human subjects based on your research using a procedure that meets the exempt review criteria section 7 (2).

Thank you for your cooperation in meeting the federal requirements for conducting research that utilizes human subjects. We appreciate your notification to this board and we will keep your information on file.

Sincerely,

Rhonda R. Tracy, Ph.D.
KCTCS Chancellor

Pamela M. Duncan
Associate General Counsel
Chair, KCTCS Human Subjects Review Board

cc: Alicia Crouch
Interim Vice Chancellor of Research & Policy Analysis

KCTCS