

Abstract

Title of Document: THE IMPACT OF AN ONLINE LEARNING
CREDIT RECOVERY PROGRAM ON THE
GRADUATION RATE OF STUDENTS
RECEIVING FREE AND REDUCED
MEALS

Jake Heibel, Doctorate of Education, 2017

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Low-income students are five times more likely to drop out of high school than their high-income peers (Chapman, Laird, Ifill, & KewalRamani, 2011). While race, geography, economic conditions, access to high quality teachers, gender, and age are measures often used to determine if a student is likely to drop out of school, economic conditions are the single variable that most closely predicts dropout potential (Mid-Atlantic State Department of Education). As an intervention tool, “online coursework may lead to increased self-efficacy in at-risk students if adequate supports are in place to

help them to succeed” (Lewis, Whiteside, and Dikkers, 2014). According to Lips (2010), “Online learning could address many discrepancies in American education in terms of the disparate access to high-quality teachers and instruction caused by socioeconomic and geographic differences” (p. 4). Describing the impact of online learning on at risk students, Archambault et al. (2010) said, “Virtual school programs find that taking advantages of the technology, various curriculum programs and being able to individualize instruction are effective strategies for meeting the needs of at-risk students” (p. 7). The purpose of this study was to examine the impact of an online learning credit recovery program on the graduation rates of students receiving free and reduced meal benefits at a high school in the Great Lakes Public Schools (a pseudonym) located in Mid-Atlantic State. The study compared the graduation rates of FARMS students who participated in the APEX online learning program against FARMS students who did not participate in the program. The results failed to reject the null hypothesis indicating that there was no statistical difference between the two groups. This study may be useful as the district seeks to evaluate the effectiveness of its intervention programs for struggling students.

**The Impact of an Online Learning Credit Recovery Program on the Graduation Rate of
Students Receiving Free and Reduced Meals**

By

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**Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
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Dedication

I would like to dedicate this to my wife, Tracey Heibel, for her unwavering support, encouragement, and unconditional love without such this would not have been possible.

Acknowledgements

I would like to acknowledge Dr. David G. Imig, Committee Chair, for his continued support and encouragement throughout this process. I would also like to acknowledge Dr. Margaret McLaughlin for her advice and guidance. Lastly, I would like to thank the other members of the committee-Dr. Patricia Richardson, Dr. John Norris, and Dr. Helene Cohen-for their time, advice, and support.

In July 2014, the School Superintendent of the Great Lakes School System (a pseudonym) helped to frame the problem of practice that is used for this study and that of my colleague Wendy Zimmerman. At that session, the Superintendent highlighted the problem of high student attrition rates among low-income students in the Great Lakes School District. He noted that the school district had in the past invested in several interventions to address the problem and that he wanted evidence that these interventions had had a beneficial affect on student retention. He identified two interventions that he was most interested in and these became the focus of our two studies. This study and that of my colleague are attempts to respond to the Superintendent's request for analysis and understanding. They conform to the expectations of the University of Maryland and the Graduate College. It should be noted that there was on-going interaction between the Superintendent, Ms. Zimmerman and this research during the ensuing thirty months regarding the progress of the studies and their possible findings. There was also continuing cooperation as Ms. Zimmerman and this researcher explored earlier interventions in Great Lakes, looked at similar studies conducted in other school districts, and considered the literature on student poverty and student retention. I would like to acknowledge the on-going encouragement and collegueship of Dr. Zimmerman and express my appreciation to for her collaboration throughout this process.

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Section 1: Statement of the Problem

School attrition among students identified as free and reduced meals (FARMS) students in Great Lakes Public Schools (GLPS; a pseudonym) is substantial. FARMS students are dropping out of school in Great Lakes at a rate almost five times greater than non-FARMS students.

Students who are eligible to receive FARMS benefits live in households earning at or below 130 percent of the Federal poverty guidelines. Eligibility for FARMS is used as a proxy for student poverty by GLPS. The Mid-Atlantic State Department of Education in which GLPS is located, uses FARMS data to rank schools from greatest to least amount of poverty (Mid-Atlantic State Department of Education, 2015). While FARMS status among students is a reality that schools cannot change; GLPS has implemented a variety of programs to support FARMS students.

Scope of the Problem

There is substantial evidence that a strong connection exists between educational success and economic disadvantage. Among the many impacts of poverty on students from low-income families are high rates of student attrition. Data shows that the higher the rate of student poverty in a school, the higher the rate of student attrition. While rates of student attrition have declined for students in low and middle-income family groups, those rates remain at unacceptable levels (DePaoli et al., 2015). The National Center for Educational Statistics (2015) reinforced this conclusion:

Dropout rates declined from 24 to 11 percent for those in families with the lowest incomes (the bottom 25 percent of all family incomes), from 15 to 9 percent for those in "middle low" income families (families with incomes between the 25th percentile and the

median), and from 9 to 5 percent for those in "middle high" income families (families with incomes between the median and the 75th percentile). For those in the highest income families (the top 25 percent of all family incomes), there was no measurable difference between the 1990 and 2013 dropout rates (3 percent in both years). During this period, the dropout rates for those in the highest income families were consistently lower than the rates for those in all other income groups. Conversely, the rates for those in the lowest income families were consistently higher than the rates for those in the "middle high" and "middle low" income families, with the exception of 2013 when the rates between those in the lowest income families and those in the "middle low" income families were not measurably different. While differences between those in the lowest income families and highest income families have remained, the gap in the dropout rate between these two groups narrowed from 21 percentage points in 1990 to eight percentage points in 2013. (para. 4)

The impact of poverty on low-income students is striking in many ways. Low-income students are five times more likely to drop out of high school than their high-income peers (Chapman, Laird, Ifill, & KewalRamani, 2011). The Mid-Atlantic Department of Education has noted that race, geography, economic conditions, access to high quality teachers, gender, and age are measures often used as predictors of student attrition with economic conditions being the single most important variable that best predicts dropout potential (Mid-Atlantic Department of Education, *Plan to Ensure Equitable Access to Excellent Educators*, 2015). The same state noted that high school students from the wealthiest families in the state are about seven times more likely to graduate than their classmates from the poorest families (Amos, 2008; a Mid-Atlantic State Department of Education, 2015).

The Mid-Atlantic state has evidence that parallels national data concerning the challenge of student poverty and student attrition. Low-income students enrolled in the Mid-Atlantic State school system are also more likely to drop out of school. FARMS students comprised 36.3% of high school students in this Mid-Atlantic State in 2013 (a Mid-Atlantic State Department of Education, 2015). FARMS students in this Mid-Atlantic State had a dropout rate of 13.5% among students receiving FARMS in 2013 as compared to a dropout rate of 7.3% for non-FARMS students. While this is a decrease from 2011, when this Mid-Atlantic State had a dropout rate of 14.4% for students receiving FARMS and 9.9% for non-FARMS students, this remains a substantial challenge (a Mid-Atlantic State Department of Education, 2015). It shows that while this Mid-Atlantic State has experienced a modest reduction in the non-FARMS dropout rate between 2011 and 2013, there was not a significant reduction in the FARMS dropout rate during this period.

The Mid-Atlantic State measures dropout rates for schools and school systems using a cohort model. The model includes the number of students, who enter a school in 9th grade, adjusted for students who transfer or leave, as the-class of students. A cohort is defined as the total number of students after four years of high school for that particular graduating class (a Mid-Atlantic State Department of Education, 2015). This Mid-Atlantic State Department of Education uses this cohort number (see figure 1) as the basis for reporting rates of student attrition.

Four-Year Adjusted Cohort Dropout Rate	Dropouts	Students who terminate formal education for any reason other than death
	Adjusted Cohort	
<hr/> (Number of First Time 9th Graders) + (Students who transfer in) - (Students who transfer out, emigrate, or die) during the 4 year period <hr/>		

Figure 1. Four-Year Adjusted Cohort Dropout Rate Calculation. This figure illustrates the calculation for the cohort dropout rate.

Data from the school district parallels that found for Mid-Atlantic State. That data confirms that students who receive FARMS benefits in GLPS are almost five times more likely to drop out than their non-FARMS peers. GLPS reported a 14.1% FARMS dropout rate and a 3.5% non-FARMS dropout rate in 2013. While these rates were lower than previous years, when the GLPS FARMS dropout rate was 22.7% and the non-FARMS dropout rate was 4.8% (2012) and 24.8% versus 7.2% (2011) it was determined that such rates of attrition were unacceptable (Mid-Atlantic State Department of Education, 2015). Attention shifted to the large gap that existed and ways to retain more FARMS students from 2011 through 2013, the three high schools in Great Lakes Public Schools (Chapel, Lakeland, and Great Falls; all pseudonyms) experienced a decrease in their FARMS dropout rates.

	Chapel HS		Great Falls HS		Lakeland HS		GLPS	
	FARMS dropout rate	Non-FARMS dropout rate	FARMS dropout rate	Non-FARMS dropout rate	FARMS dropout rate	Non-FARMS dropout rate	FARMS dropout rate	Non-FARMS dropout rate
2011	17.1%	6.5%	26.2%	12.6%	27.9%	4.3%	24.8%	7.2%
2012	21.5%	4.9%	23.9%	6.6%	21.2%	3.5%	22.7%	4.8%
2013	9.5%	5.6%	14.0%	3.5%	19.4%	<3%*	14.1%	3.5%
2014	13.2%	4.4%	12.1%	<3%*	9.2%	<3%*	11.6%	<3%*

TABLE 1. GLPS Dropout Rates by High School (HS) and Great Lakes Public Schools.

*Once a dropout rate is less than 3%, the actual percentage is no longer reported (Mid-Atlantic State Department of Education, 2015)

Table 1 shows that despite the decrease in overall dropout rates, significant gaps remain between FARMS and non-FARMS dropout rates at all three high schools. Students receiving FARMS benefits at Chapel HS remained twice as likely to drop out than did their non-FARMS peers. Students receiving FARMS benefits at Great Falls H.S. were five times more likely to drop out than their non-FARMS peers, and at Lakeland HS, students receiving FARMS benefits

were six times more likely to drop out than their non-FARMS peers. What was happening in GLPS paralleled what was happening in Mid-Atlantic State as well as at the national level.

Consequences of Not Addressing the Problem

Poverty, according to the United States Census Bureau (2014), “is the minimum level of resources that are adequate to meet a person's basic needs.” The Department of Health & Human Services adjusts the poverty thresholds annually to reflect the cost of living and the needs of families of different types and sizes. According to the Census Bureau, people and families are classified as poor if their income is less than their poverty threshold (United States Census Bureau, 2014). According to the U.S. Census Bureau’s *Current Population Survey* (2014), 22.5% of US citizens without a high school diploma are living below poverty and face many challenges.

Individuals who fail to earn a high school diploma are at a great disadvantage, and not only when it comes to finding good-paying jobs. They are also generally less healthy and die earlier, are more likely to become parents when very young, are more at risk of tangling with the criminal justice system, and are more likely to need social welfare assistance. Even more tragic, their children are more likely to become high school dropouts themselves, as are their children’s children, and so on, in a possibly endless cycle of poverty. (Amos, 2008, p. 1)

In 2014, more than 46 million people lived below the poverty line. The effects of poverty are most evident in high rates of malnutrition among children of poor families, in the health of children (including high rates of child mortality), in low rates of school attendance (and high rates of illiteracy), in reduced employment rates, and in the rates of crime and homelessness (Borgen Project, 2014). The costs of these conditions on society are enormous with billions of

dollars lost by society when individuals drop out of high school. Young adults who drop out of high school are a concern as they are students who are not equipped with skills necessary for the work force and who will face severe economic and occupational disadvantages as they proceed through life (Neild, Stoner-Eby, & Furstenberg, 2008). High school dropouts make up 6.4% of the United States unemployed compared to 3.5% who have a high school diploma (Neild et al., 2008). Students who drop out of high school lack basic skills to maintain jobs and if they do have employment, it is often in low paying jobs. Among adults age 25 and older, dropouts constitute a lower percentage of the labor force than do adults who earned a high school diploma (Chapman et al., 2011). The civilian population 25 years and over with less than a high school diploma had an unemployment rate of 9.4% while high school graduates with no college experience had an unemployment rate of 5.7%, according to the United States Department of Labor (2015).

High school dropouts who are employed earn far less than those who have completed secondary school. Dropout over a working lifetime, ages 18-64 “earn \$400,000 less than those who graduated from high school” (Northeastern University Center for Labor Market Studies, 2009, p. 3). The employability of high school dropouts has faced significant challenges since 1967, with steep declines in the earning potential for high school dropouts (Amos, 2008). Amos (2008) goes on to state:

In 1967, almost half of families headed by high school dropouts and 70 percent headed by high school graduates had earnings between \$28,000 and \$81,000 in current dollars and were considered part of the middle class. By 2004, only one third of dropouts and half of high school graduates were still in the middle class; virtually all high school dropouts had fallen

below the middle-class threshold of \$28,000 and into the bottom 20 percent of family incomes. (p. 9)

Incarceration among high school dropouts is another significant problem. The US Department of Justice in 2003 found that nearly 75% of America's state prison inmates, almost 60% of federal inmates, and almost 70% of jailed inmates had not completed high school (Wolf Harlow, 2003). In 1997, it was also found that almost half of inmates (46.9%) with parents who had received welfare or who lived in public housing had attained less than a high school diploma (Wolf Harlow, 2003). While there are many explanations as to why people with more education commit less crime, Amos (2008) suggests the potential impact of education on criminal behavior include:

- Someone with a high school diploma or better earns higher wages through legitimate work, thus reducing the individual's perceived need to commit a crime or raising the potential cost of crime —getting caught and being incarcerated—to unacceptable levels.
- The stigma of a criminal conviction may be greater for professional workers, who tend to have higher levels of education, than for those in lower-paying, lower-skilled jobs.
- More time spent in the classroom may play a role in instilling values that are opposed to criminal actions.
- Criminal behavior that begins during youth can continue into adulthood. By keeping adolescents in the classroom and off the streets, later criminal activity may be avoided.

Amos (2008) concludes that whatever the underlying causes, education is clearly related to crime prevention and the personal safety of the population (p. 13). One of the most important considerations for policymakers is that, in general, the U.S. spends less money on one year of a student's education than the nation spends on one year of a prisoner's incarceration. On average, the US spends \$12,608 a year to educate a student (Carver & Lewis, 2011) while on average; the US spends \$31,286 per year per inmate (Henrichson & Delaney, 2012).

For comparison purposes, Great Lakes County (a pseudonym), including the general operating budget but excluding capital budget funds, spent a total of \$99,018,732 for 17,887 students in 2014, which calculates to an average spending of \$5,536 per child in K-12 education (Board of County Commissioners, 2014). At the same time, Great Lakes County spent \$10,610,931 for the county adult correctional facility (Board of County Commissioners, 2014), which has at its maximum 230 inmates (Great Lakes County Sheriff, 2015) for an annual per inmate cost of \$46,134. A difference of \$40,598 is spent on incarcerating an individual versus educating youth in Great Lakes County.

Another salient fact is that students who persist in their education have longer life expectancy than students who drop out (Picker, 2015). One study concludes:

As a result, the health returns to education can outweigh even the financial returns. Using data from the National Longitudinal Mortality Study (NLMS), the authors find that one more year of education increases life expectancy by 0.18 years, using a 3 percent discount rate, or by 0.6 years without any discounting. Assuming that a year of health is worth \$75,000 - a relatively conservative value - this translates into about \$13,500 to \$44,000 in present value. These rough calculations suggest that the health returns to education increase the total returns to education by at least 15 percent, and perhaps by as much as 55 percent (Picker, 2015, para. 3).

In addition to promoting a healthier life and a longer life expectancy, more education translates into increased tax revenue and lower social welfare costs. According to Bridgeland, Dilulio, and Morison (2006, p. 2), 40% of 16 to 24 year old dropouts received some form of government assistance in 2001. According to these same researchers, high school dropouts were “twice as likely as high school graduates to slip into poverty from one year to the next”. One of

the most compelling studies comparing rates of poverty between those with only a high school diploma and college-educated adults, was that of the Pew Research Center (2014, para.12) which suggested that of “those aged 25 to 32, fully 22% with only a high school diploma are living in poverty, compared with 6% of today’s college-educated young adults.”

Several scholars point to the fact that the US pays a financial price for each individual who does not graduate from high school (Amos, 2008, Alliance for Excellent Education, 2011, Bridgeland et.al., 2006). Amos concluded that “a single high school dropout costs the nation approximately \$260,000 in lost earnings, taxes, and productivity” (2008, p. 2). The overall cost to the nation for each student that “drops out of school is from \$1.7 to \$2.3 million” (Bridgeland et al., 2006, p. 2). In times of economic turndown, high school dropouts face increased risks of unemployment (Alliance for Excellent Education, 2011, p.1).

The consequences of high rates of student attrition from high school is noted by Alliance for Excellent Education that warns that “dropouts represent a tremendous loss of human potential and productivity, and they significantly reduce the nation’s ability to compete in an increasingly global economy” (2011, p. 3). Researchers note that federal and state tax revenues are reduced because of the income levels of dropouts. Amos concludes that “high school dropouts influence a community’s economic, social, and civic health” (2008, p.5) and points to drop-outs needing to rely on government assistance programs and contributing less to the tax base, which in turn is how school systems are funded.

Policy Impacts on Poverty

The Director of the Great Lakes County (a pseudonym) Department of Economic and Community Development stated in 2009 that poverty was a significant problem in the county (Babcock, 2010). In response, Great Lakes County has designed and implemented programs in

all sectors including health, social services, housing, and schooling. Regarding the rate of poverty in Great Lakes County, Babcock wrote, “in 2009, the number of those living below the poverty line in [Great Lakes] was 9 percent” (2010, para. 3). The number of citizens without health insurance in the County increased by 6% from 2008 to 2009. Also, in 2009, the number of cases the Department of Social Services reported increased (Babcock, 2010) with the County’s Assistant Director for Family Investment and Child Support reporting that between 2007 and 2009, the number of food stamp recipients rose 33% (Babcock, 2010, para.13). An array of socio-economic problems confronts the County and these are the cause for the number of people living in poverty in Great Lakes County.

Other service agencies in Great Lakes County have responded to the concerns about high incidences of poverty in the County. In 2009, the Great Lakes County Health Department developed a list of priority health concerns with ways to address those concerns (Health Improvement Process, 2016). A community health needs assessment was conducted with four priority areas, including “healthy eating, active living, and overweight/obesity; tobacco use and exposure to secondhand smoke; behavioral health (including mental health and substance use); and access to healthcare services,” targeted for action. The County responded by assigning resources to improve health services in Great Lakes County (Health Improvement Process, 2016, para. 5).

The County’s Social Service agency also focused on poverty in Great Lakes County. In 2009, the SGLTCCAC (Southern Great Lakes Tri-County Community Action Committee, Inc., 2010; a pseudonym) was created in order to implement programs to assist people living in poverty; they also were to report annually on each program. They premised their work on the following guiding principles:

- Currently all people are not equal in their access to opportunities to create success.
- Every family should have the opportunity to financially support themselves.
- Children and families must be afforded quality services and opportunities that foster growth and development.
- Basic human needs must be addressed prior to implementing change.
- Housing opportunities must be made available at affordable levels for all persons.
- Affordable education, skill training and retraining must be available to all citizens.
- Affordable support systems: transportation, child and adult care, and services to the disabled are needed to encourage economic independence. (p. 1)

SGLTCCAC (2010) implemented a series of initiatives in 2009 to address poverty. They included:

- Career Training School for Class B Commercial Driver's License
- Child and Family Services
- Energy Assistance
- Adult Day Care
- Housing Preservation and Weatherization
- Mutual Self-Help Housing
- Rural Transportation
- Volunteer Services
- The Emergency Food Assistance Program. (p. 4).

One of the policy decisions to address poverty was to concentrate the majority of low-income housing - identified as “affordable to families earning below 45% of the County’s median household income.” Whatever the intent, what this did was to create a “low economic development district” (Great Lakes County Land Use & Growth Management, 2010) and to concentrate low-income students in one area of the County. This low economic district contains one high school, one middle school, and seven elementary schools.(Great Lakes Public Schools Directory, 2015) where students eligible for FARMS support are concentrated..

The housing policy decision impacted schools located within the low economic district. The high school, Great Falls, serving this population has a 37% FARMS population while the other two GLPS high schools have significantly lower populations of FARMS students, 20% for Chapel High School and 14% for Lakeland High School (Mid-Atlantic State Department of Education, 2015). In order to address the disparity in populations experiencing poverty in the school district, GLPS utilizes federal Title 1 funding and a per pupil expenditure and staffing allotment that the Board of Education can manipulate in order to allocate monies to schools that have higher numbers of low income students (Assurance of Comparable Services: Title, 2006). While federal funding for schools located in the low economic district are substantial, the district has policies that ensure that state and local funds for all schools in the district are distributed equitably. The GLPS Board of Education policy on equitability states, “Services provided with state and local funds in Title 1 schools are comparable to those provided in non-Title I schools” (Assurance of Comparable Services: Title 1, 2006). While schools labeled as Title 1 Schools receive additional funding so they have the same level of services and technologies as non-Title 1 schools, there is concern that schools in the low economic district should receive greater allocations to compensate for the socio-economic condition of the poorest students in the district.

The GLPS District has allocated monies to increase student retention from low-income families. The District has policies and programs that are targeted to students living in poverty. The Programs for at Risk/Disadvantaged Students (2011) states, “The primary goal of the Great Lakes Public Schools in the use of federal and state funds is to develop supplemental instructional programs for educationally disadvantaged students as designated by federal and state law and regulations.” This policy document allows for consideration to be given to supporting services that have a “direct bearing on the supplemental instructional programs developed for the designated educationally at-risk students” (Programs for At Risk/Disadvantaged Students, 2011).

Analysis of Prior Attempts to Address the Problem in GLPS

At least as early as 1996, GLPS had developed programs to address high poverty and high student attrition. In an interview with a former GLPS Superintendent, several such programs were outlined and discussed. According to the former Superintendent, GLPS established the Jumpstart program in 1996. This was an “early intervention program focused on elementary students receiving FARMS benefits” (Former Superintendent, personal communication, July 2, 2015). She indicated that her dropout prevention efforts were premised on a belief that such efforts had to begin in the early grades in order to keep students engaged and attending school. The former Superintendent (2015) pointed out, “Children can quickly fall behind and will eventually give up on school.” Jumpstart was implemented at three Title I designated elementary schools as a summer program that lasted six weeks. During this six-week period, students attended classes daily with a focus on reading and mathematics. Jumpstart students were chosen to attend the program through a recommendation by their regular classroom teachers. Transportation was provided as well as breakfast and lunch. Teachers in the

program were regular elementary certificated teachers who received eleven-month contracts versus ten-month contracts to teach in the summer program. Regarding the impact of the offered contract change on teachers, the superintendent said, “This increased their salary and counted in their retirement income calculations.” While data was collected on the success of the program, it was not published. Anecdotal evidence, based on student and teacher interviews at the time of the program, indicated “Jumpstart kept students from regressing over the summer and advanced them in their skills in reading and mathematics as well as giving students greater confidence” (Former Superintendent, personal communication, July 2, 2015). The Jumpstart program was offered over several years. Funding initially came from federal Title I monies and state grants. When the grant funding ended, the program was financed with continuing Title I funds as well as district operating funds. (Former Superintendent, personal communication, July 2, 2015). The former Superintendent reported that when she left GLPS in 2004, the program ended. There appears to have been no formal evaluation of the program and little information regarding why the program was terminated.

A second intervention that was introduced to address the needs of students living in poverty was a partnership with the local Naval Military Air Station through a School Liaison Officer. This partnership, which began in the late 1990s, took the form of mentors and tutors from the Naval Base working with elementary aged students. About the partnership, this former Superintendent said, “The program was and continues to be successful because many of the students targeted were students receiving FARMS services.” She noted, historically, students receiving FARMS services have fewer role models in their lives and are often living in volatile environments. She suggested that having adult role models encouraged students to attend school and be more engaged in the learning process (Former Superintendent, personal communication,

July 2, 2015). This partnership between the Naval Air Station and GLPS continues and, in 2015, expanded its tutoring services into middle and high schools (Current Superintendent, personal communication, July 2, 2015). There has not been a formal evaluation of the partnership program.

The former Superintendent discussed a third intervention for elementary students receiving FARMS benefits. This was the creation of a transportation hub system to serve students living in poverty. The former Superintendent noted that in elementary school, students were being forced to move their living locations due to financial hardship, thus creating emergency departures from schools. She perceived that this type of mobility was disruptive to student learning, especially in very early grades. She noted that a transportation hub was created to allow for the continuity of instruction in the same school for the student. In the 764 square mile school district of Great Lakes County, such transportation is feasible. Students were enrolled in one elementary school as their home school, and if they moved during the school year, they would be transported from the new area elementary school to their original or home school. The former superintendent saw this as attempt to stabilize the impact of high mobility among students receiving FARMS services (Former Superintendent, personal communication, July 2, 2015). Concerning the continuation of the program, the current Superintendent of GLPS, said, “The hub system is still in existence in GLPS in order to maintain continuity for students living in poverty with housing issues” (personal communication, July 2, 2015). Again, there has not been an evaluation and reporting on the hub intervention as conducted in GLPS.

During the tenure of this former Superintendent of GLPS, a fourth intervention was the establishment of an evening high school to serve particular students likely to drop out of high

school. Students who were in danger of dropping out were identified based on the number of credits earned. Certificated teachers were hired to instruct classes and students were taught in small groups. Students could earn original credit for coursework they had previously failed in order to catch-up to their same aged peers (Former Superintendent, personal communication, July 2, 2015). Regarding how the program was evaluated, the former Superintendent said, “Teachers and students who participated in the Evening High School Program were interviewed to determine the effectiveness of the program” (personal communication, July 2, 2015). From the interviews, it was determined that students benefitted the program and that they felt more confident because they had more attention from their teachers. The former Superintendent noted “the students were not embarrassed if they did not understand the material and formed support groups among their peers.” Data showed that students were earning their credits and graduating from high school (Former Superintendent, personal communication, July 2, 2015). Evening High School continued as an intervention program in GLPS until 2012. The current Superintendent reported, “the program ended because it was unsustainable as the GLPS budget was cut. It was also not accredited by Mid-Atlantic State Department of Education” (personal communication, July 2, 2015). Again, there was no further evaluation on the effectiveness of the Evening High School program nor noted in the form of a formal evaluation.

A fifth intervention for struggling students, described by the former GLPS Superintendent, was the Alternative Learning Center (ALC). Created in 1996, GLPS was the first effort at implementing an education program in Great Lakes Public Schools outside of the traditional school environment. The ALC targeted regular education students who needed an alternative placement in lieu of an expulsion. The former Superintendent noted that the ALC was a one-year placement that allowed students to receive educational services in a small

learning environment and was not intended for students with special needs. Assessing the sustainability of the ALC, the former Superintendent said, “The ALC was unsustainable because the students attending had more emotional and behavioral challenges than the school could address within their purview.” Another factor for ending the ALC occurred when a negative portrayal was given in the local newspaper” (personal communication, July 2, 2015). Again, there were no formal evaluations that were conducted on the original ALC model.

It is important to note that efforts were made to alter the original ALC model to accommodate the needs of particular students. In an effort to address the requirements of special needs students in the program, changes were made in 2001 to the ALC that would redefine its purpose and mission. Addressing the repurposing of the ALC, the then principal of the Center noted “the program changed its name to the White Oak Center and focused on students with special needs who required a nonpublic school placement” (Former Principal, personal communication, May 6, 2015). In order to qualify for the program, a student needed to have 20 or more days of absences and/or 10 or more days of suspension. Placement in the program could range from a marking period to an entire school year. The former Principal reported that the White Oak Center offered students a range of “research-based” programs such as Skill streaming training (a pro-social skills training program) and counseling (both individual and group) as well as other strategies to support students in graduating” (personal communication, May 6, 2015). The inability to sustain the program, due to the lack of funding, was noted by the former Principal. “The White Oak Center was closed when it was determined that the cost was greater than the benefit it was providing to GLPS” (Former Principal, personal communication, May 6, 2015). Again, there was never a formal evaluation of the program.

Another intervention used in GLPS to address the needs of students living in poverty was a small schools initiative. During an interview with the current GLPS Superintendent, he indicated that in 2002, GLPS received a \$500,000 Small Learning Community (SLC) grant from the Gates Foundation to promote the development of small schools. According to the current Superintendent, “the objective of the learning communities was to aid in the ninth grade transition year by grouping ninth grade students in an isolated area of the school so as to limit their exposure to the larger school environment as a whole, thus creating a smaller learning community.” Describing how small learning communities were staffed, the current Superintendent continued, “teachers were selectively chosen by school administration based on certification area and interpersonal skills. They were given room assignments near one another to facilitate collaborative planning” (personal communication, July 2, 2015). The Gates grant continued for four years to allow sufficient implementation of small learning communities (SLCs) within the three GLPS high schools for ninth grade students. The grant money was first used to implement SLC’s at Great Falls High School (GFHS), followed, two years later, by its introduction at Lakeland High School. The third high school in the District, Chapel High School, did not participate in the SLC movement. (Current Superintendent, personal communication, July 2, 2015). Addressing the sustainability of SLCs in the County,, the current Superintendent reported that “scheduling conflicts and lack of funding made the ninth grade learning communities unsustainable” (personal communication, July 2, 2015). As soon as the grant funding ended, SLCs were abandoned in GLPS. The current Superintendent suggested that “the financial burden was unsustainable to fund the extra faculty required” (personal communication, July 2, 2015). Commenting on the structural weaknesses of SLCs, the current Superintendent concluded, “Starting a school within a school was a daunting task and the heavy demands on the

development and operation were unsustainable” (personal communication, July 2, 2015). A formal evaluation on the SLC program in GLPS was not conducted.

GLPS Dropout Interventions

While all of the above interventions probably affected the retention rates of secondary school students living in poverty, we have no evidence to substantiate such claims. As previously noted, the dropout rate for FARMS students in GLPS did decline between 2011 and 2014. It is possible that this was due to two new interventions established at the high school level to target and improve rates of pupil retention. These interventions were blended learning, introduced to GLPS in 2012, and the Fairfield Academy; (a pseudonym) initiated in GLPS in 2008.

The Fairfield Academy is a program with a focus on preventing students from dropping out of high school (Fairfield Academy, n.d., Fairfield Academy [Brochure}, n.d.) that was opened in 2008.¹ Opened in 2008, Fairfield Academy draws students from the three high schools in Great Lakes Public School System (Zimmerman, 2017).

The second initiative focusing on students at risk of dropping out of high school was use of a blended learning model known as APEX. First adopted by the school system for use as an online learning intervention it seems to have much potential as a way to address the problem of high student attrition among FARMS students. According to the APEX website, APEX online learning is defined as:

Apex Learning is the leading provider of blended and virtual learning solutions to the nation's schools. The company's standards-based digital curriculum — in math, science, English, social studies, world languages, and Advanced Placement® — is widely used

¹ See Wendy L. Zimmerman (2017) Evaluation of an alternative school’s impact on the graduation rate overall and for the students receiving free or reduced price meals in one local school system. Submitted in partial fulfillment of the requirements for an education doctorate at the University of Maryland.

for original credit, credit recovery, remediation, intervention, acceleration, and exam preparation. (APEX Learning, 2016)

The use of the APEX online learning program was initiated to provide alternative ways for students to earn credits toward graduation. Through the use of APEX online learning, students in GLPS are able to make up classes they have failed, take classes for original credit, and recover failing grades within a class by completing unit recovery. Students who participate in blended-learning opportunities are identified based on their grades in current classes or credits previously failed. Certificated high school course instructors are assigned to support the students enrolled in the program, providing students with options throughout the school day as well as after school to participate in the program. No other factors, including FARMS status, are considered.

History of APEX in GLPS

As a person who was involved in 2011, Great Falls High School was asked to pilot a three-year program sponsored by the Colin Powell foundation known as APEX. After the three-year period, the school system had the option to continue with the program or not. The program originally started in Great Falls High School in the fall of 2011 but expanded to the other two high schools by the spring of 2012. Students engaged in the curriculum through the APEX platform with a certified classroom teacher in the room to assist if needed. In order to conduct the program with fidelity, a certified teacher was needed in the classroom to guide students, unlock aspects of the curriculum, and assist students with questions and concerns. Professional development was provided for teachers and staff on the functionality of the APEX program and strategies on how best to incorporate the APEX program into their everyday classrooms. The program, at first, was used at GFHS for students needing to recover half or whole credits in order

to meet their graduation requirements. In 2012, the school system changed its course credit system eliminating half credit bearing courses to yearlong credit bearing courses. This impacted the use of APEX in that more students used the program to recover marking period averages as opposed to half credits. Eligible students with low marking period grades could use the APEX program to raise their class average in the hopes of passing the course at the conclusion of the school year. Students could still use APEX to earn credits for failed classes but the primary use of the APEX program became a quarter recovery model throughout the school year.

In 2014, following the three-year pilot program, GLPS decided to fund the use of the program for every high school student in the school system. Funds in the school budget were diverted from the traditional summer school program to help pay for the APEX program. The expansion of the APEX program to all three high schools has allowed the school system to eliminate the traditional summer school program in favor APEX at each of the home schools. The current use of the APEX program has included students on home teaching, transfer students needing credits, as well as teachers within their classroom differentiating instruction and supplementing content material.

Literature Review: Online Learning

Great Lakes Public Schools (GLPS) Blended Learning Credit Recovery Program provides an opportunity for a student to retake a course in which he/she previously was not academically successful in earning credit towards graduation (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.). In GLPS, the online model, known as APEX learning, is an online learning platform designed to improve student achievement. The focus of this literature review is an examination of use of online learning in

K-12 public education and how Great Lakes Public School's use of APEX has similar characteristics described in the research.

Online learning is defined as “teacher-led education that takes place over the Internet, with the teacher and student separated geographically” (Watson et al., 2011, p.11). Staker & Horn (2012) indicate that the term “online learning” is used interchangeably with virtual learning, cyber learning, and e-learning (p. 3). The use of online learning as an intervention tool has varied across states and school districts since the early 2000's. Regarding the array of online models, Watson et. al (2014) describes:

K–12 teacher-led online courses are almost exclusively provided by state-supported virtual schools delivering supplemental online courses, and charter schools where students take all of their courses online. A small but growing number of school districts are also beginning to establish full-time online programs accessible to students regionally and across individual states. According to the report, *2014 Keeping Pace-Digital Learning*, the current national trend for online learning includes:

- Thirty states have fully online schools operating across the entire state, ensuring that students anywhere in the state can attend an online school.
- State virtual schools are operating in 26 states, providing supplemental online courses to students across their states.
- Eleven states have course choice policies or programs that are allowing students to choose online courses from one or more providers.

In Great Lakes Public Schools, online learning opportunities are available for original credit, credit recovery, quarterly recovery, and unit recovery in blended learning environments (“GLPS e-Learning,” n.d.). In Great Lakes Public Schools, a Blended Learning approach

combines face-to-face classroom methods with computer-mediated activities to form an integrated instructional approach (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.).

Various reports point to the use of online learning as an intervention tool for at-risk students. As an intervention tool, Lewis, Whiteside, and Dikkers (2014) suggests “online coursework may lead to increased self-efficacy in at-risk students if adequate supports are in place to help them to succeed” (p. 5). About the impact of online learning on at risk students, Archambault et al. (2010) said, “Virtual school programs find that taking advantages of the technology, various curriculum programs and being able to individualize instruction are effective strategies for meeting the needs of at-risk students” (p. 7).

Credit Recovery

The primary use of APEX in GLPS is to recover failed credits needed for graduation. Recognizing credit recovery can be an important strategy for dropout prevention. Great Lakes Public Schools is providing students the opportunity for grade recovery as part of an online credit recovery or blended learning recovery program (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.). The ability to make up failed credits appears to be an effective use of online learning. According to Franco and Patel (2011), “An effective use of online learning for at-risk students is to recover credits they had previously failed. Students have the ability to make up lost credits and get back on-track for graduation. Students can earn enough credits to graduate from high school by participating in credit recovery programs” (p. 19). Regarding the additional benefits of credit recovery programs, Franco and Patel (2011) say, “Credit recovery programs not only allow students to

recover credits, they also foster students opportunities to stay on track to graduate from high school in four years” (p. 25). Franco and Patel also suggest “recovery credit programs allow students to maintain class status with their peers, possibly contributing to higher self-esteem” (2011, p. 25). Great Lakes Public School’s Blended Learning Credit Recovery Program provides an opportunity for a student to retake a course in which he/she previously was not academically successful in earning credit towards graduation (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.).

Benefits of Online Learning

A potential appeal of online learning is the ability to offer an alternative to the traditional classroom setting by allowing students flexibility in the learning process. Hess and Fordham (2011) say, “Digital learning makes it possible to deliver expertise over distances, permits instructors to specialize, allows schools to use staff in more targeted and cost-effective ways, and customizes the scope, sequence, and pacing of curriculum and instruction for particular children” (p. 1). According to Lewis et al. (2014), “Online learning can provide students with greater flexibility in when and how they learn. Students may move at their own pace, completing learning modules one or two at a time, working ahead or working more slowly than the recommended pace” (p. 6). Student reactions to online learning and blended classrooms have elicited a positive response overall (Drysdale, Graham, Spring & Halverson, 2012, p. 96). Lips (2010) said of the positive benefits of online learning to students that struggle in the traditional classroom environment; “the flexibility of online learning can particularly benefit students who have specific challenges in their education; such as those who must change schools frequently and those who have fallen behind in their studies” (p. 4). About the flexibility of online learning

as a recovery option De, I.V., Keane, and Irvin (2011) say, “Online learning is considered a flexible option for non-traditional learners such as adults and home-schooled students, as well as a convenient way to deliver remedial courses” (2011, p. 35). Lips (2010) states, “Online learning has the potential to provide all children with customized education”.

Lips goes on to state that students can receive instruction at their own pace and in ways tailored to their unique learning styles and interests. Increased customization can make the learning process more enjoyable and productive (p. 4). The popularity of online learning has increased because of its ability to offer access to instructional content anytime, from any location (Means, Toyama, Murphy, Bakie, & Jones, 2009, p. 1). Teachers can use online learning to improve their level of instructional practices that include varied means of delivering content material that meet students’ needs: “Online learning can also provide teachers with new career options and increasingly give teachers more freedom to instruct students in a more productive way” (Lips, 2010, p. 4). In Great Lakes Public Schools, online learning (APEX) allows students the flexibility to make up credits after the normal school day and at their own pace. Through the use of online learning, students have had the ability to take multiple classes beyond the school day that they would not have been able to complete in previous years (“GFHS APEX” [Brochure], n.d.). The use of technology in a blended learning environment as an alternative to traditional classroom instruction individualized instruction and allows for scheduling flexibility (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.).

According to De, I. V., Keane, and Irvin (2011), “Online learning is also feasible and attractive for rural schools, which educate 29 percent of all K-12 students in the United States,

and often struggle to provide advanced courses and attract highly qualified teachers” (p. 35). Lips (2010) propose, “Online learning could address many discrepancies in American education in terms of the disparate access to high-quality teachers and instruction caused by socioeconomic and geographic differences” (p. 4). Regarding the impact of online learning on students careers, De, I. V., et al., (2011) claims online learning can “deliver an individualized, learner-focused educational experience that facilitates the communicative and collaborative skills needed by the twenty-first century workforce for lifelong and independent learning” (p. 35). About the efficacy of online learning, Lips (2011) said, “Emerging evidence suggests that online learning programs are effective” (p. 1). Lips (2010) continues, “The meta-analysis of empirical studies published by the U.S. Department of Education found that students who took all or part of their class online performed better than those taking the same course through traditional face-to-face instruction” (p. 1). The study concludes that students “indicated that online learning conditions produced better outcomes than face-to-face learning” (Lips, 2010, p.5).

Challenges

The challenge in studying the use of online learning for students in poverty is the limited number of empirical case studies of students in K-12. Online learning companies, who have a vested financial interest in the outcome and therefore may not be objective, fund a majority of these studies. The few studies that have taken an analytical look at the challenges of online learning have identified key aspects worth considering: “One challenge in online learning is the issue of establishing and maintaining student engagement and motivation, as not all students are self-motivated and on task with their learning” (Archambault, et al., 2010, p. 11). Regarding

difficulties students faced with online learning, Lewis, et al., (2014) said, “Students also had problems completing assignments in an online learning environment because of the flexibility they had in their online courses” (p. 5). Lewis et al (2014) continues, “The need to develop students’ time management skills were major challenges for at-risk populations in using the online learning format” (p. 5). In Great Lakes Public Schools online learners should be self-motivated, have good time management skills, and be willing to devote time to fulfill course requirements beyond scheduled class time (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.). Hess and Fordham (2011) identified three key mistakes that reformers make when discussing the use of virtual learning:

First reformers assert that the use of technology will eliminate all obstacles in traditional education. The second key mistake that reformers make is failing to acknowledge the implications of public attachment to familiar institutions and routines. Reformers make a third key mistake when they overlook the fact that K-12 education is publicly run, funded, and regulated, and therefore inherently political. (p. 7)

Hargrave and Curtin (2010) offer other challenges to consider when offering online learning opportunities for students: “Online learning requires the use of technology and not all students have access to the technologies to be successful in an online program” (p. 70). Additionally, use of online learning requires professional development for educators. About the challenges instructors face when implementing online learning, Hargrave and Curtin describe, “Teaching online is different from teaching face-to-face, and teachers need to learn how to effectively communicate and collaborate with students online” (p.70). Hargrave and Curtin (2010) go on to state, “One of the most important yet challenging aspects of offering

virtual courses is training for instructors. It takes time to develop content for online courses” (p. 71).

Literature collectively suggests that the use of online learning can benefit struggling students in terms of recovering credits needed toward graduation (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.). Online learning offers students alternatives to the traditional classroom setting, and greater flexibility that allows for individualized educational plans for students. Such individualized educational plans include the ability to condense a student’s schedule, complete classes after the school day, as well as the ability for students to complete classes at their own pace (“Online Original Credit and Blended Learning Credit Recovery Program Guidelines” [Brochure], n.d.). Hargrave and Curtin, 2010) indicate that the motivation of a student and a student’s access to technology remain challenges in using the online learning platform.

Section 2: Methodology

The purpose of this study was to determine if participation in the APEX online learning program was increasing the graduation rate of students who receive FARMS benefits at one particular High School in the Great Lakes Public School District. Through the study, the effectiveness of APEX program in increasing the graduation rate of students who receive FARMS benefits was analyzed. Specifically, this quantitative study involved the use of lagging data gathered from students during the 2012-2015 school year.

Research Questions

The following two research questions guided this study:

1. To what extent do FARMS students who participated in the APEX program demonstrate an increased graduation rate at Great Fall H.S. (GFHS) as opposed to the graduation rates of FARMS students who did not participate in the APEX program at the same high school? The hypothesis is that participation in the APEX program has positively impacted the graduation rate for FARMS students at Great Falls High School.
2. What are significant factors in predicting graduation for FARMS students participating in the APEX program?

Study Design

A correlational research design was used to help determine and to what degree a relationship exists between the predictor variable (FARMS students who participated in the APEX program) and the criterion variable (FARMS students who graduated). This study attempted to demonstrate a relationship between participation in the APEX program and an increased graduation rate for students receiving FARMS benefits.

Data Sources

Student data was provided to the researcher from the GLPS data specialist using the GLPS data warehouse. Student demographic information was used to determine FARMS status. Additional data included participation in the APEX program, graduation status, and student attendance. The names and identification numbers of students were removed to protect the confidentiality of each individual. Data analysis included a comparison of the graduation rate of students receiving FARMS-benefits who participated in APEX and those students receiving FARMS-benefits who did not participate in the APEX program from 2012 through 2015 school years. The unit of analysis was the individual student with a sample size of approximately 689 students who receive FARMS benefits.

Procedures

A Chi-squared test was used to analyze the data, which was counted and divided into categories. “The Chi-squared test is used primarily for determining whether a set of events has occurred as predicted by some assumption or theory” (Gellen & Hoffman, 1984, p. 264). According to Gellen and Hoffman (1984), the Chi-squared test is a test that “attempts to compare obtained results with those to be expected theoretically, based upon some hypothesis” (p. 264). The researcher believed the Chi-squared test was appropriate for this study.

A logistic regression model was then used to analyze the data further to determine if the APEX online learning program has had a statistically significant impact on the graduation rate of students receiving FARMS benefits. A logistic regression model is used to “describe the relationship between a response variable and one or more explanatory variables” (Hosmer, Lemeshow, & Sturdivant, 2013). According to Hosmer et al. (2013), the logic regression model is the most frequently use regression model for the analysis of this type of data (p.1).

Data was gathered on the total number of students receiving FARMS-benefits enrolled in the APEX program at GFHS from 2012 through 2015 who graduated compared to the number of students receiving FARMS-benefits who graduated without participating in the APEX program at GFHS during the same timeframe. A further comparison was made with FARMS students who completed APEX classes but failed to graduate and those FARMS students who did not complete an APEX class and did not graduate.

The criterion variable for this study was FARMS students who graduated from GFHS. The predictor variable was FARMS students who completed APEX classes. Other predictive variables include the number of APEX classes completed and attendance for entire high school enrollment.

Plan for Analysis

To begin the study, the researcher developed a pooled group of APEX eligible students. The pooled group consisted of FARMS students from the graduating years 2012-2015 who met the eligibility requirements for participation in the APEX program. In order to be eligible for participation in the APEX program, a FARMS student must have either failed a course for an entire year in school years 2012-2015 or failed a course for one marking period during the 2014-15 school year. Eligibility for marking period recovery was based on a student earning between 45%-59% average in a course during that marking period.

The pooled group consisted of 689 students. A subgroup was then pulled from the pooled group. This subgroup consisted of FARMS students from the graduating year of 2015 who met the eligibility requirements for APEX. This subgroup was extracted because this was the only group of students in the pooled group who had been eligible for participation in the APEX program for all four years of high school. This subgroup consisted of 93 students, 47 of

which participated in APEX (test group) and 46 who did not participate in APEX (control group). The researcher then sorted the student subgroup into four categories: 1) FARMS students with twenty or more days of absence who completed at least one APEX course and graduated, 2) FARMS students with twenty or more days of absences who did not complete any APEX courses and graduated, 3) FARMS students with twenty or more days of absence who completed at least one APEX course but did not graduate, and 4) FARMS students with twenty or more days of absence who completed no APEX courses did not graduate. A full day of attendance is defined as being present four or more hours of the school day.

This study will compare the graduation rates of students receiving FARMS benefits who participated in the APEX program to the graduation rate of students receiving FARMS benefits who did not participate in the program. The researcher will evaluate if the APEX intervention program increases the graduation rate of FARMS students, does not increase the graduation rate of FARMS students, or has no effect on the graduation rate of FARMS students. A trend line of the graduation rate for FARMS students from Great Falls High School will be established by reviewing the pre and post APEX graduation rates of FARMS students. The researcher will look at the graduation rate of FARMS students from 2009-2011 (prior) and 2012-2015 (post) the implementation of the APEX online learning program. The researcher predicts that there will be a positive relationship between FARMS students who completed courses in the APEX program and an increased graduation rate.

Section III: Results

This section presents the results of this study and details the answers to the following two research questions: To what extent do FARMS students who participated in the APEX program demonstrate an increased graduation rate at GFHS as opposed to the graduation rates of FARMS students who did not participate in the APEX program at the same high school? What are significant factors in predicting graduation for FARMS students participating in the APEX program?

The section begins with establishing a trend line of the graduation rate for FARMS students at Great Falls High School from 2009-2011(prior) and 2012-2015 (post) the implementation of the APEX online learning program. The section then reports the descriptive statistics of the pooled and comparison groups of this study. It then moves on to present the results from the Pearson chi2 test as well as the logistic regression models used to examine both sets of data. The section then moves on to discuss the results of the study, its limitations, the implications of the study, and recommendations for the school system. Lastly, this section outlines the summary and final conclusions of this study. The hypothesis for this study is that participation in the APEX program positively impacted the graduation rate for FARMS students at GFHS.

Descriptive Statistics

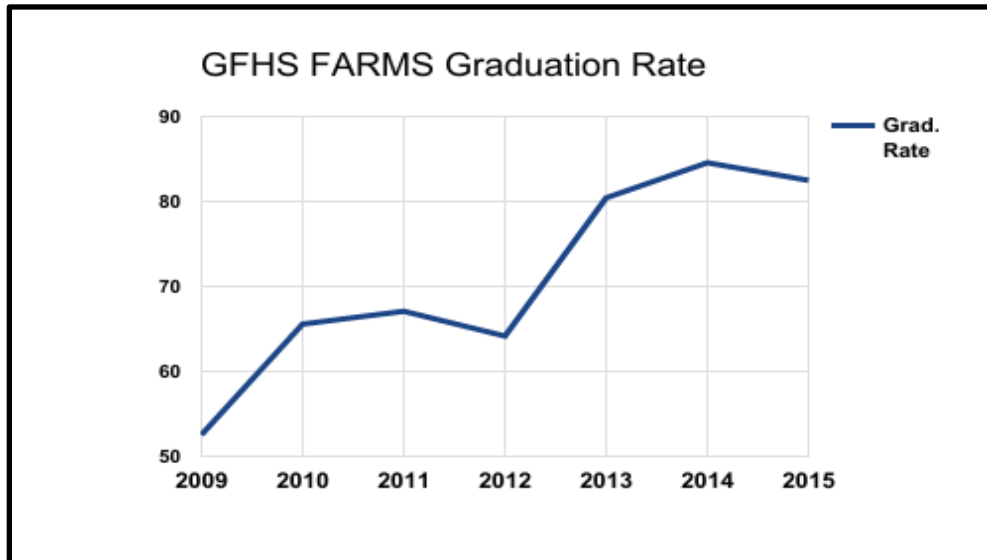


Figure 2. GFHS FARMS Graduation Rate. This figure shows the trend line establishing Great Falls High School graduation rate for FARMS students from 2009-2011 (prior) and 2012-2015 (post) the implementation of the APEX online learning program.

The graduation rate of FARMS students prior to the implementation of the APEX online learning program was 52.53% in 2009, 65.56% in 2010 and 67.07% in 2011. The graduation rate of FARMS students following the implementation of APEX program was 64.15% in 2012, 80.42% in 2013, 84.56% in 2014, and 82.48% in 2015 (A Mid-Atlantic State Department of Education, 2017). Note: there is difference in the graduation rate of FARMS students examined in this study based on the difference in the total number of students considered FARMS students by the state department of education and the local school district. This discrepancy will be further discussed in the limitations section of this study.

The following figures provide a detailed examination of the larger sample of student data used for this study, known as the pooled group. These students were selected based on their FARMS status, twenty or more days absent, and APEX eligibility. These figures describe the demographic makeup of the group, the number of students who participated in the APEX program vs. the number of students who did not participate in the APEX program, and number of APEX classes each participating students completed. The pooled group is used to study the larger impact that APEX may have had on FARMS students and the graduation rate.

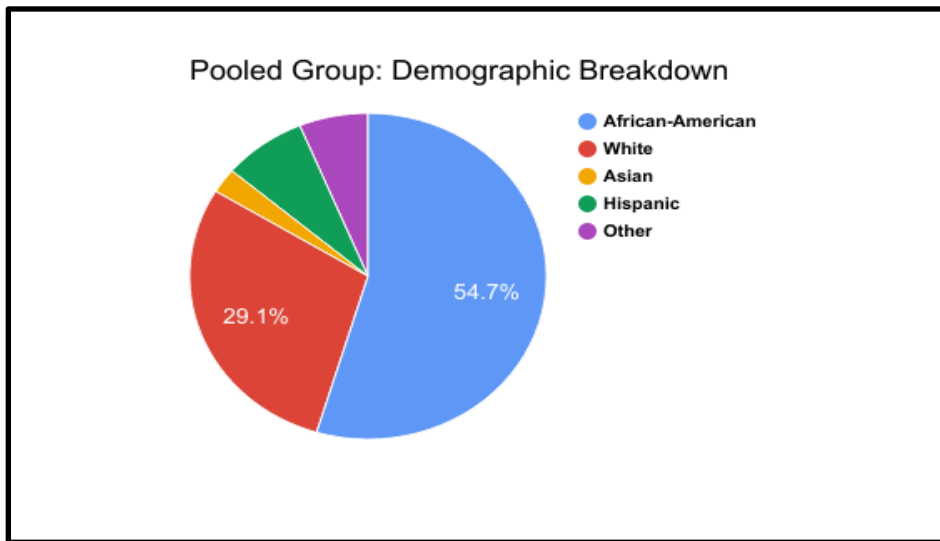


Figure 3. Pooled Group: Demographic Breakdown. This figure describes the large sampling group known as the pooled group.

The pooled group consisted of 688 FARMS students from the 2012-2015 year of graduation. The demographic breakdown of the 688 students included 376 (54%) African-American, 200 (29%) white students, 52 (7%) Hispanic students, 17 (2%) Asian, and 43 (6%) other races.

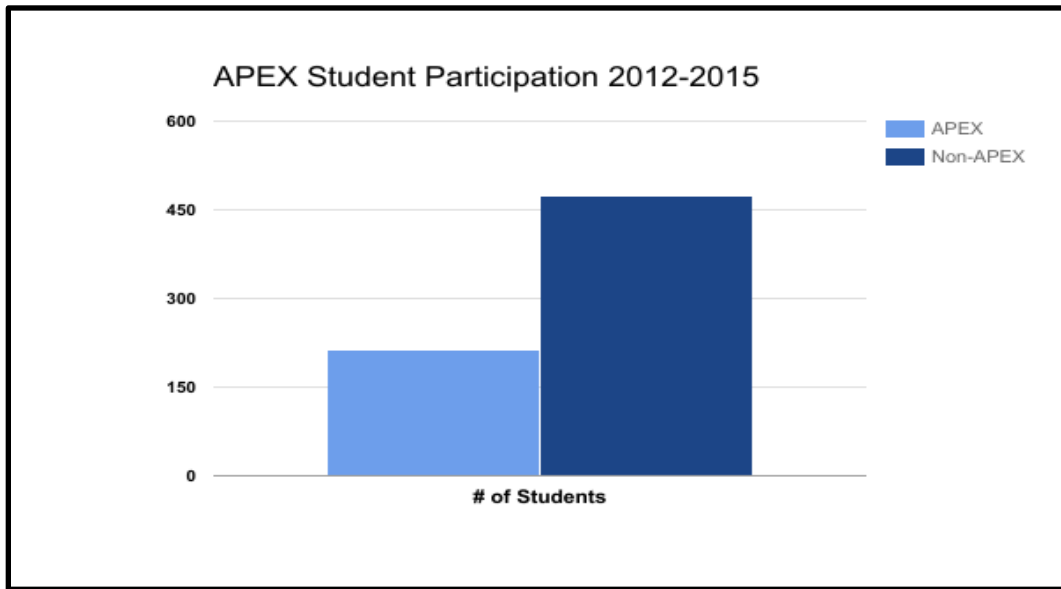


Figure 4. APEX Student Participation 2012-2015. This figure illustrates the number of students who participated in the APEX program.

The number of students who participated in the APEX program total 213 (30%) from 2012-2015. Students who did not participate in the APEX program totaled 475 (69%) during the same four-year period.

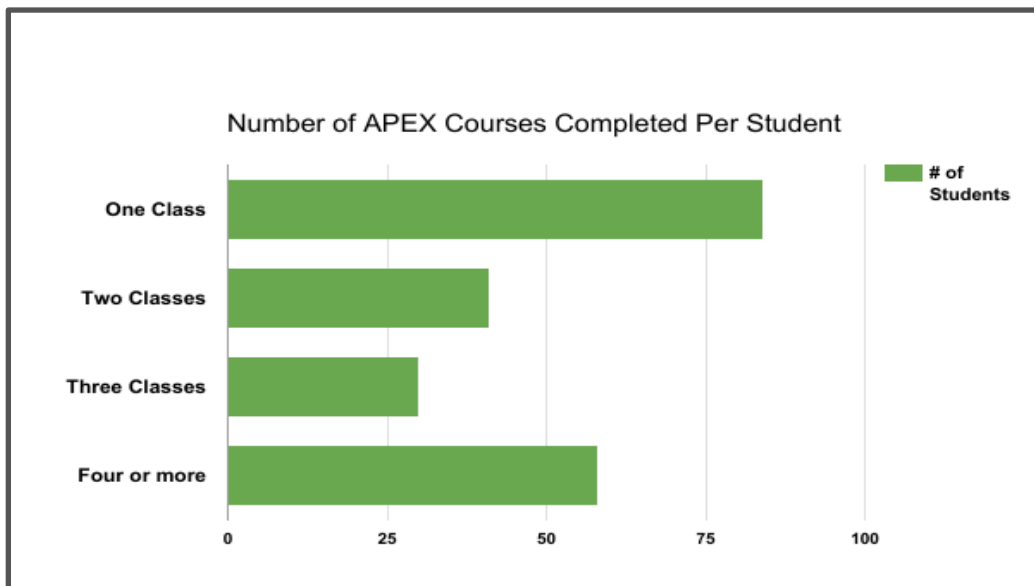


Figure 5. Number of APEX classes completed per student. This figure depicts the total number of classes completed per student in the APEX program from the pooled group.

The total number of APEX courses completed included 84 (39%) completing one class, 41 (19%) completed two classes, 30 (14%) completing three classes, and 58 (27%) completing four or more classes on APEX.

Comparison Group: Control and Test Groups from the Class of 2015

A control and test group of FARMS students from the 2015 graduation year was analyzed based on their participation or lack of participation in the APEX program during their four years of enrollment. This group of students was selected for study because they were the first cohort of students eligible to participate in the APEX program during each of their four years of high school. A total of 93 students were sampled. Of the 93 eligible students, 47 (test group) participated in the APEX program while 46 (control group) did not participate. A further breakdown of the student sample is as follows:

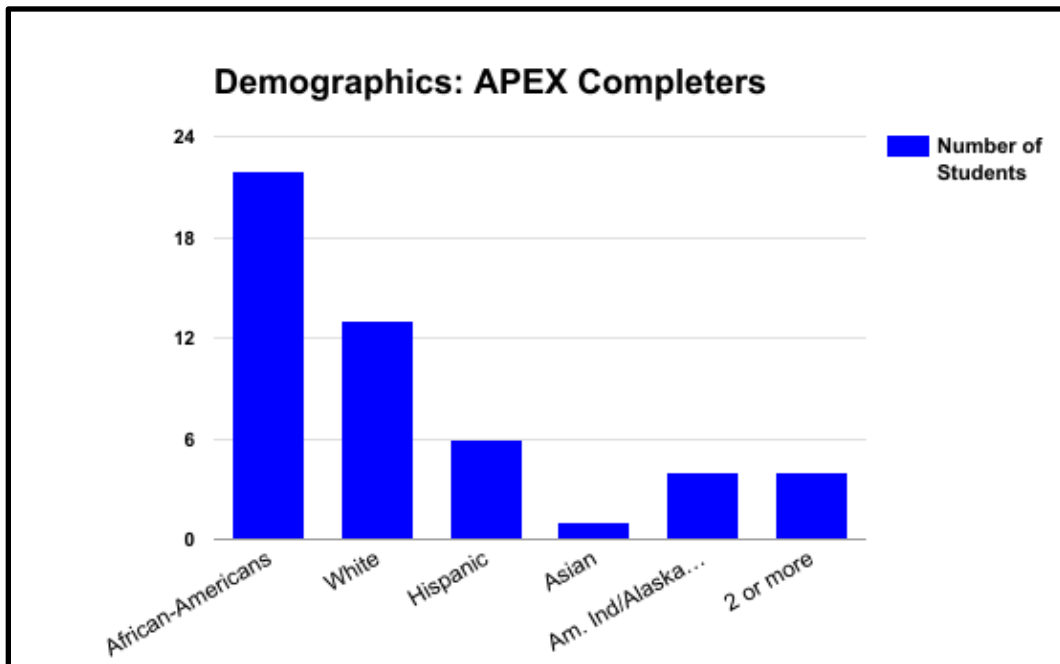


Figure 6. Demographics: APEX Completers. This figure describes the demographic breakdown of the students who completed courses in the APEX program from the comparison group (test group).

The group of students consisted of 22 (47%) African-American students, 13 (28%) white students, 6 (12%) Hispanic students, 1 (2%) Asian students and 1 (2%) American Indian/Alaska Native, and 4 (8%) of two or more races.

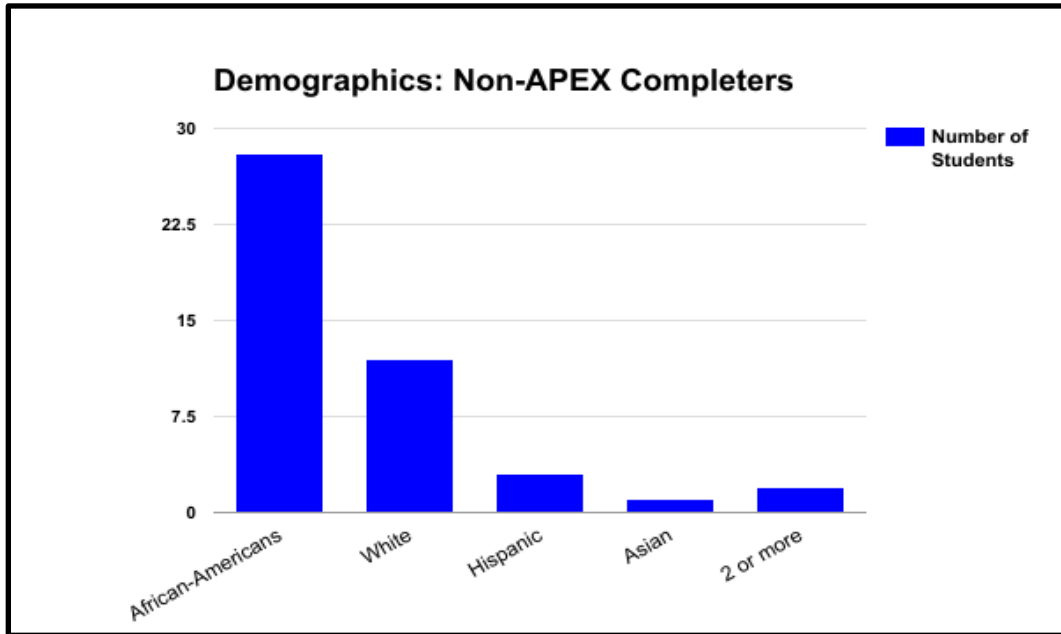


Figure 7. Demographics: Non-APEX Completers. This figure describes demographic breakdown of the students who did not complete courses in the APEX program from the comparison group (control group).

The group of students consisted of 28 (60%) African-American students, 12 (26%) white students, 3 (6%) Hispanic students, 1 (2%) Asian students, and 2 (4%) two or more races.

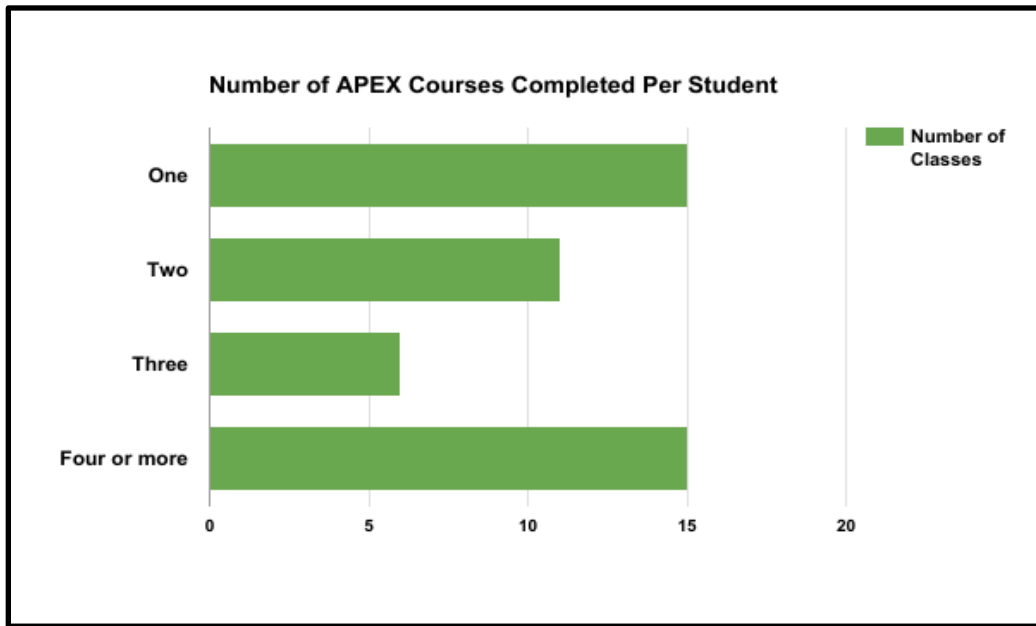


Figure 8. Number of APEX Courses. This figure illustrates the total number of classes each student completed in the APEX program from the test group.

The number of classes each student completed in APEX included 15 (32%) completing one class, 11 (23%) completed two classes, 6 (12%) completing three classes, and 15 (32%) completing four or more classes in APEX.

	Not Graduating	Graduating
APEX Students	6.6%	93.4%
Non-APEX Students	8.2%	91.8%

Table 2. Pooled Group Descriptive. This table shows the percentage of APEX students who graduated after participating in the APEX program.

The percentage of students who participated in the APEX program and graduated was 93.4%. The percentage of students who participated in the APEX program but failed to graduate was 6.6%. The percentage of non-APEX students who graduated was 91.8%. The percentage of non-APEX students who did not graduate was 8.2%.

APEX	Graduation		Total
	DNG	Graduated	
APEX	14	199	213
No APEX	39	437	476
Total	53	636	689
Pearson chi2 (1) = (0.5442)			

Table 3. Pooled Group Results. This table describes the results from the pooled group of students from the 2012-2015 school years.

The pooled group sample size comprised of N = 689 FARMS students. The Pearson chi2 (1) value of (0.5442) was greater than the calculated alpha of (0.05). The logistic regression model was then used to verify the results from the Pearson chi2 test. The Prob. > chi2 = (0.4546) and (p=0.462) indicating that both were greater than the alpha of (.05) and therefore representing that there was no statistically significant results from the data.

	Not Graduating	Graduating
APEX student (test)	4.3%	95.7%
Non-APEX student (control)	8.7%	91.3%

Table 4. Control vs. Test Group Descriptive. This table shows the percentage of APEX students vs. Non-APEX students and their graduation status.

APEX	Graduation		Total
	DNG	Graduated	
APEX	2	45	47
No APEX	4	42	46
Total	6	87	93

Table 5. Control vs. Test Group Results. This table describes the results from the control and test groups.

The sample size $n=93$ FARMS students with 47 participating in the APEX program and 46 students who did not participate in the program. The Pearson $\chi^2(1)$ value = (0.7595). The result was greater than alpha (.05) indicating no statistically significant result from the data. The logistic regression model was then used to verify the results from the Pearson χ^2 test. The Prob. > χ^2 = (0.3795) and ($p=0.393$) indicating that both were greater than the alpha of (.05) and therefore representing that there was no statistically significant results from the data.

Discussion of Results

This section presents the results of this study and details the analysis to each of the two research questions.

Research Question 1. Research Question 1 posed the following query: To what extent do FARMS students who participated in the APEX program demonstrate an increased graduation rate in SMCPS as opposed to the graduation rates of FARMS students who did not participate in the APEX program? As previously explained, data on FARMS students was pooled to sample a group of 689 students from the 2012-2015 school years. A Pearson $\chi^2(1)$ test was used to evaluate the data. These calculations yielded a value of (0.5442). This number is greater than the calculated alpha of (.05). This means that there was no statistically significant result from the calculation. The data of the pooled group failed to reject the null hypothesis. This means that there was no statistically significant difference between the graduation rates of FARMS students who participated in the APEX program and FARMS students who did not participate in the APEX program. A logistic regression test was then administered to further analyze the pooled group. Logistic regression results indicated that the Prob. > χ^2 value of (0.4546) was greater than the alpha value of (.05). This also indicates that there was no statistically significant result

from the data. The value of ($p = 0.462$) for FARMS students who took APEX classes and graduated was greater than alpha (.05). The data of the pooled group failed to reject the null hypothesis using the logistic regression model. Therefore, there was no statistically significant difference in the graduation rates of FARMS students who participated in APEX program and FARMS students who did not participate in the APEX program. These results were verified in both statistical analyses.

A comparison group was then established in an attempt to answer the research question. The same statistical procedures were followed for this group, which consisted of $n = 93$ FARMS students from the graduating class of 2015. The Pearson $\chi^2 (1)$ was calculated and produced a value of (0.7595) which was greater than the alpha of (.05) indicating that there was no statistically significant results from the data of the comparison group. The data of the comparison group failed to reject the null hypothesis. There is no statistically significant difference between the graduation rates of FARMS students in the class of 2015 who participated in APEX program and FARMS students in the class of 2015 who did not participate in the APEX program. A logistic regression test was then administered to further analyze the comparison group. The Prob. > χ^2 value = (0.3795). Again this indicated that there is no statistically significant result from the data since the value was greater than alpha (.05). The value ($p = 0.393$) for FARMS students who took APEX classes and graduated was again greater than alpha (.05). The data from the comparison group failed to reject the null hypothesis using the logistic regression model. There was no statistically significant difference in the graduation rate of FARMS students from the class of 2015 who participated in APEX program and FARMS students from the class of 2015 who did not participate in the APEX program. This result was verified in both statistical analyses.

Research Question 2. What are the significant factors in predicting graduation for FARMS students participating in the APEX program? Significant factors in predicting graduation for FARMS students participating in the APEX program were not identifiable as a result of failing to reject the null hypothesis. Student's attendance, APEX eligibility, and the total number of APEX classes completed were used in both the pooled and comparison groups with no significant statistical results. The researcher is of the mind set that a lack of consistent identifiable sample data sets for the APEX program created a bias that contributed to this null hypothesis making it difficult to identify the significant factors that contribute to predicting the graduation rate of FARMS students who participate in the APEX program.

Limitations

FARMS students may be underrepresented in the population sample being studied.

Students qualify for FARMS benefits each school year by completing and submitting an application for benefits form. During the high school years, it is not uncommon for a student to fail to apply for FARMS benefits by not completing and submitting the necessary form.

Sometimes, students who reach their senior year of high school have class schedules that end before school lunch periods begin. This means that students will depart from the school grounds before a school lunch period is available. Students in this situation often do not complete and submit the FARMS application for benefits because they will not be at school during the lunch periods and will therefore be unable to eat lunch at school. All of these situations contribute to an overall reduction in the number of students receiving FARMS benefits. In terms of the graduation rate statistics, students who do not receive FARMS benefits in grade 12 are not counted as FARMS students in the graduation rate. For the purposes of this study, these situations may result in a reduced number of FARMS students in the population being studied.

Great Lakes Public School System changed methods of earning credit for high school courses during the years being studied. During the 2012-2013 school year, GLPS regulations on how students earn credit for high school courses were changed. Specifically, in the credit system, half credits were eliminated. This meant that the grade to determine whether or not students earn credit in a high school course was calculated by taking the average of four marking period grades, rather than the average of two semester grades. Often, the theory holds, that after failing the first semester of a course, student's motivation decreased with the knowledge that they had already failed half of the course and would have to retake the first semester of a class in order to earn the course credit required for graduation. It is believed that in some cases, this situation impacted student motivation to be successful in the second half of the course.

What is not measured in this study is the impact of this decision on student self-efficacy as described above. This change in policy had the potential to make a positive difference to students' attitudes toward their academic success in that students would be less apt to "give up" on a course after receiving a failing semester grade. As a result of this decision, students knew that they had a full year to pass a class and not just two semesters.

Data beyond the scope of this study suggests that fewer students actually failed classes for the entire school year. It is not known if this trend was a result of the change in the credit policy, student use of APEX or something else.

Criteria for participation in the APEX program changed during the period being studied.

Following the implementation of the yearlong credit regulation in 2012, marking period recovery was introduced as a way for students to recover failing marking period grades in high school courses. Eligible students had to have failed a course with a grade percentage between 45% and 59%. Students receiving a marking period average in this range were eligible to "recover" their

marking period grade by completing a two to three week APEX based recovery process.

Students could earn a “recovered marking period average” of up to 59%. While students would still receive a failing marking period in a course, the numerical average of the failing grade would be raised to 59% to give students a “fighting chance” to pass a course for the year and earn the credit required for graduation when the four marking period grades were numerically averaged for the year to determine whether credit was earned for a course.

At the school level, there were inconsistencies in the enforcement of eligibility criteria as many students who earned below a 45% average during the marking period were allowed to recover credits for the marking period in the hopes of increasing their chances of passing a course. These inconsistencies place some limitation on the ability of the researcher to gather consistent sampling of student participants, as there was no consistent implementation of eligibility standards for the program.

The sampling of students may have been too limiting. This study’s narrow focus of data may have limited the number of participants. The data was taken from FARMS students with twenty or more absences who received either a failing grade for a year long course or a failing grade for a marking period at some point in their high school career. Another possible limitation in the sampling of students for this study was the failure to take into account the use of APEX in conjunction with other intervention programs for FARMS students at GFHS as well as all of GLPS. It is not uncommon for alternative educational placements, used as student interventions for struggling students, to use APEX in supporting student achievement, which helps them to stay on track for graduation. Even though these students participate in an alternative educational setting, they are still considered in the graduation rate of their “home” school. The combined

impact of using the APEX program in an alternative education setting is a topic for possible future study.

Implications

The statistical significance of the impact of the APEX program on the graduation rate of FARMS students was not demonstrated in this study. It is believed that there may be several reasons for this result. APEX as a single intervention may not impact the graduation rate of FARMS students. FARMS students taking APEX were just as successful graduating as were FARMS students who did not participate in the APEX program. The study does not support the use of APEX by itself as an effective means for improving the graduation rate of FARMS students. School system leadership needs to consider the use of APEX as one of several possible interventions to use in assisting students rather than a stand-alone intervention program.

Another implication of this study indicates that there is a lack of consistency in determining eligibility of student participation in the APEX program. The APEX program was first instituted in the school system in the fall of 2011, largely targeting students who needed to recover half and full credits needed for graduation. Over time, the focus of the APEX program changed more to students taking APEX to complete marking period recovery. Once marking period recovery was introduced eligibility standards were established indicating that only students who had earned a grade average between 45%-59% were eligible for APEX marking period recovery. As a response to the changing needs of the student body, it is not clear that the school was consistent in the enforcement of this eligibility standard.

Recommendations

Providing all students, but especially FARMS students, with the proper intervention tools is critical for a school system trying to raise and/or maintain a high graduation rate. The use of APEX is one such intervention tool that deserves further study and consideration.

Recommendation 1. GLPS should conduct a study to more closely look at the impact of the change in the grading method for high school courses, and in particular, the use of the year long credit model and its effect on student's attitudes. The data may ultimately suggest that fewer students failed courses as a result of this policy change but at this time, the validity of this statement has not been evaluated. A study that examines the impact of this policy on student self-efficacy could provide meaningful information for teachers who are working closely with these students each day.

Recommendation 2. GLPS should consider examining the ways in which it determines and documents student eligibility and student participation in the APEX program. An examination of these practices would create the opportunity to gain greater insight into the effectiveness of the APEX program for all students. A lack of clear eligibility guidelines and documentation standards proved to be challenging when attempting to gain a true measure of the APEX program's role in improving the graduation rate for FARMS students. The school system could benefit from developing a system that closely monitors the standards of eligibility for the APEX program as well as who is actually completing the program.

Recommendation 3. GLPS could benefit from comparing marking period recovery through the use of the APEX to that of course recovery through the use of the APEX program. In conducting this study, there was not a clear distinction between students who participated in the APEX program for marking period recovery or students who participated in the APEX program for

course recovery. This information could be of value for a school trying to implement the APEX program as an effective intervention tool that meets a wide variety of student needs.

Summary and Conclusion

This study attempted to evaluate the effectiveness of the APEX Program, an online learning platform, and its impact on the graduation rates of FARMS students. To begin the study, a pooled sample group was formed. Students in this pooled sample group were FARMS students who were scheduled to graduate in the years 2012-2015. These were the first four years that the APEX program was available to students. The overall graduation rates as well as the graduation rates for FARMS students were analyzed for each of these years. The Pearson chi² test as well as a logistic regression model was used to analyze the data. The results from both tests failed to reject the null hypothesis. This means that there was no statistically significant difference between the graduation rates of FARMS students who participated in the APEX program and FARMS students who did not participate in the APEX program.

FARMS students scheduled to graduate in the years 2012-2014 was then eliminated from the pooled group. The remaining group of students in the pooled sample group was FARMS students who were scheduled to graduate in 2015. The reason for this step is that the students scheduled to graduate in 2015 were the only group of students from the original pooled group who all equally had four years of eligibility for participation in the APEX program. Students scheduled to graduate in the years 2012-2014 did not have four full years of eligibility for participation in the APEX program.

A comparison group was then pulled from the pooled group. This comparison group consisted of 93 FARMS students from the 2015 graduation year. These students were selected from the pooled sample group because these students were members of the first graduating class

to have access to the APEX program for all four years of high school. Again, the Pearson chi² test and logistic regression modeling was used to analyze the data. The results from both tests failed to reject the null hypothesis. This indicates that there was no statistically significant difference between the graduation rates of FARMS students who participated in the APEX program and the graduation rates of FARMS students who did not participate in the APEX program.

There were several limitations in this study. The first limitation pertains to sample selection. Selection criteria for this study was narrow in that only students with twenty or more absences from school were studied. It is also a possibility that FARMS students may have been underrepresented in the population sample being studied due to lack of enrollment by eligible students in the FARMS program. Also not considered in the scope of this study was the impact of the APEX program when used in combination with other interventions. Another limitation of this study is that Great Lakes Public School System changed the method of computing final grades for high school courses during the years being studied. The impact of this change on the study is uncertain. Finally, the criteria for participation in the APEX program changed during the period being studied. These changes were based on individual student needs and the impact of these decisions on the study is also uncertain. The possible impact of each of these limitations should be considered when evaluating the results of this study.

An implication of this study is that GLPS should recognize that the APEX program as a single intervention might not impact the graduation rate of FARMS students. FARMS students taking APEX were just as successful graduating as were FARMS students who did not participate in the APEX program. The study does not support the use of APEX by itself as an effective means for improving the graduation rate of FARMS students. This study also indicates

that there is a lack of consistency in the determining the eligibility of student participation in the APEX program for GLPS. This makes the evaluation of the program's success difficult.

The inconclusive nature of these study results was similar to other studies that were reviewed. Further research in the use of online learning as an intervention tool should be undertaken with this implication in mind. Specifically, there is a need for the GLPS to develop a more rigorous method for measuring and documenting student use of the APEX program as an intervention tool. Additionally, the utilization of a consistent eligibility measure for participation in the APEX program would be helpful in gaining accurate data pertaining to the success of the APEX program as an intervention tool for struggling students.

Although the study failed to support the assumption that the APEX program impacted the graduation rate of FARMS students it is important to note that as an intervention tool, APEX has contributed to the success of a number of FARMS students who used the program successfully to earn course credit. While a statistically significant difference in the results was not found by this study, GLPS should not conclude that this program is without merit. This study did not attempt to measure the impact APEX has had on student attitudes and intrinsic motivations when it comes to earning credit towards completing graduation requirements. This may be worthy of future inquiry.

In conclusion, the use of online learning as an intervention tool to assist struggling students, especially those in poverty, is gaining popularity despite the limited number of studies that evaluate its effectiveness. A student's socioeconomic status is still a leading contributor to the achievement gaps that persists in most school systems across the nation. As schools look for ways to close the achievement gaps that continue to exist, there is a consistent need for intervention programs that can meet student needs.

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