Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/14625
DOI URL: http://dx.doi.org/10.21474/IJAR01/14625

RESEARCH ARTICLE

ADVANCING THE COMPLETION AGENDA IN ADULT DEVELOPMENTAL READING AT THE COMMUNITY COLLEGE LEVEL: A QUANTITATIVE RESEARCH STUDY

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Manuscript Info

Manuscript History
Received: 28 February 2022
Final Accepted: 30 March 2022
Published: April 2022

Abstract

In order to assist community college students in completing their program of study at a more rapid pace, this quantitative, correlational study examined the effectiveness of acceleration as a method to help community college students complete the developmental reading sequence quickly and more successfully. Acceleration is a curricular redesign that includes challenging readings and assignments and reduces the number of required classes in the developmental sequence. Past research does not adequately measure student success in the current community college trend of securing the most efficient pathway possible for attaining an associates' degree or career certificate. Students who scored 80 or higher on the post-course, COMPASS reading placement test skipped a developmental class and were eligible to take college-level gateway courses sooner, for the purpose of saving them time and money. Retention and grade-point-average of developmental reading students who pursued an accelerated path was compared to developmental reading students who followed the traditional, two-tiered course sequence to determine first year success. In the college of the study, findings indicated developmental reading intervention, regardless of model, was effective for the students who persisted, as measured by their literacy skill gains.

Introduction:-

Chapter One:

Background of the Study

An increasing number of adult students are on community college campuses seeking undergraduate degrees and certificates (Complete College America, "Guided Pathways," 2012). As the economic picture has changed, the number of adults seeking post-secondary study for the purpose of obtaining a degree or enhancing workplace

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preparedness at community colleges has risen by 22% since 2007 (Fain, 2011). Increased unemployment, as well as the declining job opportunities available in the United States for under-educated workers, contributed to this enrollment surge (Schneider & Yin, 2012). Other factors have been frequently cited:

1. the decision or opportunity to pursue another career;
2. a change in one's life situation which results in a career decision and the corresponding need for additional education;
3. increased cultural acceptability for adults to return to school (Cook & Pullaro, 2010).

The response of American community colleges to the issue of increased enrollment and decreased academic preparedness has been to design policies and programs to help students complete their studies. These include required orientation and first-year experience seminars as well as intrusive advising, early-academic-warning systems, fast-tracking remedial education, and providing students with experiential learning (Center for Community College Student Engagement, "A Matter of Degrees," 2012).

Statement of the Problem

While research and anecdotal evidence is beginning to emerge, there is still poor outcome data from current developmental education models (Simms & Knowlton, 2008). A variety of initiatives are underway nationally to address this dearth of data, and improve student outcomes, as measured by program completion. Contributing to the urgency of these initiatives, state legislative bodies and private education foundations have recently increased pressure on community colleges to streamline the number of credit hours necessary on the pathway towards completion of a degree or stackable certificate. The term "streamlining" in this context was defined as decreasing the number of developmental coursework credit hours in English, Math, and Reading that are assigned as pre-requisites to technical or major-specific coursework. This was done by replacing previous "credit hour-dense" developmental coursework requirements with alternative, more efficient curriculum models that possesses lesser quantities of credit hours ("Develop Lower-Cost Pathways," 2013). For example, the Chronicle of Higher Education recently published research results of alternative models using the effectiveness of the Accelerated Study in Associate Programs (ASAP) at City University of New York (CUNY), which clearly indicates the benefits of identifying and supporting adult developmental learners' needs. The study reports a 66% increase in the completion rates of developmental students through the use of a rich array of supports for three full years, including a tuition waiver that covers any gap between a student's financial aid and tuition and fees, special seminars and block-scheduled classes, enhanced advising, career services, free *MetroCards* for use on public transportation, and free use of textbooks (Mangan, 2013).

Past research does not adequately address the new community college trend of securing the most efficient pathway possible for attaining an associates' degree or career certificate. Prior to 2000, the methods employed to shorten time towards a degree were credit by exam and early college entrance. Survey results administered by the Carnegie Corporation in 1971 and 1972 and taken by legislators and directors of statewide governing and coordinating boards were published in 2000 demonstrating that government policy-makers did not have much interest in pursuing additional options for shortening the path towards an educational goal. In fact, the report stated, "time shortened degree programs, however defined, do not seem to be high on the agenda of state policy-makers" (Smart & Evans, 1977).

However, as early as 1971, the concept of options that move a student along a shortened path towards an educational goal (degree or certificate) drew attention and consideration by educators in higher education. The Carnegie Commission, at the urging of the Carnegie Corporation, gave a presentation based on their report in San Francisco at a higher education conference in 1975. The report was titled, *Less Time, More Options*. ("Less Time, More Options," 1971). This prompted a response from Florida State legislators that included non-financial support of, "the use of accelerated mechanisms, including, but not limited to: credit by examination or demonstration of competency, advanced placement, early admission, and dual enrollment" ("Dual Enrollment Programs," 1971). Other states, especially California, responded accordingly, just shy of assigning financial support to these programs (Smart & Evans, 1977). Of particular interest to this researcher was 71% of the combined response of legislators and coordinators to the second method of time saving, "Reduction of general or liberal education from the usual two years to approximately one year's duration" as being a poor method to expedite the pathway towards a degree on the 1971 survey (Smart & Evans, 1977).

Modern trends in higher education have since changed, mostly due to a response from the *2010 Healthcare and Education Reconciliation Act* to prepare more students for jobs of the future by year 2020 (United States 111th Congress, 2010). This initiative also triggered the current State of Ohio legislative bodies to reconfigure their state share of instruction equation for financing higher education institutions based upon performance and outcomes, not enrollment. Thus, the urgency of implementing and demonstrating the effectiveness of alternative developmental education programs is further exacerbated by fiscal pressures on state institutions of higher education.

Private education foundations, such as the Lumina Foundation and the Gates Foundation, have joined forces with state legislative bodies in promoting shortened pathways towards educational goals to both reduce cost and increase completion rates (Complete College America, "Guided Pathways," 2012), ("Develop Lower-Cost Pathways ," 2013). Pipelines towards degrees and/or certificates that contain higher numbers of required developmental coursework have historically resulted in very low retention, persistence, and graduation rates (Complete College America, "Guided Pathways," 2012). Higher education institutions have responded and developed methods of reducing developmental coursework, but success rates of individual developmental subject credit hour reductions have yet to be determined, partially due to the novelty of this trend ("Develop Lower-Cost Pathways," 2013). Based on the current literature and research, a benchmark to indicate probability of success has yet to be tied to developmental credit hour reductions.

The number of underprepared students who do not complete their programs of study is both staggering and discouraging, especially at open-access colleges. "Community colleges are open access and do not, with the rare exception, build a student body" (Mullin, 2012). Community colleges are supported by and serve the communities in which they are located (Mullin, 2012). The problem increases exponentially as large numbers of underprepared students are granted open access to attend college, while these institutions grapple with providing supportive services and balancing increasingly tight budgets, while addressing new funding formulae based on student success rates. Many funding agencies include open access as a condition for financial support. For example, the Bill and Melinda Gates Foundation, who advocate strongly for college completion, is an example of a private foundation that includes access in its definition of post-secondary success. As stated in Post-Secondary Success Strategies (2014), to ensure that all low-income young adults have affordable access to a quality postsecondary education that is tailored to their individual needs and educational goals and leads to timely completion of a degree or certificate with labor-market value ("What We Do," 2014).

Exploration was done to define an appropriate indicator for college completion. According to U.S. News and World Reports, of students who complete their first two semesters successfully, approximately 66% will go on to graduate ("Freshman Retention Rate," 2012). This number is higher for four-year research universities and lower for community colleges. Although formal research is limited, the Carnegie Foundation reports freshman completion rates nationally for public community colleges as between 23.5% and 65.5%, depending on a variety of factors. One more limitation in the research is that there are few details on the demographics of students who have expedited through developmental coursework and gone on to graduate. Absent is a clearer picture of the student populations being served and differential measurement of the impact either by class components or by sub-population ("First-Year Retention," 2010).

Of the enrolled adult students at the college in which this study was conducted, 43% were initially channeled into the lower level developmental reading courses with COMPASS Reading Placement Test scores < 65. Of this subset of students, 61% withdrew after two semesters as a result of being academically underprepared. Only 9% (on average) complete a certificate or degree program. According to an emerging pattern, it is the subpopulation of students who not only test into developmental coursework but also those who are required to repeat their developmental coursework due to non-completion by failure, withdrawal, incomplete, or no credit who make up 91% of the non-graduating population (Trumpower, 2012).

The first decade of the Twenty-First century offers many opportunities and challenges for community colleges. There has been an all-encompassing array of changes in the higher education environment which have significantly affected community colleges. Meeting these challenges necessitates addressing the lack of reliable outcome data; increased financial pressure from state legislatures to shorten pathways based on student success outcomes, not enrollment; and the lack of identified, appropriate first-year indicators for successful college completion.

Rationale for the Study

It was predicted that the number of adult, developmental students beginning college will continue to rise based on the increased ease of access to financial aid funding (Complete College America, "Guided Pathways," 2012). Awareness of this increase has resulted in a growing interest by community colleges that recognize the importance and challenges of developmental learners (Schneider & Yin, 2012). For community colleges seeking to meet the needs of this growing population of students, this study proposes that students' educational goals can be reached sooner by the opportunity to expedite through their developmental coursework. This will allow developmental students to begin their gateway courses such as introduction to business and introduction to early childhood education one or two semesters sooner than if they completed the entire developmental coursework sequence. Completion of a curriculum delivered in this manner may also lead to a decrease of credit hours necessary to complete a program of study for highly motivated students. Each of these aspects of the proposed studyaddressed one or more of the well documented problems in developmental education, especially at community colleges.

Research Purposes and Questions

The purpose of this study was to compare students who were expedited through the developmental reading sequence completing only one semester of intervention, to students who were not expedited and completed two courses of the developmental reading sequence. Two components evaluated were grade-point-averages (GPAs) and persistence of both groups after thirty semester hours. A quantitative codebook served to identify the variables which were tested to support or not support two data-generated null hypotheses (Creswell, 2012).

The central question that guided this study was: "Do students who expedite through the developmental reading sequence after scoring $\geq$ 80 on the post-course COMPASS reading assessment have GPAs the same or higher after thirty semester hours as compared with their peers who transitioned through the reading sequence following a traditional, higher credit hour model? Additional sub-questions include:

1. "Is the average GPA of expedited students after thirty credit hours significant as compared with students completing the two-course reading sequence?"
2. "Do more of the expedited students complete thirty or more credit hours as compared with students required to complete two semesters of developmental reading?"

The prediction to be tested in this study was, "Students who are expedited through the developmental reading sequence are more likely to have higher GPAs and persist thirty credit hours later than those who complete the two-course developmental reading sequence." This was tested through the following hypotheses:

$H1_0$ There is no significant difference in GPA after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

$H2_0$ There is no significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

The following are the affirmative hypotheses:

$H1_a$ There is a significant difference in grade-point-average (GPA) after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

$H2_a$ There is a significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

Theoretical Lens and the Inquiry Process

This study has been formulated through the principles of pragmatic theory (Haack, 2006). Pragmatism is a logical way of problem solving that is based on managing specific situations rather than applying theory to process problem-solving. Pragmatism was a philosophical convention that began in the United States around 1870. The most notable conventional pragmatists were Charles Sanders Peirce (1839–1914), William James (1842–1910) and John Dewey (1859–1952). The impact of pragmatism declined during 1900-1965, but underwent a revival in the 1970s when researchers became increasingly willing to use the writings and ideas of conventional pragmatism. A number of thinkers, such as Richard Rorty, Hilary Putnam and Robert Brandom developed philosophical views that represent later stages of the pragmatist tradition. The core of pragmatism is a rule for clarifying the contents of hypotheses by tracing their practical consequences (Haack, 2006). "New age" pragmatists are philosophers who

revitalized pragmatism by developing ideas that belonged to the pragmatist tradition (Misak, 2007, Malachowski, 2010). There has also been a growing interest in the connections between pragmatism and idealism (Margolis 2010). James offered his pragmatism as a technique for clarifying concepts and hypotheses. He proposed by doing this, abstract disputes that appear to be unanalytical will be discarded. Pragmatist theory after 1970 can be used in a wide sense, such as standing for a particular approach to understanding inquiry and the normative standards that govern it (Misak, 2007). Pierce approaches the question of logic by considering a fundamental understandable notion, reality. His approach for clarifying the concept of reality is first, to give an account of truth, and then second, to observe that the object represented is reality. Pierce summarizes the abstract definition of reality as being understood from a pragmatist viewpoint (Haack, 2006).

Effective practices in Twenty-First Century Higher Education are constantly changing. Pragmatically speaking, applying empirically evidenced solutions to problems as they arise will enhance the dynamic and evolving role of the community college. There is no absolute and unchanging solution, but rather, the actuality of what methods produce success.

Additional research on andragogy seeks to explain adult learning theories applicable to the developmental education classroom. Malcolm Knowles describes the ability to engage in deductive-inductive reasoning as "inclusive in the skills of learning" (Knowles, 1980). Inductive-deductive reasoning skills are categorized as critical thinking skills in adult, developmental reading curricula. Adult developmental learners turn to the post-secondary classroom as a result of either need or opportunity to enhance career growth for a variety of reasons (Knowles, 1980). Mezirow's transformational learning theory explains this return to the classroom as necessary to developing autonomous thinking. Adults seek to change their frame of reference by reflecting critically on their life situations; they consciously and analytically implement plans such as returning to the classroom to bring about the necessary changes they seek. Inductive-deductive reasoning skills are an essential means to bring about this transformation (Mezirow, 1997). This study generated pragmatic interest in the implication of theory for the application of teaching and learning in developmental education.

In developmental reading, instruction promotes the application, transfer and retention of learning. There is no clear agreement about the cognitive development of adults, but it is clear that not all adults will have the same patterns of change and growth (Fischer, Yan, & Stewart, 2003). Because of this disparity, developmental reading instruction taught through repetition of content following a pragmatist model allows for a method in which the end result is being fully developed autonomous thinking (Haack, 2006). Thus, this study clarified a hypothesis by identifying its practical consequences.

Significance of the Study

It was anticipated that based on the findings, those college administrators and faculty interested in meeting the needs of students of all ages will explore different models to advance developmental coursework. Leadership personnel also may be willing to explore new ways to recruit, teach, and support faculty who work with the developmental adult learner for the purpose of reducing the period of time the learner spends in completing his/her developmental coursework requirements, and expediting program enrollment and completion (Complete College America, "Remediation," 2012).

In proving the correlation between expedited placement for students based on post-course assessment and their persistence, Completion by Design researchers could take notice and recommend portions of this study to participating college organizations nationwide. Those planning and assessing the effectiveness of developmental coursework at the college level, for instance the National Association of Developmental Education (NADE), will have the opportunity to share these findings nationwide through their training conferences and journal publications.

The results of this study did not solely rely on COMPASS test scores but also on the persistence rate of students. Given the national and state focus on degree and certificate completion as the primary assessment metric for judging the success of institutions of higher education, including awards of financial support, the results of this study were both timely and impactful. The research college at which this study was conducted, as well as other colleges in the state and region, are in desperate need of empirical evidence relative to developmental program models and outcomes. This study should provide credible, widely applicable findings that supported and guided reform efforts. The dearth of such evidence in the existent literature underscores the critical nature of this study.

This significant study can assist colleges in determining the most effective and accessible developmental education models, as well as maximizing student support services. The needs of working adults and commuters especially require academic advising, learning support, and instructional delivery models that are worth the investment. This study should guide the development and delivery of these critical elements for student and institutional success.

Chapter Two

Literature Review:-

Introduction

The majority of adult, community college students are underprepared for college-level coursework upon admission(Complete College America, "Remediation," 2011). Developmental courses, meant to remediate inadequately prepared students, are often credit hour intense, time consuming, and costly. Those students who are required to complete developmental pathways prior to degree related coursework may often withdraw from recommended remediation or give up on their academic goals altogether. To improve completion rates, many schools are pioneering remediation approaches that encourage student engagement and reduce developmental course duration (Complete College America, "Remediation," 2011).

This chapter demonstrates existing empirical evidence that can link a benefit to student persistence rates of innovative practices that reduce or expedite developmental coursework requirements. According to a benchmark poll by Noel-Levitz, (2010), students who persist past the gateway (introductory) courses in their major(s) are more likely to complete their programs.Approximately 80% of post-secondary students persist to graduation after successfully completing the first year – with the first year being defined as completing thirty semester credit hours. (Sanborne, 2011).

Important in the consideration of putting new approaches into practice are the common qualities of adult developmental students and the andragogical methods employed by post-secondary institutions in teaching developmental coursework. Experts agree that adult learning occurs when adult students possess the motivation and self-direction to persist, as stated within Knowles' six learning principles (Knowles, 1980). Available empirical evidence supports success in accelerating developmental coursework and completion of developmental coursework sequences sooner. However, it is not clear whether students are persisting in completing gateway (introductory) courses in their major due to the accelerated developmental format (Edgecombe, 2011).

Most community colleges have the authority to define their own placement exam and cutoff scores, to determine whether developmental education is required or recommended, and to design their own developmental education course sequences.

One method of increasing adult literacy is through developmental reading coursework in community colleges (Lesgold & Welch-Ross, 2012). Review of relevant sources indicate more research on the benefit of accelerated developmental reading coursework and its connection to persistence after developmental reading sequences are completed is key in successfully continuing the trend of expedited pathways to a post-secondary educational goal. The connections between adult learning theory, a uniform definition of persistence, and its effect on the creation of definitive policy changes are proposed to direct the empirical discussion of this study, in addition to its research purposes and questions.

Adult Literacy

In order to investigate research related to reading proficiency in post-secondary education, adult literacy must first be defined. Defining literacy is difficult because individuals have differing philosophies as to what reading skills are necessary in the workplace, in society, and for personal applications. Traditional definitions of literacy focus on decoding and comprehension, but do not focus on the applications of decoding and comprehension (White & McCloskey, 2003). The results of a nationwide survey published by the *National Assessment of Adult Literacy* (*NAAL*) involving 26,000 adults across the United States were published in 1993. Participants finished a succession of tasks measuring literacy and were scored on three scales that measured prose, document, and quantitative literacy. They were categorized in five levels: Level 1 (ranging from 0 to 225), Level 2 (226 to 275), Level 3 (276 to 325), Level 4 (326 to 375), and Level 5 (376 to 500). The levels on each scale represented degrees of aptitude. For example, "a low score (below 225) on the document scale indicates that an individual has very limited skills in processing information from tables, charts, graphs, maps, and the like [even those that are brief and uncomplicated]" (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Lowest measureable levels of literacy were demonstrated by six

categories of adults: immigrants and minorities with limited ESL skills, those who did not graduate from high school, older adults, adults living continuously in poverty, adults whose parents did not graduate from high school, and prison inmates (Kirsch et al., 1993).

A similar study was done by *NAAL* in 2003, this time measuring adults' ability to use literacy skills to read and understand health-related information. *NAAL* defines health literacy as "the ability to understand and use health-related printed information in daily activities at home, at work, and in the community to achieve one's goals and to develop one's knowledge and potential" (United States National Center for Education Statistics, 2003). Again, the specific populations that scored in the lowest level were the elderly, immigrants, minorities, low-income persons, the less educated, and prison inmates (United States Department of Education, 2003).

In November 2012, The National Academy of Sciences released this statement after a report on adult literacy was published:

A high level of literacy in both print and digital media is required for negotiating most aspects of 21st Century life—supporting a family, education, health, civic participation and competitiveness in the global economy. Yet a recent survey estimates that more than 90 million adults in the United States lack the literacy skills for a fully productive and secure life (Lesgold & Welch-Ross, 2012).

According to Lesgold and Welch-Ross (2012), adults with minimal literacy levels represent a smaller percentage of the labor force and have lower earnings. Since lifetime net tax contributions increase as education levels increase, studies now show the correlation between gains in literacy, increase in education that leads to higher standards of living, and the ability of an increased number of individuals to support educating future generations. In order to improve adult literacy, more research is necessary to develop effective approaches to adult literacy instruction. Many adults do not continue in reading instruction long enough or make the time to apply their literacy skills outside instructional settings because they do not associate the connection between literacy levels and meeting their life goals (Lesgold and Welch-Ross, 2012). Andragogy offers instructors insight to the unique learning styles of adults that can assist in crafting the connection between literacy levels and life goals. In developmental education and assessing the effectiveness of remediation programs, the definition and assessment of adult literacy are critical elements.

Adult Learning Theory

Limited studies have explored the retention of degree-seeking, non-traditional, adult students. Non-traditional adult students make up over 50% of college and university campus populations. In addition, this population of students also contribute to the rising attrition rates among minorities, women, and under-prepared adults who never complete post-secondary studies (Miller-Brown, 2002). Current adult learning theories are utilized to help remediate non-traditional adult students in an effort to improve success rates.

Knowles, Holton, and Swanson (2005) categorize six principles of andragogy as, "the learner's need to know, self-concept of the learner, prior experience of the learner, the learner's readiness to learn, orientation to learning, and the learner's motivation to learn." Many dynamics affect adult learning, such as the individual learner, variations of situation, and the individual learner's goals and purposes of learning. Andragogy works best when it is adapted to the uniqueness of the learners and the situation of learning. The most fundamental of adult learning theory is the idea that the most value in adult learning is the learner's experience (Knowles et al., 2005).

Eduard Lindeman stated "psychology is teaching us, however, that we learn what we do, and that therefore all genuine education will keep doing and thinking together... [sic] Experience is the adult learner's living textbook" (Lindeman, 1944). Additionally, he explained that adult education is a process by which learners become mindful of significant experiences expressing, "Meanings accompany experience when we know what is happening and what importance the event includes for our own personalities" (Lindeman, 1944).

Lindeman identified several key assumptions about adult education. First, adults are motivated to learn as they experience needs and interests that are satisfying. This is a first step for organizing adult learning activities. Second, adult learning is life-centered. Therefore, it makes most sense that adult learning activities are inclusive of life situations and not subjects. Third, experience is the richest resource for adult education. The essence of adult learning considers the learner's experience. Fourth, adults tend to be self-directing. An instructor must engage the student in a process of mutual inquiry as opposed to transmitting his or her own knowledge. Lastly, as individuals

get older, individual differences become more prominent. Higher education must make adaptations that would be optimal for each individual, taking into account style and pace of teaching and learning (Lindeman, 1944).

Knowles described adult education as having a broad definition. He described the adult educator as, "an individual who has responsibility for helping adults learn" (Knowles et al., 2005). He defined the process of adult education as an organized set of activities that help the learners achieve a set of educational goals. He also classified adult learning as a movement and a field of social practice. This definition captures a broad range of experiences that comprise adult education environments and enhance andragogical approaches uniquely suited to the characteristics of developmental students in higher education (Knowles et al., 2005).
Studies of remedial and developmental programs designed for under-prepared adult students must take such learning theory and evidence into consideration when planning policy and measuring effect.

Characteristics of Developmental Students in Higher Education
Of the subset of adult students with the lowest graduation rate from two-year and community colleges, the same groups of adults as identified by *NAAL* recur: minority, first generation, low income, and academically underprepared adults over the age of 18. Additionally, African-Americans, Latinos, and low-income students are funneled into language arts remediation based on post-secondary placement scores at rates higher than other subgroups (United States National Center for Education Statistics, 2003). In two-year colleges, adults aged 25 or older make up 42.5% of the remediation population. Of the entire remedial (developmental) population of students in two-year colleges, 64.7% of them are categorized as low income Americans. Only 64% of developmental learners complete their remedial courses. Of those, only 22.3% graduate within two years' time; 9.5% graduate in three years' time (Complete College America, "Remediation," 2012). A 2009 report released by the National Center for Education Statistics found that, "Pell Grant recipients are more likely than others to have 'risk' characteristics (such as delaying postsecondary enrollment after high school graduation) that suggest statistically greater chances of dropping out of college" (United States Department of Education, 2009). Other shared characteristics of those at risk were gender, age at graduation, parents' highest level of education, and race/ethnicity. Because so many students who are categorized as minority, first generation, low income, and academically underprepared adults over the age of 18 also receive federal Pell Grant assistance, statistics use these counts as an inclusive category for comparison purposes (United States Department of Education, 2009). In Ohio, the total first-time number of entry students at the college level receiving Pell Grants in 2006 was 13,031. Statewide, 58.3% of all students enrolled in developmental classes were required to complete their remedial coursework in language arts, reading, and/or writing. Of those that received Pell Grants, 53.1% completed remedial coursework and only 37.7% completed both their remedial coursework and their college-level coursework. In Ohio, the six-year graduation rate from all colleges of those enrolled in remedial coursework was 33.8% in 2006. The *total* six-year graduation rate for the community college this researcher is studying was only 15% in 2011 (Complete College America, "Remediation," 2012).

In order to meet the needs of adult, non-traditional learners, it is essential that post-secondary institutions address the continuing challenge of promoting the success of their at-risk students, especially those enrolled in developmental education coursework. Tinto (2006) identifies this challenge as an area of research and practice that calls for further exploration. Since retention is an area that has largely remained fixed at low levels nationwide over the last decade, "there is much we have not yet done to translate our research and theory into effective practice" (Tinto, 2006). Forms of action based on prior research have yet to consistently occur within post-secondary institutions. In Tinto's three lessons, he encourages institutions to explore not only what is necessary for students to remain enrolled, but also to succeed. This means encouraging institutions to implement programs of action and see them through to fruition (Tinto, 2006).

Student background characteristics, such as academic preparation and status variablessuch as age or ethnicity, are a common denominator of adult, non-traditional students presently enrolled in community colleges (Hirschy,Bremer, & Castellano, 2011). A large, earlier study of students taken from the National Survey of Student Engagement (NSSE) from 2003 at the University of Iowa by Umbach and Wawrzynski indicated that "students report higher levels of engagement and learning at institutions where faculty members engage students in higher-order cognitive activities in the classroom, challenge students academically, and value enriching educational experiences" (Umbach & Wawrzynski, 2005). Measured were the "faculty behaviors and attitudes that are related to student behaviors linked with positive undergraduate outcomes" (Umbach & Wawrzynski, 2005).

In his 2012 book, *Completing College: Rethinking Institutional Action*, Tinto demonstrates through existing research that "students thrive in settings that pair high expectations for success with structured academic, social, and financial support, provide frequent feedback and assessments of their performance, and promote their active involvement with other students and faculty" (Tinto, 2012). As a result, the classroom is designated as the center of student education and calls for institutional action to begin there.

Goudas and Boylan, in the *Journal of Developmental Education*, also advocate for developmental education studies by maintaining three positions that criticize existing, contradictory bodies of research. First, Goudas and Boylan (2012) point out developmental students will not always attain outcomes better than those of college-prepared students. Even though students requiring remediation are identified based on low placement test scores, both types of students are not similar to begin with and should not be expected to achieve at the same rates. Second, Goudas and Boylan (2012) assert developmental educators tend to focus more on negative results than positive results and support their assertion with the 2010 findings of a study by Boatman and Long (Goudas & Boylan, 2012). Boatman and Long's study utilized participants who were newly enrolled undergraduates from two and four-year colleges in Tennessee. The participants also completed the COMPASS Reading, English, and Math placement tests. While it concluded null findings overall, it did find that students who were enrolled in a lower level, language arts developmental course experienced a positive effect on their grades in their first college (gatekeeper) level course. Boatman and Long (2010) could not conclude that: …remedial or developmental courses were the cause of the better performance in the first college level course. It could be the case that students with the characteristics to persevere through remedial programs have traits that would also make them successful in later courses (Boatman & Long, 2010).

Similarly, a study by Bahr in 2010 found that students who completed the entire remediation sequence faired similarly with those students who began studies in college level courses with respect to graduation and transfer (Bahr, 2010). Bahr (2010) asks the question, "Does remediation work?" There is very limited research-based evidence to date. Of the available research, findings "agree that postsecondary remediation is beneficial to the long-term attainment of skill-deficient students, when compared to students who do not participate in remediation or who participate but do not complete the remedial process successfully" (Bahr, 2010). Results of the study of California-based community college students are encouraging because of the size of the sample, (68,884 students). Bahr (2010) concluded:

Remedial English students who attain college-level English competency exhibit relative odds of terminal credentials (i.e. associate degrees and certificates) and odds of transfer with a credential that are comparable to students who achieve college-level English skill without remediation (Bahr, 2010).

Third, Goudas and Boylan contend that current research oversimplifies results from students who score near developmental education cutoff scores. The basis of their third position is the fact that current research is not reliable for measuring effectiveness of developmental education for students who do not initially score near the cutoffs on their placement tests (Goudas & Boylan, 2012). However, something to be considered with this third position is the fact that placement score indicators vary by institution and therefore create research groups of students who are at differing levels of ability upon entrance to higher education. One point of agreement among developmental researchers is that contemporary models must be designed that condense developmental sequences while bolstering curricular alignment and that more research is needed to develop these contemporary models (Bailey, Smith-Jaggars, & Scott-Clayton, 2013).

One factor of retention and persistence addressed in the professional literature is the concept of open enrollment in community colleges. Open enrollment, also known as open admissions, is the customary admissions route in community colleges across the nation. Open enrollment came about in the 1960s and 1970s. The purpose behind it was to reduce discrimination in college admissions and promote education for the disadvantaged. City University of New York (CUNY) was the first college to apply this policy to two year community colleges because of their belief that community colleges were better prepared to provide developmental education based on admissions placement scores (Crain, 2003). Critics argue against open enrollment in community colleges, charging that it is used to either obtain increased subsidies from government or other sources or to lower standards and limit offerings to lower costs. In 1990, community college students had a 19 percent lower chance of ever graduating with a bachelor's degree, regardless of their placement test scores (Lavin & Hyllegard, 1996). Today, because of open enrollment, non-traditional, adult learners enrolled in developmental coursework comprise approximately 51.7% of the population of

freshman community college students (Complete College America, "Remediation," 2012). Their success can only be measured and strengthened through initial standardized assessment that outlines goals for this population (Wright-Henderson, 2006). Yet, in 2011, the percentage of students in open enrollment at community college who complete bachelor's degrees was less than 25% (Complete College America, "Remediation," 2012).

A new trend in national community colleges is selective marketing and recruiting. This changes the horizon for community colleges that practice open enrollment. A recent study in North Carolina found that even though more than half of the community colleges in the state are now practicing selective marketing and recruiting, the demographics of their student populations have remained unchanged. This strengthens the necessity for developmental education even with new enrollment initiatives (Morris, 2012).

Another similar study of 116 participants at a western United States community college found success when students in similar sub-populations were grouped together in cohorts, or "blended modes." This study found that academic success occurred when a more structured approach was utilized with students possessing poor time-management skills. Pedagogical attributes were also a contributing factor to the success (Phillips, 2010). Whole programs of remedial study have been among initiatives recently introduced that contribute to successful completion of certificates or degrees. Such approaches specify the essential components of success, clearly laid out for students, whether they traveled through the curriculum in cohorts or individually. Students, especially developmental learners, were found to be better monitored in this type of system (Complete College America, "Guided Pathways," 2012). Instructional approaches by experienced developmental educators vary, so it is difficult to adopt a uniform and responsive instructional approach (Farakish, 2008). In the study by Farakish (2008), eight experienced instructors of English and Reading answered the research question, "Can instruction practices be improved after reflection?" (Farakish, 2008). The findings: …indicated developmental reading/writing instructors' reflections on their practices may facilitate improvement of some of their teaching practices. Such reflections may occur individually (during teaching and in retrospect), collectively with peers, or in reviews of student feedback and other classroom data (Farakish, 2008).

In a study that involved first time, full-time students at a community college in Des Moines, IA, a pilot sample of 270 students and a control sample of 174 students were chosen. Pearson *r* was used in statistical analysis of, "significant positive linear correlations between the independent variables and the dependent variable of fall-spring persistence" (Emmerson, 2009). The analysis of different sub-populations placed in learning communities from an advising standpoint suggest significant positive effects on persistence, but the results as they related to students who were not in learning communities or cohorts, were inconclusive (Emmerson, 2009).

Variables that predict completion of an educational goal are persistence through the first academic year, or the accumulation of thirty credit-bearing semester hours and grade-point-average (Sanborne, 2011). If the goal of developmental education is to support student skill development through program completion, then measuring persistence is a valid indication of program effect.

Standardizing Assessment

Researchers may disagree on the conclusiveness of a study's results without a standardized measurement of some nature. Existing literacy studies directly measure the effects of programming as a whole on student achievement but do not always link the role of additional factors influencing student achievement. Longitudinal designs can be employed to allow for definitive measure by specific benchmarks, like assessment scores (Rutschow & Schneider, 2011). *The National Assessment of Adult Literacy* (*NAAL*) measures three types of adult literacy: prose, document, and quantitative. Prose literacy is defined as, "the knowledge and skills needed to perform prose tasks, (i.e., to search, comprehend, and use continuous texts). Examples include editorials, news stories, brochures, and instructional materials" (United States National Center for Education Statistics, 2003). Document literacy is defined as, "The knowledge and skills needed to perform document tasks, (i.e., to search, comprehend, and use non-continuous texts in various formats). Examples include job applications, payroll forms, transportation schedules, maps, tables, and drug or food labels" (United States National Center for Education Statistics, 2003). Quantitative literacy is specified as: …the knowledge and skills required to perform quantitative tasks, (i.e., to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials). Examples include balancing a checkbook, figuring out a tip, completing an order form or determining the amount (United States National Center for Education Statistics, 2003).

Grade-level equivalents, while common assessments in K-12 settings, are not relevant in measuring adult literacy skills because of the variance in the different strengths and weaknesses most adults possess as a result of their life experiences. This is significant when comparisons are made to other reading assessments because the *NAAL* is an open-ended test. Questions are arranged on the test instrument before the reading selection, requiring the participant to scan the selection for the answer (United States National Center for Education Statistics, 2003).

A second type of literacy assessment is called the National Assessment of Educational Progress (*NAEP*). It, "focuses more directly on a participant's ability to read, and less on a participant's ability to apply what they have read to accomplish everyday literacy goals" (United States Department of Education, 2012). Unlike the *NAAL*, this assessment requires participants to first read a selection and then answer questions, mostly multiple choice, related to the reading selection. The *NAEP* is a longitudinal design, beginning with subject area measurements in 1990 and continuing annually (United States Department of Education, 2012). Whereas the *NAEP* is taken by students under the age of 18, there are other similar reading assessments taken by adults before entry into post-secondary studies. *The Townsend Reading Test* measures "recognizing main ideas, identifying supporting details, recognizing implied main ideas and the central point, understanding relationships that involve addition and time, and understanding relationships that involve illustration, comparison and/or contrast, cause and/or effect, and problem and solution" (Townsend Press, 2013). It assesses in the same approach as the *NAEP*, with the reading selection first and objective questioning following the selection. Students are "placed" according to their scores in developmental reading coursework and engage in individualized instruction (by the same publisher) to develop their skills as needed. This may be an effective way of increasing literacy for learners, but it is not a nationally normed assessment (Townsend Press, 2013).

American College Testing is an organization that offers norm-referenced reading placement tests such as the *ACT College Readiness Assessment (ACT*), the *College Placement Test (CPT*), and the *Computer-Adaptive Placement Assessment and Support System (COMPASS*). Norm-referenced tests are: …designed to compare and rank test-takers nationally. By definition, they are constructed so that 50 percent of the test takers will be in the top 50 percent and 50 percent will be in the bottom 50 percent, and so that 25 percent will be in the top 25 percent and 25 percent will be in the bottom 25 percent (Crawford, DeVoogd, Goodman, Goodman, Krashen, & Moustafa, 2013).

Norm-referenced reading placement tests are valuable to this researcher's study because they compare scores nationally in each year, versus only measuring a sample from a target student population by commercial assessments, like the *Townsend* test. When measuring and comparing statistical significance, it is necessary to use nationally normed reference tests which result in a bell curve of the assessment data (Ford, 2009). Thus, the *COMPASS Reading Placement Test* was utilized in this study to generate reliable pre-test and post-course measures of students' overall reading achievement.

First Year Persistence as an Indicator of Success

Persistence or retention, can be defined as course completion, moving from one semester to the next, completion of thirty semester hours, and/or the completion of a degree or program of study. The review of the literature supports the completion of the first year of study (thirty semester hours) as the best predictor of completion of a certificate or degree program. In light of changes in the expectations and funding models now in effect, graduation and certificate completion rates are even more critical.

Early attrition models attempt to provide a conceptual framework for identifying variables that would suggest a student's risk for withdrawing from the post-secondary educational system (Spady, 1970, Rootman, 1972, Fishbein & Ajzen, 1975, Tinto, 1975). Predicting variables associated with student withdrawal risk is difficult because today's students are more complex and deal with multiple issues at one time such as society, family, employment, and social issues. This makes it difficult to pinpoint one single variable (Tinto, 1993). However, research has established that the single most important gauge for identifying withdrawal and its connection to persistence was the first year (Moore, 2003). Some pre-enrollment variables are important keys to understanding students' departure from the post-secondary education environment, or failure to persist. First year factors are key in determining withdrawal risks (Boulter, 2002). "Researchers agree that what happens following entrance into college has a greater influence on retention, in most cases, than what occurs before entering college" (Boulter, 2002). This statement is a beginning point to investigate persistence.

Factors that influence students in college are connected to characteristics associated with persistence; this begins the process of understanding what keeps students in the higher education environment (Cope & Hannah, 1975). Studies that have reviewed predictors associated with freshman accomplishments during the first year of school identified variables such as grade point average, core curriculum, gender, national standardized test (SAT/ACT) achievement, planned employment, housing plans, marital status, and attitudinal behaviors, as variables that can influence student withdrawal risk (Boulter, 2002). In the United States, typically over 25% of an entering class will be lost due to attrition factors before that class reaches its second year, with the attrition rates for low income and under-represented students even higher (Reason, Terenzini, & Domingo, 2005). Not only is the first year an important identification milestone, if the educational environment does not become proactive in linking persistence to student development, the benefits of retention efforts will be minimized (Moxley, Najor-Durack, & Dumbrigue,2001). Moxley, et al. (2001) further states:

Facilitation of student development focuses on fostering academic maturity. Students develop an increased capacity to manage their own learning experience as they move from academic foundations to purposeful learning and then to autonomous learning. As the student [sic] evolve their persistence increases and retention risk decreases, thus impacting persistence.

The passage towards improved persistence resulting in graduation involves a commitment from the individual student to control ownership of his/her academic pursuit (Brookfield, 1999). Student development models that represent a journey of personal ownership for improved academic persistence rates include the attainment of skills. When institutional demands are not consistent with students' expectations, it becomes difficult for students to make personal commitments to remain in the post-secondary environment (Magolda, 2014). Part of student persistence requires verbal and visual observations of other students engaged in similar academic pursuits. When students are exposed to these types of interactions, informal learning communities are formed that support persistence. Freshman interactions that promote learning include movement through the first year of academic coursework (Magolda, 2014).

Similarly, the importance of innovative and engaging course curriculum links students together in environments that promote the importance of learning (Chickering & Reisser, 1993). "Encouraging students to work together and explore engaging interdisciplinary topics enhances development by helping students to care, not only about their own work and each other, but also about what they are learning" (Chickering & Reisser, 1993). When a student loses a sense of belonging, they become disconnected from the environment, and withdrawal is often on the immediate horizon (Magolda, 2014). Four consistent reasons for freshman withdrawal are 1) unclear of expectation of post-secondary programs; 2) issues or concerns about adjustment, 3) financial constraints, and 4) academic under-preparation (Kalsner, 1991).

The major contributor to students' persistence are the levels of commitment that are demonstrated at the enrollment stage of the first year and the students' issues before admission. These issues include motivation level, self-control and efficacy, empathy, affiliation needs, parental education, and deterring socialization. When these issues are aligned with the institution's initial commitment, each student's internal commitment towards academics can be achieved (Braxton,Hirschy, & McClendon, 2004).

A student's journey towards individual ownership of the academic environment is called academic maturity. Students must enter a level of interdependence that includes self-directed learning and creating personal academic agendas that lead to persistence. Before this can happen, students need to practice a number of academic skills, including: organizing, attending, and completing requirements that make up the academic foundation level. The sooner freshmen master the autonomous learning role, the better the odds are of persistence. When students are exposed to what the post-secondary institutions' expectations are and accept them, this is called the student role. (Moxley et al., 2001). "The basis of student development lies in a student's mastery of the role of student" (Moxley et al., 2001). Since persistence is clearly linked to program completion in higher education, studies of those factors which may positively affect this variable are both timely and critical.

Grade Point Average as an Indicator of Academic Success

"Higher education officials agree it is actually a student's grade point average, not a standardized test score, that is the best predictor of how that student will perform in college" (Edwards, 2014). A grade-point-average (GPA) over a period is considered a collective indicator of achievement versus a standardized test score as an indicator of a

student's ability. Students with weak, initial entering GPAs over time continue to earn lower GPAs and graduate at lower rates (Hiss & Franks, 2014). In prediction studies, first-year college GPA is frequently used as the criterion measure of college success. However, college GPA from later years must also be examined as measures of achievement and/or career preparation. For example, the SAT, which has been established as a good predictor of first-year college GPA, is less effective in predicting senior-year college GPA (Atkinson & Geiser, 2009).

The validity of using GPAs as an indication of institutional policy effectiveness is well supported in the literature. Both as an admission criterion, and a predictor of college program completion, students' GPA is a well-established empirical measure. For example, an undergraduate, Canadian baccalaureate study of 249 nursing students reported in *Nurse Education Today* (2011) found that admission GPA was predictive for as much as 36% of the variance in GPA at graduation and was the, "only consistent predictor of student success" (Timer & Clauson, 2010).

Another study of 219,435 first-year students from 301 United States post-secondary institutions compared the effectiveness of ACT composite score and high school GPA for predicting different levels of first-year college GPA. Among other things, this study supports the traditional procedure of using GPA in predictive studies and in affirming the stability of general GPA across sequential semesters from the freshman year through the senior year of college (Noble & Sawyer, 2002).

"With respect to grade performance, many studies have shown GPA to be the single most important factor in predicting persistence in college" (Tinto, 1975). Several other scholars report GPA to be a major and direct predictor of attrition or retention (Cabrera, Castaneda, Nora, & Hengstler, 1992; Pascarella & Chapman, 1983). On a Bell Curve, a C grade (2.0) or higher captures the greatest number of students. Students with a grade of C or higher are more likely to persist to completion of their first academic year when no other variables are considered (Pascarella & Chapman, 1983). When GPA and completion of their first year are considered, students may be capable of successfully completing expedited pathways towards their academic goals.

Expedited Pathways

Empirical research on the effects of accelerating students' progression through their developmental requirementsdo show that students who do not enter a degree program within a year of enrollment are far less likely to ever enter a program and therefore less likely to earn a degree or certificate (Jenkins & Cho, 2012). Accelerated pathways allow students to complete their developmental coursework in either a shorter amount of time or concurrently with gateway coursework. This allows developmental students to have greater access to college-level coursework, preferably within the first year of enrollment, and maintain academic momentum (Edgecombe, 2011).

The Community College of Denver began an accelerated math program called FastStart that compresses the number of required credits from multiple courses into one. This was done by reducing the time required for review and increasing the amount of instruction time. (Concurrently provided to all students was student services support as well as nearly half of the students being enrolled in some type of first-year experience course). Studies show that students who passed through this model were more likely to complete their developmental math sequence and enroll in college-level math. However, participation in the program did not influence increased or decreased persistence in their degree programs (Edgecombe, Cormier, Bickerstaff, & Barragan, 2013). The program group was made up of students who completed the FastStart semester; the completion semester was not a variable. The comparison group was comprised of students who were enrolled in a non-FastStart developmental math sequence during the same semesters as the program group. In addition, students in both groups took a valid college math placement test and were first-semester college students enrolled only at the main campus at the Community College of Denver. Because students were both part-time and full-time, the window for them to complete thirty semester hours differed and could take as long as six subsequent semesters. Therefore, both groups were tracked for three academic years (six semesters). (Edgecombe et al, 2013). Results were categorized according to gender, race, and socio-economic background, including Pell Grant recipients. Persistence was defined as having earned a C or higher in either the FastStart program or the non-FastStart program and having earned a C or higher in a gatekeeper or college level course after three consecutive academic years. Findings showed, "the FastStart groups appear to have slightly higher short-term persistence rates and credit accrual, and substantially higher developmental math sequence completion, gatekeeper math enrollment, and gatekeeper math passing rates" (Edgecombe et al., 2013). The program group completed college credit courses with a C or higher was 16.85% versus the comparison group at 14.08%. The percentage of the program group that completed a gatekeeper math course with a C or higher was 33% versus the comparison group at 18% (Edgecombe et al., 2013).

The Community College of Baltimore County (CCBC) began an accelerated developmental English program funded by the Lumina Foundation for Education called the Accelerated Learning Plan (ALP) in which students complete their developmental English components concurrently with their college-level English requirements. Study results show that students in the ALP program improved developmental English completion rates by almost 50% in half the amount of time compared to CCBS's traditional developmental English sequence. Similarly, students were more likely to complete and pass both their first and second college-level English requirements (Jenkins, Speroni, Belfield, Jaggars, & Edgecombe, 2010). As in the FastStart study, the number of semesters it took for program students to complete the ALP program was not a variable. Researchers in the ALP study defined persistence as program completion to consecutive semester and program completion to consecutive year (thirty semester hours) completion. The conventional approach in which students complete developmental courses before enrolling in college-level courses was compared to the ALP model.

The ALP model provides a substantially more cost-effective route for underprepared students to pass the ENGL101 and ENGL102 sequence required for an associate degree ($2,680 versus $3,122 per student). The 2010 study found no association between ALP enrollment and increased persistence. However, using a larger number of cohorts and tracking students over a longer period of time, we also found that ALP students were more likely to persist to the next year than non-ALP students (Cho, Kopko, Jenkins, Smith-Jaggers, 2012).

Six community colleges with the City University of New York (CUNY) system were compared in a study. All six utilized the same developmental placement assessment exams. Data from Math and English were tracked for cohorts in the study organized over a three-year period. Data from developmental reading was not tracked.

Among the matched sample of students, holding constant student-level characteristics and semester of entry, students who started in a shorter writing sequence were 9.7 percentage points more likely to enroll in college English than their counterparts who started in the longer sequences, and 6% were more likely to complete college English (Hodara & Jaggers, 2014).

In the developmental math analysis, "students who started in a shorter math sequence were 3.5 percentage points more likely to enroll in and 3 percentage points more likely to complete college math than their counterparts who started in the longer sequences" (Hodara & Jaggers, 2014).

Thus, an empirical study of the effects of expedited developmental instruction in reading contributed to this small, critical database, and provide evidence of effects of reading intervention.

Summary

Developmental education remains one of the most difficult issues confronting community colleges. Despite the controversy surrounding educational policy regarding developmental education, there is a significant need for empirical research measuring the effect of remediation on community college student outcomes. Furthermore, findings demonstrate that traditional developmental education coursework may overall serve to decrease community college students' odds of successful completion with negative impacts on students enrolled in developmental reading, English, and math. Across the nation, 75% of adult developmental college students typically do not graduate (Schneider & Yin, 2012). There is the likelihood that this group will continue to grow in numbers (Complete College America, "Guided Pathways," 2012).

Adapting identification protocols and remediation models to improve the efficacy of developmental education as well as research with acceleration through shorter sequences improves access to college-level coursework and possibly students' overall college success. More reforms integrating additional effective student supports may be required to achieve considerable increases in developmental students' college-level credit accrual and completion rates. Accelerated strategies may be able to better address student preparation for college-level coursework by redesigning the curriculum, ensuring that developmental education content is rigorous, necessary and aligned with each student's academic and career goals.

Chapter 3:

Methodology And Procedure:-

Framework

The purpose of this study was to compare students who were expedited through the developmental reading sequence after scoring ≥ 80 on the post-course COMPASS reading assessment to students who were not expedited and completed both courses of the sequence. Specific components evaluated will be grade-point-averages (GPAs) and persistence of both groups after thirty semester hours. A quantitative codebook served to identify the variables which were tested to demonstrate a statistical relationship and support or not support a data-generated null hypothesis (Creswell, 2012).

Nature and Limitations of the Study

The proposed study follows a quantitative, correlational method of research approach, involving the use of documented data analysis as the primary method. The study tested for a statistical relationship within a population of adult developmental, undergraduate students who completed their required developmental reading route either by finishing a two-course reading sequence or by having tested out of the second course in the reading sequence. The expedited group was identified by scoring ≥80 on the COMPASS reading placement test at the conclusion of the first course, Technical Comprehension. GPA after completion of thirty semester hours and persistence after completion of thirty semester hours for both groups are the dependent variables. The route of the completed developmental reading requirement was the independent variable.

It was limited to no more than 100 subjects at one community college. The primary data came from student records which identify students who completed both courses in the developmental reading sequence and students who tested out of the second course in the developmental reading sequence, Critical Analysis. Student GPA and accrued credit hours after completion of six semesters also came primarily from student records. The secondary source of data was the students' COMPASS reading post-test score at the conclusion of the first reading class in the sequence, Technical Comprehension came from student records. COMPASS is a nationally normed, computer-adaptive college placement assessment that allows educators to evaluate incoming students' skill levels in reading and other subjects that may require remediation ("National collegiate retention," 2013). The two categories of data was GPA and persistence rate and included course completers through either a two-course completion route or an expedited route after the completion of the first course.

Research Design and Procedures

The quantitative component utilized the Pearson Product-moment Correlation Coefficient (*r*), a measure of linear correlation, to measure the degree of linear dependence between each set of two variables. In using the sample Pearson correlation coefficient design, GPA after completion of thirty semester hours and persistence after completion of thirty semester hours (x-values) was compared to the route of the completed developmental reading requirement for both groups (y-value). A one-tailed, paired t-test was utilized to determine *p* or significance because there was an expectation of significant difference between the variables. The correlation was determined at .05 level of significance based on the scaled responses, which did not allow a rejection of both null hypotheses (Pallant, 2010). This meant the observation was highly likely under the null hypotheses and there wasnot a significant difference in grade-point-average (GPA) after thirty semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence. Additionally, it was demonstrated that there was a not significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

To determine "Is the average GPA of expedited students after thirty credit hours significant as compared with students completing the two-course reading sequence?", GPAs of fifty students who completed the two-course sequence and persisted after thirty semester hours werecompared to the GPAs of fifty students who expedited through the second course in the sequence after thirty semester hours.

To determine "Do more of the expedited students complete thirty or more credit hours as compared with students required to complete two semesters of developmental reading?", the percentage of fifty students who expedited through the second course in the sequence and persisted to complete thirty semester hours werecompared to the percentage of fifty students who completed the two-course sequence and achieved thirty semester hours, within a six-semester time frame (See Table 1).

Table 1:- Statistical Significance Calculation.

Correlation Coefficient	Strength
$r = n(\sum xy) - (\sum x)(\sum y)$ / $\sqrt{[n\sum x2 - (\sum x)2][n\sum y2 - (\sum y)2]}$	
$\pm$ .70 – 1.00	Strong
$\pm$ .30 - .69	Moderate
$\pm$ .00 - .29	None (.00) to Weak

Definitions

For the purposes of this study, these operational definitions wereapplied. *GPA* (grade-point-average) refers to a standardized measurement of varying levels of achievement in a course or over a series of courses; it is calculated by dividing the total quality points earned divided by total units of credit attempted. For the purposes of this study, student GPA after the completion of thirty semester hours of course credit was one of the metrics analyzed. *Persistence(retention) (completion)* generally refers to students remaining within one higher education (HE) institution and completing a milestone within their program of study. For this study, the completion of thirty semester hours was considered persisting through the first year of study. The average persistence rate of sample study groups was subjected to correlational analysis. *Course sequence completers* refers to students who fulfill their developmental reading requirement by enrolling in and completing both courses in a two-course sequence. In the case of the research institution involved in this study, "course sequence completers" are those who, after testing into the remedial program, successfully completed both IDS 101 (Technical Comprehension) and IDS 102 (Critical Analysis) to fulfill the developmental reading requirement. *Expedited (accelerated) format* refers to students who fulfill their developmental reading requirement by scoring $\geq$ 80 on the COMPASS Reading Placement Post-Test after testing into and completing the lower-tier reading course in the two-course sequence. These students to gain direct entry to their gateway level courses, without having to complete the second-tier reading course (Critical Analysis). *Developmental (remedial) education* includes academic services and/or courses in math, reading, and English designed to raise student skills to meet post-secondary standards, usually determined by a score on a placement test or the *ACT*. *Gateway course* is a college level course that is foundational in nature and associated with a particular major or career path and involves large numbers of students within the first or second year of their academic programs. A *Non-traditional learner* in this study refers to an adult student $\geq$ 18 years in age, enrolled in a degree or certificate program at a community college, with no prior post-secondary education, no formal college assessment testing (SAT or ACT) preparation, and who achieved a high school diploma or in possession of a GED. A *placement test* refers to an instrument that assesses the academic skill levels of initial, entering HE students for the purpose of enrollment in classes at the appropriate level. A placement test may indicate the need for additional preparation before enrolling in college-level coursework or may indicate advanced skill levels which waive prerequisite requirements for entrance to college-level coursework. *Open enrollment* refers to the non-selective policy of admitting to college a high-school graduate or equivalent in an effort to provide higher education for all who desire it. In this study, n*orm-referenced* refers to a standardized test designed to compare and rank student scores in relation to one another.

Instrumentation

The instrumentation utilized in this study was the data sets by semester per student. In order to insure aggregated data was not traced to an individual student, results were maintained on a password-protected computer system. Individual students were assigned a random letter known only to the researcher. No personally identifiable information was collected, which resulted in no harm to individual students. After a period of five years, any such data stored on a secure website accessible to only the researcher will be removed and destroyed.

Setting

The chosen college in this study was an open-access public community college located in northeast Ohio. This college has articulated baccalaureate degree programs with other HE institutions throughout the state and is a member of the Ohio Universities System. Recently the college has expanded the campus by eight buildings and 200,000 square feet. It offers classes at satellite campuses located in rural, suburban, and urban communities. The

school offers 200 majors, one-year certificates, and a variety of career enhancement certificates. As of spring 2011, credit student enrollment was approximately 15,530 (Stark State College, 2011).

The college prepares individuals to enter fields in the arts and sciences, business and entrepreneurial studies, health sciences, engineering technologies, information technologies and public service. Degrees awarded are the associate of arts, associate of science, associate of applied science, associate of applied business and associate of technical studies (Stark State College, 2011).

A selective sample of fifty expedited students and a selective sample of fifty sequence-completion students were obtained by choosing students across all forty-eight sections of Technical Comprehension from the combined Fall 2011 and Spring 2012 progressive course offerings. An institutional research board proposal with the college has already been filed and approved this initiative involving human subjects.

Table 2:- Hypotheses and Variable Labels.

Hypotheses	Dependent Variable	Independent Variable
H10 There is no significant difference in GPA after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.	GPA	Route of Completion
H20 There is no significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.	Persistence	Route of Completion
H1a There is a significant difference in grade-point-average (GPA) after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.	GPA	Route of Completion
H2a There is a significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.	Persistence	Route of Completion

Quantitative Codebook

The control variable in this correlation design was the route of completion:

1. students who expedited their developmental reading course sequence (took only one class)
2. students who completed the two-course sequence and was not changed throughout the experiment (Pallant, 2010) (See Table 2).

The uncontrolled variables in the correlation design are:

1. GPA after completion of thirty semester hours
2. Persistence after completion of thirty semester hours.

Validity and Reliability

According to Cooper and Schindler (2006), validity of a sample depends on both accuracy and precision. "Accuracy is described as a primary reduction of bias from the sample, whereas precision is measured by how closely the sample represents the population" (Cooper & Schindler, 2006). In this study, threats to accuracy were prevented by selecting students from each of the sections of Technical Comprehension in the Fall 2012 and Spring 2012 schedule of courses that was offered. Precision was protected by selecting only students who were placed in Technical Comprehension as a result of their initial score on the COMPASS Reading Placement test (0 – 65). Reliability, sometimes referred to as repeatability, aims to create an environment in which there is a "consistent data collection experience" (Fowler, 2014). SPSS was used to calculate Pearson *r* and create all tables and plots. SPSS repeatedly and consistently measured each set of variables from each student in the study set.

Summary

Using an experimental, correlation research design, this quantitative study involved an investigation of persistence (retention) and GPA of developmental reading students enrolled after completion of thirty semester credit hours at the same HE institution. The study was conducted at a community college in northeast Ohio. The study employed a selective sample of 100 developmental, undergraduate students. In the study, correlation analysis of the quantitative data collected occurred. The data was collected from student records.

In the study, data was analyzed to evaluate persistence and GPA of fifty undergraduate students after six semesters who completed both tiers of a two-course, developmental reading sequence. Data was also analyzed to evaluate persistence and GPA of fifty undergraduate students who tested out of the second tier in a two-course, developmental reading sequence after completing the first tier course and scoring $\geq$ 80 on the COMPASS reading placement post-course test.

The controlled (independent) research variable was the route of completion of the college's reading requirement and the uncontrolled (dependent) variables was GPA after thirty semester hours and persistence (retention) after thirty semester hours. A correlation coefficient was used to determine significance strength. SPSS repeatedly and consistently measured each set of variables from each student in the study set to insure validity and reliability. The study followed data collection and confidentiality procedures recommended by the literature.

Chapter Four

Analysis and Results:-

The purpose of this study was to compare the performance of students who were expedited through the developmental reading sequence completing only one semester of intervention, to students who were not expedited and completed two courses in a developmental reading sequence.Specific components evaluated were grade-point-averages (GPAs) and persistence of both groups after thirty semester hours. The study was limited to 100 subjects at one community college from Fall 2011 through Spring 2014. The primary data came from student records which identified students who completed both courses in the developmental reading sequence and students who tested out of the second course in the developmental reading sequence. Student GPA and accrued credit hours after completion of six semesters also came from student records. The secondary source of data was the students' COMPASS reading post-test score at the conclusion of the first reading class in the sequence, and came from instructor-reported data. Gender was also noted. The number of participants from each group was equal, fifty for each sub-group and did not vary for the duration of the research. All results were tabulated including from those subjects no longer enrolled in the college.

The data from the research were used to indicate whether or not students who were expedited through the developmental reading sequence were more likely to have higher GPAs and persist to thirty credit hours as compared with those who complete the two-course developmental reading sequence.

The following hypotheses to be tested in this research study were:

$H1_0$ There is no significant difference in GPA after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

$H2_0$ There is no significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

$H1_a$ There is a significant difference in grade-point-average (GPA) after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

$H2_a$ There is a significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence.

Stratified sampling was used to identify both subject groups, one comprised of students completing two semesters of remediation, and the other populated by students who tested out of the second course. The first fifty sections of Technical Comprehension from Fall 2011 and Spring 2012 semesters were arranged by section number. Students were arranged alphabetically by last name in each section. Systematic sampling, n + 1; where n = the prior assigned section number of Technical Comprehension when arranged by ordinal fashion, was used to create both groups of subjects until the requisite fifty per group was identified. For example, the first student in the first section was chosen; the second student in the second section was chosen, and so on. Fifty students in each group (for a total of one hundred subjects in the study) were identified using this sampling method. All fifty course sections were represented, an equal number of male/female students was included and the average pre-course scores of the two groups was commensurate (less than one standard deviation difference between the two group averages). See Appendices A - D.

The first group was comprised of students who were enrolled in the lower-tier course of a two-course, developmental reading series titled, Technical Comprehension, with a pre-course COMPASS Reading score $\leq$ 65. These students took the COMPASS Reading Placement assessment again post-course to demonstrate literacy skill gains. The first group's subjects were identified with the number two (2) after their alphabetized code, indicating their completion of two semesters of intervention. There were twenty-nine females and twenty-one males in the first group of subjects. The average pre-course score was 51 and the average post-course score was 67. All but one subject demonstrated growth of at least one standard deviation (+8 points) or higher.

Those students with pre-course scores $\leq$ 65 and whose post-course score was $\geq$ 80, which allowed them to expedite past the second tier of the two-course developmental reading sequence and enroll in their major's gateway courses, comprised the second subject group. They were identified with the number one (1) after their alphabetized code, indicating one semester of intervention. There were twenty-eight females and twenty-two males in the second group of subjects. The average pre-course score was 58 and the average post-course score was 86. Sixty percent of the expedited group demonstrated growth of at least three standard deviations or higher (+24 points). Composite data are reflected in Table 3.

Table 3:- Results for Two Comparison Groups.

Subject Group	Gender	N Spring 2014	N Persistence	Avg. GPA
Expedited	F=28 M=22	11/50 (22%)	15/50 (30%)	2.74 (N=15)
Two-Course	F=29 M=21	15/50 (30%)	13/50 (26%)	2.71 (N=13)
Totals	F=57 M=43	26/100 (26%)	28/100 (28%)	2.73 (N=28)

Note. N Spring 2014 refers to number enrolled 2014.

Table 4:- COMPASS Comparative Data.

Subject Group	Avg. Pre-Score	Avg. Post-Score	$\sigma < 0$	$\sigma > 1 < 2$	$\sigma > 2 < 3$	$\sigma > 3$	Avg. σ growth
Expedited	58 (N=50)	86 (N=50)	0	1	19	30	3+

Two-Course	51 (N=50)	67 (N=50)	4	27	9	10	1

Note. Pre-Score is pre-course; Post-Score is post-course.

The data were normally distributed and bivariate, making the data appropriate for examination using the Pearson product-moment correlation coefficient (Coladarci, 2008). There were no exclusions.

Section One
The study results address the following research question and two sub-questions:

Q."Do students who expedite through the developmental reading sequence after scoring ≥ 80 on the post-course COMPASS reading assessment have a GPA the same or higher after thirty semester hours as compared with their peers who transitioned through the reading sequence following a traditional, higher credit hour model?

Table 1 demonstrates that the average GPA of students who expedited through the developmental reading sequence after scoring ≥ 80 on the post-course COMPASS reading assessment was 2.74 and the average GPA of students who transitioned through the reading sequence following a traditional, two semester model was slightly lower at 2.71.

Q_1. "Is the average GPA of expedited students after thirty credit hours significant as compared with students completing the two-course reading sequence?"

There was no significant difference in grade-point-average (GPA) after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence. This is evidenced by $p = 0.414$; $p > .05$. Students who completed both tiers of the developmental reading sequence have a slightly higher, but not statistically significant, grade-point-average than those students who expedited and were excused from the second tier of the developmental reading sequence (see Table 5). Therefore, these results do not reject the first null hypothesis.

Table 5:- Relationship Between the Average GPA of Students.

Type	P-Value	Significance
1-tailed	0.414162	(.05) = No

Note. Students completed ≥ 30 credit hours in each group.

Q_2."Do more of the expedited students complete thirty or more credit hours as compared with students who are required to complete two semesters of developmental reading?"

The expedited group had fifteen students persist to thirty or more credit-hours and the group of students who were required to complete two semesters of developmental reading had thirteen students persist to thirty or more credit-hours. See Table 3.

To test for significance in persistence rate after thirty semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence, an independent samples test was performed. There was one independent, categorical variable that had two levels (route of completion) and one dependent variable (persistence). A two-tailed, t-test was conducted to accommodate both subject groups. Significance = .764, (2-tailed) was greater than .05, so there was no significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence (see Table 6).

Table 6:- Relationship Between the Persistence of Students.

Type	P-Value	Significance

2-tailed	0.764298	(.05) = No

Note. Students completed ≥ 30 credit hours in each group.

Because there was no significant difference in persistence rate after 30 semester hours between those who expedited their developmental reading course sequence (took only one class) and those who completed the two-course sequence, the second null hypothesis cannot be rejected.

The prediction, "Students who are expedited through the developmental reading sequence are more likely to have higher GPAs and persist thirty credit hours later than those who complete the two-course developmental reading sequence," was not supported by the data.

Section Two

While the prediction of this researcher was not supported by the data and neither null hypothesis could be rejected, further analysis was conducted to reveal any trends in the data. For instance, the researcher explored whether those with lower pre-course scores in both groups had lower persistence rates and GPAs after thirty semester hours. See Table 7.

Table 7:- Students With a Pre-Course, COMPASS Reading Placement Score of < 30.

Subject ID	Pre-Score	GPA	Subject Group	Persistence
B2	30	.615	Two-course	< 30
Q2	29	3.303	Two-course	≥ 30
QQ2	20	1.765	Two-course	< 30
VV2	16	1.738	Two-course	< 30
KK1	26	.923	Expedited	< 30

Note. Pre-Score is pre-course.

To test for significance in persistence rate and GPA after 30 semester hours between those students with a pre-course, COMPASS Reading placement score of ≤ 30 who expedited their developmental reading course sequence (took only one class) and those students with a pre-course, COMPASS Reading placement score of ≤ 30 who completed the two-course sequence, two independent samples tests were performed. There was one independent, categorical variable that had two levels (route of completion) and one dependent variable in each test (persistence and GPA). A total of five students from both groups scored ≤ 30. Of these five subjects scoring at or below thirty on the pre-course test, one completed the two-course sequence and persisted to thirty or more semester hours. The one expedited subject who scored at or below thirty on the pre-course test did not persist to thirty or more semester hours. After initial analysis of those subjects who scored ≤ 30 on the pre-course test and persisted to thirty or more credit-hours, a total number of five was too small for meaningful analysis of persistence and GPA.

The researcher also explored whether those with higher pre-course scores in both groups had higher persistence rates and GPAs after thirty or more semester hours. To test for significance in pre-course score after thirty semester hours between those students with a pre-course, COMPASS Reading placement score between 50 and 65 who expedited their developmental reading course sequence (took only one class) and those students with a pre-course, COMPASS Reading placement score between 50 and 65 who completed the two-course sequence, an independent samples test was performed. There were twenty students in this data set. There was one independent, categorical variable that had two levels (route of completion) and one dependent variable (pre-course score). A one-tailed, t-test was conducted to accommodate both subject groups. Significance = 0.418, (1-tailed) was greater than .05, so there was no significant difference. See Table 8.

Table 8:- Relationship Between the Pre-Course Scores of Students.

Type	P-Value	Significance
2-tailed	0.418164	(.05) = No

Note. Students completed ≥ 30 credit hours with a pre-course score range 50-65 in each group.

An investigation of the number of students from each group who reached three upper-limit milestone pre-course score ranges was complete. The three milestone pre-course score ranges were 50-65, 55-65, and 60-65. The researcher recorded the number of subjects from each of the total populations and the total number of subjects from both groups that persisted to ≥ 30 credit-hours. The range with the largest percentage of students from each group who persisted to thirty or more credit hours was 50-65. There was also a significant difference between the number of students in each group whose pre-course score range was 50-65 and persisted to ≥ 30 credit hours. The implications of this trend will be further discussed. See Tables 9 and 10.

Table 9:- Pre-Course Scores of 50-65 for Both Study Groups.

Subject Group	N total population (100)	N persisted to > 30 credit hours (28)
Expedited	42/50 (84%)	13/15 (87%)
Two-Course	32/50 (64%)	7/13 (54%)
Total	74/100 (74%)	20/28 (71%)

Note. Students persisted to ≥ 30 credit hours.

Table 10:- Relationship Between the Number of Students in Each Group.

Type	P-Value	Significance
2-tailed	0.001887	(.05) = Yes

Note. Students completed ≥ 30 credit hours with a pre-course score range 50-65 in each group.

Moreover, the researcher explored the role of gender in this comparative analysis. The relationship between the route of completion and GPA of male students in each group was investigated using Pearson product-moment correlation coefficient. There were a total of 43 males in the data set. There was a weak correlation between the two variables, significance = 0.0015, n = 43, p > .05. Males in the expedited group had the higher GPA. See Table 11.

Table 11:- Correlation for GPA and Route of Completion for Males.

Type	P-Value	Significance
2-tailed	0.001548	(.05) = Yes

Note. Students were from both groups in the study.

Additional analysis of anecdotal evidence for students in both groups who were still enrolled as of Fall 2014, regardless of persistence to ≥ 30 credit hours, was completed. Fourteen students in the expedited group were still enrolled and had an average GPA of 2.78; all but two were enrolled on a part-time basis. Nine students in the two-course group were still enrolled and had an average GPA of 2.69; all but one were enrolled part-time. Sixteen of the total expedited group's students no longer enrolled and twenty-one of the total two-course's group's students no

longer enrolled failed to meet the college's minimum standards of academic progress overall GPA of 2.0 or higher. See Table 12. These data suggest that although persistence is somewhat related to a pre-course score of 50 – 65, other confounding variables such as part-time enrollment may positively affect persistence (see Tables 9 and 10).

Table 12:- Longitudinal Data (Fall 2011-Fall 2014 summative analysis).

Student Group	Enrolled Fall 2014		Total Fall 2014		Standards of Academic Progress	
	≥ 30 hrs	< 30 hrs	Enrolled	Not Enrolled	Met	Not Met
Expedited	10/15 (67%)	4/35 (11%)	14/50 (28%)	36/50 (72%)	34/50 (70%)	16/50 (30%)
Two-Course	8/13 (62%)	1/37 (3%)	9/50 (18%)	41/50 (82%)	29/50 (48%)	21/50 (42%)
Totals	18/28 (64%)	5/72 (7%)	23/100 (23%)	77/100 (77%)	63/100 (63%)	37/100 (37%)

Additionally noteworthy is the predictive correlation between subject completion of thirty semester hours and sustained enrollment. Twenty-three total subjects (fourteen expedited and nine two-course completers) were still enrolled as of Fall 2014. This compares with twenty-six (eleven expedited and fifteen two-course completers) as of Spring 2014 (see Table 3). This may suggest that many developmental education students may require more time – not acceleration – to complete their requirements. Factors contributing to such slower-than-anticipated progress will be explored in Chapter 5. Finally, a significantly higher percentage of those in the upper pre-test range persisted to completion of ≥ 30 semester hours. This may indicate a sub-population that could especially benefit from expedited developmental education models.

Summary

The purpose of this study was to compare the performance of students who were expedited through the developmental reading sequence completing only one semester of intervention, to students who were not expedited and completed two courses in developmental reading sequence. Standardized pre-course and post-course scores from the COMPASS Reading placement assessment were examined for a total of 100 students to determine the level of correlation between the two groups of students. The results from this study do not reject either of the two null hypotheses because no significance between route of completion and either GPA or persistence resulted. This study suggests that students who are expedited through the developmental reading sequence are not more likely to have higher GPAs and persist thirty credit hours later than those who complete the two-course developmental reading sequence. A complete analysis of the results is presented in Chapter 5, including an exploration of trends that were revealed in the data. The meaning behind the results and their possible connection to confounding variables will be discussed as well. The implications of other variables affecting program persistence toward completion of a degree or certificate program are also analyzed. Further, the relevance of these results and need for future study within the community college network as it pertains to incentives currently employed to encourage a national completion agenda will be explored in depth.

Chapter 5: Discussion, Conclusions, And Recommendations:-

Research Summary

Instructors in community college developmental reading programs are continuously in search of new ways to improve outcomes for their students, but there has been a shortage of empirical studies on the effectiveness of such efforts (Simms & Knowlton, 2008). However, limited research that does exist suggests that programs that offer underprepared students a more expeditious route to and through introductory college-level courses produce better outcomes. A variety of initiatives are underway nationally to address this dearth of data, and improve student outcomes, as measured by program completion. Contributing to the urgency of these initiatives, state legislative bodies and private education foundations have recently increased pressure on community colleges to streamline the number of credit hours necessary on the pathway towards completion of a degree or stackable certificates. ("Develop Lower-Cost Pathways," 2013). The prediction tested in this study was, "Students who are expedited through the developmental reading sequence are more likely to have higher GPAs and persist thirty credit hours later than those who complete the two-course developmental reading sequence."

The results from this study do not reject either of the two null hypotheses because no significant differences between route of completion and both GPA and persistence were demonstrated. Subjects who were expedited through the developmental reading sequence were not more likely to have higher GPAs and persist thirty credit hours as compared with those who completed the two-course developmental reading sequence.

Interpretation

As stated in the literature review, developmental courses are often credit hour intense, time consuming, non-transferable, and costly for those students who are required to complete those pathways prior to degree related coursework. Many students withdraw from recommended remediation or give up on their academic goals altogether (Complete College America, "Remediation," 2011). Within the scope of this research, sixty-four out of seventy-two of the students who did not persist to $\geq$ 30 credit hours (89%) were no longer enrolled the last semester of the parameters of the research period (Spring 2014) (See Appendices G and H). Like most community colleges, the college in the study has the authority to define its own placement exam and cutoff scores, to determine whether developmental education is required or recommended, and to design its own developmental education course sequences. Since existing empirical evidence supports success in accelerating developmental coursework and completion of developmental coursework sequences sooner, this study greatly assists the college in designing pathways that include developmental course acceleration, in addition to continue to offer multi-semester supports, as both models were validated by the data.

Studies also point out that a high level of literacy is necessary for negotiating most aspects of twenty-first century life and that almost 30% of the population of the United States have insufficient literacy skills for a fully productive and stable life (Lesgold & Welch-Ross, 2012). Based solely on pre-course and post-course scores and within the theoretical framework of pragmatism, students in both groups achieved higher levels of literacy, as demonstrated by pre- and post- test score improvement on the COMPASS Reading Placement Test. All but one student in the expedited group increased their pre-course scores by two or more standard deviations while all but four of the students in the two-course group increased their pre-course scores overall, with an average increase of at least one standard deviation (see Table 2). The average gain in all course completers (N=100) out of one hundred subjects was 21.83 points, significantly greater than one standard deviation. Thus, no matter which route of developmental reading completion was taken, the positive effects of remediation were evident in the data.

One outcome of this study is that a significant percentage (28%) of developmental reading students effectively persisted to $\geq$ 30 credit hours utilizing either an accelerated pathway or a traditional, two-course model (See Table 1). This compares favorably with the often-reported less than 10% success rate in national studies (Complete College America, "Remediation," 2011). Additional academic reading support via a two-course sequence for underprepared students was demonstrated to be a needed service to assist some underprepared students, as evidenced by the persistence rate and average GPA of this two-semester intervention. Students who went through the expedited program model do not appear to be more likely or less likely to continue in their program of studies. By analyzing the effectiveness of developmental reading pathways, the study provided evidence to support the continued use of accelerated developmental reading models for developmental community college students, as well as continuing the use of more traditional, longer-term interventions. Both are effective in producing gains without negatively influencing persistence. This is essential, as the aim of developmental education is to support student skill development en route to certificate and degree completion.

Limitations of the measure of error for the COMPASS Reading placement test is $\pm$ .40 to .57 points, which is statistically very low (Westrick & Allen, 2014). This supports the conclusion that subjects in the study were properly identified and the unlikeliness of a significant variation of the results based on standard measurement of error in the placement assessment. It is interesting to note that, according to a recent, national study, "community colleges generally set a higher bar than do four-year institutions, a result that surprised experts" (Fain, 2012). Thus while any normed assessment has some degree of inaccuracy, the COMPASS test results reflect a minor limitation.

A trend arose when examining the pre-course scores and the numbers of students overall in each who persisted. 84% of the expedited population and 64% of the two-course group attained a pre-course COMPASS score of 50 or higher and persisted to complete at least thirty credit hours. 87% of accelerated students scored between 50 and 65 pre-course and persisted to $\geq$ 30 credit hours, while 64% of two-course students scored between 50 and 65 pre-course and persisted to $\geq$ 30 credit hours. This suggests a predictive value of a pre-course score of 50 – 65 as linked to persistence to $\geq$ 30 credit hours. This is relevant for the College because it can greatly assist in adjusting

developmental reading options. For instance, if the cut-off score for the first course in the two-course, developmental reading sequence is lowered or combined with other metrics such as the ACT, such students are more likely to benefit from expedited remediation. An additional study could then more accurately predict the success of an expedited, developmental reading pathway for such subjects. This in turn could improve student success rates and degree completion for those required to satisfy remedial reading intervention.

Additionally of interest was the anecdotal evidence that an additional five students from both groups who were still enrolled in Fall 2014 regardless of their Spring 2014 enrollment status, despite the fact none had yet attained 30 credit hours (see Table 10). Thirty students in the expedited group and twenty-six students in the two-course group who did complete the prescribed developmental reading course(s) did go on to enroll in and complete at least one corresponding college-level course. Of these college-level course completers, twenty were enrolled part-time in Fall 2014 and three were enrolled full-time. One explanation for this discovery is the part-time enrollment of each of the additional students and twenty of the college-level course completers, suggesting there could be a relationship between completion rates and enrollment type (part-time vs. full-time) for developmental reading students. Since only 8% of the total expedited population and only 16% of the total two-course group population not enrolled in Fall 2014 possessed a GPA < 2.0, other unknown variables in addition to academic unpreparedness likely impact students' lack of persistence and academic success. Other confounding variables such as part-time enrollment, may positively affect persistence.

In exploring the gender significance to GPA and persistence, a weak, negative correlation between males arose. Certainly a community college cannot place students by gender into developmental reading courses, but perhaps the content and contextualization can be further researched to determine whether or not the course materials are biased in favor of females.

Limitations

The developmental education systemin community collegesis characterized by uncertainty, lack of agreement on the definition of college-ready, the best strategies to overcome high costs, and the varied and often unknown benefits of remediation. Many who complete one developmental education course fail to enroll in the next course in the sequence (Johnson, Rochkind, Ott, & Dupont, 2014). In this study, consistent with national trends, less than one third of the entire study population who were channeled into developmental reading completed the first thirty credit hours of college work.

The evaluation of the data was disheartening and inconclusive, but could not reliably measure the effect of the College's developmental reading methodology and differentiate between both approaches through the sole use of a nationally-normed placement test. The COMPASS Reading placement test is a multiple-choice, computerized adaptive test that incorporates both comprehension from reading passages and tests of vocabulary in an assessment that is about forty-five items in length (Westrick & Allen, 2014). Confounding variables within the student populations may contribute to placement assessments, and the subject' subsequent educational accomplishments. This ambiguity is reflected in the variety of placement tests and cutoff points used by community colleges nationally. Even more important, there is no single assessment test score that clearly differentiates the developmental from the college-level student (Fain, 2012). At best, placement assessments approximate measures of readiness and are often supplemented with anecdotal evidence or other metrics. Using this single metric to gauge correlational indicators may be less than optimal.

Data were collected from only one higher education institution in a suburban venues in Northeast Ohio. Community colleges across the nation are located in a wide variety of locations and accommodate culturally diverse populations. And, while much care was used to create two representative and unbiased subject groups, one hundred students in the study was a very small percentage of the overall population of developmental reading students enrolled in the college (approximately 13,000 total). Because of the six-semester timeframe of the study, part-time students and students who took off one or more semesters and then returned within the study period may not have reached the measured credit-hour milestones yet. Thus, the setting and time frame of the study way limit the applicability of the results.

Another limitation to the study lies in the subjects themselves. No academic data were collected from students except for their GPA and persistence. The level of success in each section of the test, then, could have resulted from a variety of factors, including their success in their preparatory classes, their motivation, their relationship with their

academic instructors, or their amount of effort while completing the COMPASS Reading placement test, before or after the intervention. Two students with the same score on an assessment test may have needed completely different types of assistance to be successful in college-level courses due to confounding variables. This is consistent with the weak relationship between test scores and subsequent measures of student success in developmental and college level courses. While correlation does not prove causation, students whose skills are so weak that they could not be successful benefit little from developmental courses (Bailey, Jeong, & Cho, 2008). A limitation of this study, then, was the fact that the degree of skill deficiency and the specific, individualized needs of each subject, were not considered in course assignment or data analysis.

Despite these limitations, the results are compelling. Both the accelerated and two-course models provide students with an opportunity to strengthen their skills in reading comprehension and identify which students are more likely to succeed through comprehensive assessment and highly structured approaches to instruction. The goal is to produce students who are independent in their academic choices through a transitional sequence of reading instruction that will teach them how to participate actively and independently in their own learning at the college level. Thus these findings are compatible with professional literature which clearly suggests that underprepared students need a learning environment that respects and motivates them as they make a difficult and relatively rapid transition to college level study (Boylan & Eaton, 2001).

Implications

The results of this study impact both private and state higher education institutions nationwide. Neither the strategic acceleration of qualified developmental reading students to college-level coursework nor the completion of the traditional, more time-intensive sequence for students who were not eligible for accelerated placement were solely significant in predicting persistence or GPA. The findings of the study are especially significant for community college institutions. Evidence now exists that more than one instructional strategy can be effective in developmental reading instruction and not all traditional routes need to be replaced by accelerated models. The findings of the study indicate that either approach can be appropriate and productive, especially for those who need the remedial reading benefits that a two-semester developmental sequence offers. Reducing the length of the developmental reading sequence for those students with higher pre-course placement scores may be an effective practice in higher education and deserves additional study. This can be accomplished by monitoring progress at regular intervals based on demonstrated competency so that those students who need additional remediation receive it, while those who do not, accelerate faster towards their educational goals. Thus, subjects may demonstrate improved outcomes via a flexible scheduling, intervention model. Additional data could support the efficacy of such remedial designs.

It is crucial to ensure that the curriculum in developmental courses provides students with what they need to succeed in college-level courses because the demands of college-level academic literacy require higher order knowledge and skills. Thus, selected models also need to ensure that the numbers of students persisting in college-level gateway courses increases. The National Study of Developmental Education (Boy1an, Bonham, & Bliss, 1992) indicates, "with the help of developmental programs, underprepared students can pass courses and graduate at rates equal to or greater than those of better prepared students. Without this help large numbers of potentially successful students would be unable to complete college" (pgs. 2-3). To help improve student progress through developmental education, pursuing such strategies and models while also looking for more innovative intervention may positively impact student achievement.

The results of this study should be approached with caution, as the literacy gains cannot be causally linked to either acceleration or the two-course completion of the developmental reading sequence. Innovative efforts within the college of the study are aligning developmental and college-level practices and to advance developmental students' progress to college-level work through contextualized content. Other, nonintervention-related factors, such as student motivation, SES, and prior educational experiences have influenced study results, and warrant additional exploration and research.

Recommendations for Further Study:-

The results of this study helped to fill the gap in the existing body of literature involving developmental education reading programs and student performances on standardized tests. The results of this study do not prompt higher education institutions to implement acceleration into community colleges as a mode of improving student performance and completion rates. This research prompted three recommendations.

First, the recommendation for practice from this research is that institutions should seek to find developmental education programs that produce outcomes highly and positively correlated with standardized, nationally normed test scores. The results from this current study only suggest that no correlation between the accelerated pathway and persistence and GPA was found to exist.

A second recommendation is for a further research study be conducted to indicate whether other reading programs are associated with higher levels of correlation and academic success. Although most developmental education reading programs address the overall goal of increasing students' reading, specific components of other reading programs might indicate a higher correlation between, for example, contextualized reading programs and higher test scores.

A third recommendation is for future research. Conducting experimental research would assess positive effects of intervention models. Different groups of students within the same college could be used as control and experimental groups. If the groups were also matched on prior academic performance and other criteria, a researcher could implement an accelerated program in one group to see if the participation produced different results on standardized tests. The use of an experimental study might diminish the effects of many of the limitations of the current study and could produce results that might be more compelling for higher education institutions guiding developmental education policy and procedure.

Dissemination of Results

The merit of any research endeavor is the dissemination of research findings through different media routes such as publication media, academic works, and the worldwide web. Peer-reviewed research journals and e-journals as well as modern technology should be provided and be made accessible for effective and wider dissemination. To further guide professional practice, this study's research results and initiative, will be shared via candid interaction among researchers and target audiences through the Ohio Association of Developmental Education, the National Association of Developmental Education, the Completion by Design Cadre and other state and national community college-specific organizations. Additionally, this research will be included in the published papers of at least one regional/national developmental education organization.

Conclusions:-

While the effects of developmental reading on academic performance have been studied, the specific link between acceleration, persistence, and GPA is an area that needs additional research. Further exploration of the data for relevant trends uncovered some promising correlations. Persistence and GPA for those students who needed both courses in the developmental reading sequence produced results similar to those enrolled in the expedited model. Thus, enrolling in the second course was non-punitive. As documented in chapter four, all students who were routed through the two-course model averaged a gain of at least one standard deviation while the total expedited group averaged gains of three or more standard deviations. In the college of the study, developmental reading intervention, regardless of model, was effective for the students who persisted, as measured by their literacy skill gains.

The purpose of this study was to fill that gap in the literature. And, although another purpose of this study was to compare students who were expedited through the developmental reading sequence completing only one semester of intervention, to students who were not expedited and completed two courses of the developmental reading sequence, persistence and GPA were not correlated with the route of completion. Pursuing and implementing promising, developmental reading practices without first contributing to the body of predictive knowledge could cause unintentional obstacles to student persistence. The results of this study challenge higher education institutions to first conduct internal research to identify effective components in their current developmental education programs that may be incorporated into evolving models, offering enhanced opportunities to support essential academic preparation skills and increasing the likelihood of student success.

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Appendix A:
Expedited Group Core Data Set: Subjects A1 – Y1

ID	≥ 30 credit hours		Gender	GPA	Pre-Course	Post-Course	σ
	Yes	No	M/F		Score	Score	
A1		X	M	1.235	66	87	2
B1	X		M	1.818	57	87	3+
C1		X	M	1.795	63	86	2
D1	X		F	2.482	46	86	3+
E1		X	M	1.200	64	80	2
F1	X		F	3.065	45	80	3+
G1		X	M	2.154	64	87	2
H1	X		F	3.257	62	81	2
I1		X	M	1.636	62	80	2
J1		X	F	2.536	60	89	3+
K1		X	F	3.385	61	95	3+
L1		X	M	3.571	59	89	3+
M1		X	F	2.000	56	85	3+
N1		X	F	2.000	45	83	3+
O1	X		M	2.595	64	92	3+
P1	X		F	2.818	67	81	1
Q1		X	F	3.333	58	80	2
R1	X		M	3.250	53	90	3+
S1		X	F	2.000	53	80	3+
T1		X	F	1.167	47	80	3+
U1		X	M	2.813	60	80	2
V1	X		F	2.750	63	99	3+
W1		X	F	2.167	54	94	3+
X1		X	M	2.357	43	82	3+
Y1		X	M	1.588	65	87	2

Appendix B
Expedited Group Core Data Set: Subjects Z1 – XX1.

ID	≥ 30 credit hours		Gender	GPA	Pre-Course	Post-Course	σ
	Yes	No	M/F	Score	Score		
Z1	X		M	2.471	60	81	2
AA1	X		F	3.167	45	80	3+
BB1	X		M	1.611	60	89	3+
CC1	X		M	4.000	63	85	2
DD1	X		F	2.853	64	83	2
EE1	X		M	3.111	52	81	3+
FF1	X	F		2.714	61	94	3+
GG1	X	M		1.091	60	99	3+

HH1	X	F		1.704		61		85	3+	
II1	X		M		2.304		65	82		2
JJ1	X	F		0.923		26		88	3+	
KK1	X	M		0.000		64		81	2	
LL1	X	M		3.250		62		93	3+	
MM1	X		F		2.394		58	80		2
NN1	X	F		3.444		52		85	3+	
OO1	X	M		2.476		62		84	2	
PP1	X	F		1.500		45		81	3+	
QQ1	X	F		2.139		65		95	3+	
RR1	X	F		0.938		61		87	3+	
SS1	X		M		3.108		62	86		3+
TT1	X		F		2.600		61	93		3+
UU1	X	F		4.000		61		83	2	
VV1	X		F		2.703		63	86		2
WW1	X		F		2.974		51	82		3+
XX1	X	F		3.520		61		83	2	

Appendix C

Two-Course Group Core Data Set: Subjects A2 – Y2

ID	≥ 30 credit hours		Gender	GPA	Pre-Course	Post-Course	σ
	Yes	No	M/F	Score	Score		
A2	X		F	2.373	65	74	1
B2		X	M	0.615	30	58	3+
C2		X	M	2.933	60	54	0
D2		X	M	3.000	55	69	1
E2		X	M	0.000	60	69	1
F2	X		F	3.367	55	68	1
G2		X	M	0.000	56	64	1
H2		X	M	1.417	57	70	1
I2	X		F	2.667	49	54	1
J2		X	F	0.000	46	61	1
K2		X	F	0.941	59	74	1
L2		X	M	0.769	52	62	1
M2		X	F	2.333	42	62	2
N2		X	M	0.200	45	73	3+
O2		X	M	0.000	41	55	1
P2	X		M	2.559	60	71	1
Q2	X		F	3.303	29	43	1
R2		X	M	2.147	56	72	2
S2		X	M	0.938	56	41	0
T2		X	M	0.000	49	63	1
U2	X		F	2.667	40	70	3+
V2	X		F	2.844	59	64	1
W2		X	F	1.143	62	69	1
X2		X	F	0.000	53	67	1
Y2		X	F	3.000	62	78	2

Appendix D

Two-Course Group Core Data Set: Subjects Z2 – XX2.

ID	≥ 30 credit hours		Gender	GPA	Pre-Course	Post-Course	σ
	Yes	No	M/F	Score	Score		

Z2	X		F		2.143		54		78	3+
AA2		X	M	2.147		58	72		1	
BB2		X	F		3.500		57		59	1
CC2	X		M		2.765		47		71	3+
DD2	X	F		2.373		65	74		1	
EE2		X	F		2.143		52		78	3+
FF2	X		M		2.235		54		72	2
GG2	X		F		2.892		63		76	1
HH2		X	M		2.417		36		76	3+
II2	X		F		3.472		47		59	1
JJ2		X	M		0.000		49		41	0
KK2		X	F		1.833		38		54	2
LL2		X	M		0.000		64		62	0
MM2		X	F		3.545		59		74	1
NN2		X	F		2.429		52		64	1
OO2		X	F		1.960		61		74	1
PP2		X	F		2.385		64		77	1
QQ2		X	F		1.765		20		69	3+
RR2		X	F		0.158		53		54	1
SS2		X	F		3.217		52		75	2
TT2		X	M		0.000		48		68	2
UU2		X	F		4.000		54		77	2
VV2	X		M		1.738		16		79	3+
WW2		X	F		2.667		57		77	2
XX2		X	F		2.000		49		73	3+

Appendix E

Expedited Group Fall 2014 and Spring 2014 Enrollment Data: Subjects A1 – Y1.

ID	Enrolled Spring 2014		Enrolled Fall 2014			
	No	Yes	No	Fin Aid Hold	Yes	# hours
A1	X				X	6
B1		X			X	6
C1		X	X	X		
D1		X			X	6
E1	X		X	X		
F1		X			X	7
G1	X		X	X		
H1	X		X			
I1	X		X	X		
J1	X		X			
K1	X		X	X		
L1	X		X			
M1	X		X	X		
N1	X		X	X		
O1		X	X			
P1	X				X	6
Q1	X		X			
R1		X			X	6
S1	X		X			
T1	X		X	X		
U1	X		X			
V1		X			X	9
W1	X		X			

X1	X	X	X	
Y1	X	X		

Appendix F
Expedited Group Fall 2014 and Spring 2014 Enrollment Data: Subjects Z1 – XX1.

ID	Enrolled Spring 2014		Enrolled Fall 2014			
	No	Yes	No	Fin Aid Hold	Yes	# hours
Z1	X		X			
AA1	X		X			
BB1	X		X			
CC1	X		X			
DD1		X			X	8
EE1		X			X	9
FF1	X		X			
GG1	X		X	X		
HH1	X		X	X		
JJ1			X			
KK1	X		X	X		
LL1	X		X	X		
MM1		X			X	7
NN1		X	X			
OO1	X		X	X		
PP1	X		X			
QQ1	X		X			
RR1	X		X	X		
SS1	X		X	X		
TT1	X				X	15
UU1	X		X			
VV1	X		X			
WW1	X				X	6
XX1	X				X	12

Appendix G
Two-Course Group Fall 2014 and Spring 2014 Enrollment Data: Subjects A2 – Y2.

ID	Enrolled Spring 2014		Enrolled Fall 2014			
	No	Yes	No	Fin Aid Hold	Yes	# hours
A2		X			X	6
B2	X		X			
C2	X		X	X		
D2		X	X			
E2	X		X	X		
F2		X			X	7
G2	X		X			
H2	X		X	X		
I2		X			X	7
J2	X		X			
K2	X		X	X		
L2	X		X			
M2	X		X			
N2	X		X	X		

O2	X		X	X		
P2		X	X			
Q2		X			X	9
R2	X		X	X		
S2	X		X	X		
T2	X		X	X		
U2		X			X	12
V2		X			X	7
W2	X		X			
X2	X		X	X		
Y2	X		X			

Appendix H

Two-Course Group Fall 2014 and Spring 2014 Enrollment Data: Subjects Z2 – XX2.

ID	Enrolled Spring 2014		Enrolled Fall 2014			
	No	Yes	No	Fin Aid Hold	Yes	# hours
Z2	X		X			
AA2	X		X	X		
BB2	X		X	X		
CC2	X		X			
DD2		X			X	6
EE2	X		X			
FF2		X	X	X		
GG2		X			X	9
HH2	X		X			
II2		X	X			
JJ2	X		X	X		
KK2		X	X	X		
LL2		X	X			
MM2		X	X	X		
NN2	X		X	X		
OO2	X		X			
PP2	X		X			
QQ2	X				X	9
RR2	X		X	X		
SS2	X		X	X		
TT2	X		X	X		
UU2	X		X			
VV2	X		X			
WW2	X		X	X		
XX2	X		X			