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## Assessing the Supports and Variables Needed for Graduation of Students Receiving Special Education Service: A Longitudinal Study

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ASSESSING THE SUPPORTS AND VARIABLES NEEDED FOR GRADUATION OF  
STUDENTS RECEIVING SPECIAL EDUCATION SERVICE:  
A LONGITUDINAL STUDY

by

Jennifer DeWaard

A dissertation submitted to the Graduate College  
in partial fulfillment of the requirements  
for the degree of Doctor of Education  
Special Education and Literacy Studies  
Western Michigan University  
December 2018

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### Acknowledgements-Continued

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Jennifer DeWaard

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Jennifer DeWaard, Ed.D.

Western Michigan University, 2018

Graduation from high school is an important measure of success for both schools and individuals. While requirements for graduation change, the rate at which students receive a diploma within four years is on the rise. But students who receive special education services continue to have a lower graduation rate than the general population. It is imperative for both schools and individual students to increase this rate and close the gap for those receiving a diploma.

The purpose of this study is to examine that gap between graduation rates for the total population of a high school in West Michigan compared to the graduation rates for students receiving special education services in that same school. After a review of the possible alterable school aspects that contribute to graduation, the study examines four factors through a non-experimental, ex post facto design in order to test and measure possible relationships to on-time graduation rates for students with special needs ending their four years at HS during the years 2015, 2016 and 2017. Participation in team- and co-taught classes, duration of relationship with special education case manager, coursework in relevant curriculum, and attendance data was statistically measured against the graduation rates of the total population and each cohort graduating year.

In order to measure special education graduation rate outcomes associated with participation in school intervention and programming, non-parametric tests were used. There was no significant difference found in the median graduation rates for students receiving special education services when considered by their participation in co-/team -taught courses or by the duration of relationship with their case manager. A significant difference in the median graduation rates for these students was found during one of the school year cohort student groups for attendance (2015) and for relevant coursework (2017). These results contribute to a body of knowledge about special education graduation rates by providing suggestions to further clarify and improve an accurate measure of graduation rates for all high schools, including specific plans to use school and post-secondary programming transfers as a studied element. The data is further operationalized by providing a starting point for struggling schools to measure their own data. Recommendations to repeat this study in a school with markedly lower special education graduation rates would provide clearer data and effect sizes for further study.

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## CHAPTER I

### INTRODUCTION TO THE STUDY

#### **Background**

Graduation rates for all students have been a priority for schools across our country and especially in the state of Michigan. Our nation has achieved 82.3% high school graduation rate which is a new record high with an overall increase in on-time graduation and schools are working to meet the goal of 90% graduation by 2020 (Balfanz, 2016). The overall data show gains but gaps between different groups of students are still large. The findings from this 2016 study indicated that progress is slowing and 90% graduation rate may not be possible because there are troubling rates for subgroups which include students with disabilities. All groups, including those that struggle the most, need work to make progress for graduation rates to rise because efforts will not be successful and reach the goal of 90% graduation rate based on just the rise of the most advanced students (Balfanz, 2016). Within that data, the groups that struggle the most become sub-groups that show some progress but narrowing of gaps can be attributed to modest gains at the top. In yet an earlier study of middle school students, Balfanz's (2009b) studies stated that we face pervasive failure if we continue and do not provide pathways to successful graduation for all students. This means more students need to receive a diploma, especially those in subgroups like students with disabilities.

Higher graduation rates across the nation have not gone unnoticed. In the 2017 annual update of *Building a Grad Nation* (DePaoli, Balfanz, Bridgeland, Atwell, & Ingram, 2017), it is stated that progress since 2001 has meant 2.8 million more students received a diploma (rather than dropping out). This specific report calls for a refocus on the goal (90% graduation rate by

2020) while specifically noting disparities in graduation rates for students with disabilities.

Further, DePaoli et al. state that graduation progress is limited by “stubborn graduation rate gaps for historically underperforming subgroups” (p. 3). The report also identifies questions about the validity of rising graduation rates/measures and alternate pathways created for students showing signs of not meeting graduation requirements. It identifies graduating students with disabilities as one of five “drivers”—specific subgroups and areas in need of improvement.

### **Conceptual Underpinnings for Study**

Persistent graduation rate gaps between general and special education subgroups of students exist along with many disparities on the path to a diploma. Strategies and safeguards need to be in place to improve the path to graduation through school accountability and work to make all students successful. This is especially true for students with disabilities and those receiving special education services due to the negative consequences they face when they leave school without a diploma. Students who leave school without a diploma face serious implications being jobless (Cortiella, 2013) and are often underemployed or, when employed, underpaid (Chapman, Laird, Ifil, & KewalRamani, 2011). They are more likely to have poor health and be involved in the prison or juvenile systems (Barron, 2013; Schifter, 2011; Thurlow & Johnson, 2011).

For these reasons, it is especially important that the factors contributing to graduation rates, student success, and specific rates for sub groups are studied closely. This is complicated because graduation rates and students success through engagement in school is hindered by the complex interplay of factors that operate within students, families, classrooms, and schools (Bradley & Renzulli, 2011; Burke, 2015; Wilkins & Huckabee, 2014). Students of all groups are not successful and leave school without graduating for many reasons which are often difficult to

manage, multifaceted, and complex. Most often, they also interact in a cumulative way over time and throughout school. This is specifically shown when the student's likelihood of graduation is specifically affected by prior to HS experience especially related to test scores, entry age, gender, race, and SES (Allensworth & Easton, 2007).

While there is a lack of research specifically detailing the complex factors related to graduation rates for students receiving special education services (Wilkins & Huckabee, 2014), there are data available regarding the school and personal factors that encourage on time graduation for all students (Barrington & Hendricks, 1989; Barron, 2013; Scruggs, Mastropieri, Berkeley, & Graetz, 2010). Managing these factors with the effort to keep students in school in order for them to graduate is difficult because its causes are many and very complex creating a confluence of contextual factors that interact to blur factors even more when combined (Balfanz, 2009a). These factors and their measurable characteristics include: student's performance in courses (GPA/test scores), teacher characteristics, absences rates, economic/demographic backgrounds, gender, race, health, family stability, prior school experiences in elementary/middle school, mobility from school to school, age at entry to high school, type of curriculum, and teaching service models (Allensworth & Easton, 2007). Recent policy recommendations from *Building a Graduation Nation* (Balfanz, 2016) include further evidence of the factors in schools that all students need in order to complete school successfully and ready for postsecondary goals. Those include positive relationships with caring adults, strong tailored instruction, supports and measures to meet goals, and the connection of learning to life. Balfanz continues by recognizing evidence based plans to improve high schools by making sure students have engagement opportunities, early warning systems for potential problems, supports for students who are off track, and relationships through formal and informal mentoring. Course



failure (GPA), behavior issues, and attendance are particularly high yield and predictive measures of on time graduation (Balfanz, 2009a). Lastly, many of these complex factors and education policy or plans are in direct response to regulation changes since the early 2000's. The premise of special education and the protections offered for students with different abilities exist to even the playing field, provide necessary access to general education, and ultimately help students with disabilities earn a high school diploma.

### **Purpose and Significance of Study**

The purpose of this study is to examine the gap between graduation rates and the factors contributing to graduation for the total population of a high school in West Michigan compared to students receiving special education services in that same school. Through the assessment of supports and variables helping students on their path to graduation, study will determine if any, relationship exists between special education factors (independent variable) and graduating on time (dependent variable) for students receiving special education services. The guiding question is: How were special education graduation outcomes associated with each special education variable? The study will look for possible relationships involving the four factors (attendance, functional/relevant curriculum, established teacher relationship, and participation in co or team taught courses) and graduation rates for diploma seeking students receiving special education services.

For this study, student level data have been collected from a large West Michigan high school in order to assess and explore the supports and variables needed for graduation of students receiving special education services. Current reports and data regarding rising graduation rates for all students with a persistent gap existing between general education and special education students are also true for this specific school. As shown in Table 1, graduation data for this West

Michigan high school and reported by the State of Michigan Department of Education (MDE; 2017) can be disseminated by rates for the school years 2011–2017. It shows a difference in the rates of graduation for all students compared to students with disabilities. There is little discernible pattern beyond a consistent rise for both groups and the gap % difference average is approximately 22. The gap % difference was highest in 2011-2012 at 29 and lowest in 2014-2016 at 17. When total population graduation rates were at their highest for the total population, rates were also at their highest for the subgroup of students with disabilities.

Table 1

*Percentage of Students Graduating After 4 Years (9th–12th Grade, West Michigan High School)*

	2011–2012	2012–2013	2013–2014	2014–2015	2015–2016	2016–2017
All students	86	90	94	95	92	99
Students with disability	57	65	71	78	75	79

The significance of this study relates to being able to provide a better understanding about the relationship of school alterable factors for existing models and services in a high school setting. It will address factors and variables that are part of support system enabling students to graduate on two levels. First, assessment and study will focus on the larger and wider scope of contributing to the small body of knowledge regarding community wide concern about graduation attainment for students with disabilities receiving special education services. In a 2014 literature map study completed through The National Dropout Prevention Center for Students with Disabilities, researchers (Wilkins & Huckabee, 2014) identified 544 potential studies focused on interventions for reducing drop out or associated with graduation for middle

school, junior high, and high school students. Only 19 of those studies included students with disabilities in their sample and reported graduation outcomes for those students separately from the overall sample. Three sets of important recommendations came from this study: practice, research, and policy. First, recommendations for practice highlight specific intervention programs schools and districts can use to further engage students and help them graduate. Eleven of the nineteen studies cited in Wilkins and Huckabee involved some type of adult advocate or mentor. RENEW, FUTURES Academy, and Check and Connect programs were specifically cited as evidence for a direct recommendation of assigning or designating an adult advocate for any student at risk of not graduating. All three of these cited programs used adult facilitators or monitors to help students coordinate experiences, manage conflict, and advocate for themselves (Wilkins & Huckabee, 2014). These authors also recommended providing rigorous and relevant instruction/curriculum to engage all students through the provision of skills they need to receive a diploma and be successful after graduation (Wilkins & Huckabee, 2014). Nine of the nineteen studies identified and cited in their study were related to job training or career awareness. Seven of those nineteen studies exposed students to post-secondary educational options. The authors specifically cited the Texas Dropout Recovery Pilot Program (TDRPP), Take Charge, and Back on Track Programs. These cited programs used varied methods to deliver a variety of services which included integration of vocational courses/topics, self-determination development, and college exposure focused on transition from high school to post-secondary success (Wilkins & Huckabee, 2014). Results and recommendation from this study specifically address the need for more research regarding interventions effective for promoting the graduation of students with disabilities receiving special education services. Recommendations for research and policy should focus on more effective research design (experimental for measure of effect of

intervention) and strengthening of policy with more flexible options for students to graduate and achieve success (Wilkins & Huckabee, 2014).

Second, exploration in factors and variables needed for the graduation of students receiving special education services may result in findings directly applicable to state policies and school programming. The school and policy level significance lies behind who it will inform in order to monitor, improve, and/or confirm supports and the need for interventions in order to help all students graduate. This is specifically in line with the newest policy recommendations from the Grad Nation 2017 Annual Update reported by Johns Hopkins University. Policy makers in states across our nation are required to include high quality implementation plans for the newest regulations in Every Student Succeeds Act. It specifically calls for graduation rates to be weighted in the data collected in order to identify, serve, and provide accountability for consistently underperforming groups which include students with disabilities (DePaoli et al., 2017). Recently, the State of Michigan was identified as the only state in the nation that did not meet federal requirements regarding the graduation rate for students with disabilities based on high drop-out and low graduation rates from the 2016–2017 school year data (Chambers, 2018). Michigan was identified with a “needs intervention” ranking after four years at “needs assistance” and the article specifically cited Candace Cortilla (director of the Advocacy Institute, Washington, DC). Chambers stated, “The state is doing an unsatisfactory job on the academic achievements of students with disabilities in the state. The state needs to pay attention to outcomes, not just compliance with IDEA” (p. 16). This study will look for data and interventions so that states, districts, and schools can learn from what worked through effective reform which includes teaching quality, school culture, and school interventions (DePaoli et al., 2017). It will provide a better understanding about the relationship for four factors of existing

models and services for special education in a large West Michigan high school and for the state of Michigan. Administration, policy makers, staff, faculty, and teachers need models and findings in order to use data and evidence based practice to act on these recommendations, policies, and plans.

After a review of the possible school alterable factors that contribute to graduation, the study will examine and assess the variables that may have a relationship with the graduation rate for students receiving special education services. In a quantitative, quasi-experimental, ex post facto design, the research will examine four factors: attendance, duration of relationship with special education case manager, coursework in relevant curriculum, and participation in team and co-taught classes in order to test and measure possible relationships to on time graduation rates for diploma seeking students receiving special education services. This will be a longitudinal study examining the supports and variables supporting students in cohort groups that were expected to graduate in 2015, 2016, and 2017. It will examine possible statistical relationships/correlations among four variables (attendance, length of case manager relationship, functional/relevant coursework, and participation in team or co-taught classes) using existing school data.

Descriptive statistics for all four factors (one at a time) will be determined and correlations tables will be computed through correlation and ex post facto design. Descriptive correlational design will be used to quantify the degree of the relationship between each of the four variables individually and student graduation rate. Correlations will be used to explore and describe the relationships among variables with a dichotomous, categorical variable (students who graduated within four years and students who did not). These methods will lead to the description and assessment of the support systems that may or may not have helped students

receiving special education services be successful and graduate from high school within four years.

### **Summary**

Despite all-time high graduation rates for all students across our nation, there is still work to be done. Gaps in those rates exist between total student population and sub groups of our neediest students including students with disabilities receiving special education services. These gaps are well documented in the Grad Nation research through Johns Hopkins University and highlighted in the 2018 Update (DaPaoli et al., 2018). The authors reaffirm the national gap between students with disabilities and their peers in the general education population at 21.1 % points with twenty-six states exceeding that average (DaPaoli et al., 2018). The National Center for Education Statistics (NCES; 2018) reports further gaps as these students leave school and enter our community. In their latest reports, the differences in the employment and not-in-labor rates for persons with disabilities were considerable at about 50 percentage points. Many educational professionals and policy makers consider this one of the largest equity gaps in education and the workforce (Stawinoga, 2017). This is especially important because of the individual, family, and community effects through negative consequences when students do not receive a diploma or drop out. This is pronounced for students with disabilities receiving special education services. The factors that contribute to this path toward graduation are complex, interwoven, and hard to separate for definitive study. Complicating things further, there is also a gap in knowledge for specific study regarding students receiving special education services and those factors that may contribute to success and/or graduation. Much of what is known is based on the use of data regarding all students and total population graduation. This study is proposed to examine those gaps in knowledge and in graduation rates for students receiving special

education services. Further assessment and exploration will focus on the factors, supports, and variables that may specifically contribute to graduation for students receiving special education services.

The next chapter will review pertinent literature which provides more of a framework and further implications for study. Information, studies, and data begin with a history of special education, reform, and improvements over the years. The history continues and becomes more specific with discussion of the measurements behind dropping out of school as it has grown to a nationally accepted form of calculation along with the relevant data for Michigan and the region of study. Further information and study focus on the components and types of interventions, supports, and variables available to all (total populations and sub groups) students. Discussions are made regarding the complexity of factors along with alterable and unalterable characteristics/actions. Details will be provided about general factors, the four specific factors of study (attendance, participation in co- and team taught courses, relevant curriculum, and adult relationships), and mobility of students.

## Glossary

***Adjusted Cohort Graduation Rate*** - The ACGR is defined and required by federal policy and MISchoolData (2018). The ACGR is calculated by tracking first time ninth grade individual students from the time they were enrolled with a four-year expected completion rate. The formula allows for students who leave school, who return later, who are retained in a grade staying in school, and who transferred into and out of other public schools. It also requires students to have attended two or more count days and reported to the state for one or more count days. This allows for a count of all students and a total graduation population.

***Attendance*** - Measurement of the percentage of class missed or times the student was absent from school. States require measurement based on policy and federal guidelines for the proportion of classes missed in the total attendance/enrollment period. Systems and schools include all absent time periods with no difference between excused or unexcused. This is also described by the student rate of coming to school with missed class time accounted/calculated.

***Certificate of completion*** - Exiting a school system with a record of completion through an alternate course of study and not the required diploma coursework. Decision for placement on this course of study is made based on student need and through the Individualized Education Plan meeting and team. This decision is usually made early in the student's high school career (i.e. ninth or tenth grade year). Students in this subgroup are usually in a categorical program which focuses on more functional coursework and does not lead to a diploma or count toward graduation rate for the school system. Students on this course of study are often those who are more severely impaired spectrum and were not included in this studied population.

***Co/Team Taught Courses*** - Co and team taught courses in this study are defined as two teachers (one general education and one special education or other specialist) working and partnering



together in the same physical space and general education setting jointly sharing duties and delivering instruction to a specified diverse student population that includes students with disabilities. This mode of instruction is also defined as special education delivery vehicle with intent to make it possible for students needing special education instruction to access the general education curriculum while at the same time benefiting from the mandated supports/strategies necessary to individualize and nurture learning in flexible, deliberate ways to meet specific needs making sure students with disabilities interact with peers. Teachers work together to address IEP goals and objectives while at the same time meeting learning needs of other students in the class through fluid roles, alternating responsibilities, and negotiating design/delivery of instruction with the chores of teaching (i.e. grading). For the purposes of this study, courses were identified as co-/team taught by the scheduled and physical presence of a certified special education instructor for the class period.

***Diploma*** - Official notice that a student successfully completed high school requirements and has achieved graduate status/end type to exit the school system.

***Drop out*** - Students who did not complete requirements and exit the school system without a diploma four or more years after entering high school as computed through their cohort.

***Enrollment*** - Amount of time listed as a student at a specified school from date of entrance to date of withdrawal.

***General education*** - Required courses designated by the state of Michigan and in a setting of peers. Students at the high school level are pursuing a diploma through these courses and participating in the focused programming and possible interventions/supports at the school and district levels

***Graduation rate*** - Data listing a description of the high school completion outcomes for the population of students exiting a school at the end of the school year. This is usually defined by the student group (cohort), specified time period (four years), and mode of exit (exam or diploma). The federally recognized rate is the Adjusted Cohort Graduation Rate. This study outlined and used a more detailed rate for a redefined population different from the state and federal calculation.

***Infinite Campus*** -System used by the district and school to record student level data including demographic information, cohort membership, attendance, discipline, courses, scheduling, teacher grade books, online parent access “portal”, teacher/student schedules, student progress, student transcripts, and special education caseload rosters allowing for archival data collection.

***Mobility*** - Student movement between schools and communities including transience among families, homes, schools, and areas.

***Not completing high school*** - Measure of high school completion in which students choose to transfer to other schools or continue towards graduation in an extended time period but within their cohort. Their diploma graduation status and end type are entered as not finishing and not as an exit from the school system.

***On time graduation*** - Students attainment of a diploma and exiting the school year four years after beginning their high school coursework as computed through their school year cohort/group based on the year ending 8th grade and entering the high school.

***Relationship with school related adult*** - A connection with an adult providing important sources of support, provision of academic help, encouragement for student success, progress monitored over time, actions as an advocate, listening, empathy, and care. This type of relationship commonly provides understanding of others, messaged of purpose and priority, and valuable

feedback making students feel safe. This study measured the highest number of years for a student with the same special education case manager/instructor compared to total school years of attendance. Case manager for this study was defined as the special education instructor that handles student issues, goals, service coordination for students during their school enrollment period, and Individualized Education Plan.

***Relevant coursework*** - Classes that included functional objectives and tasks that provide a connected opportunity to learn more about habits of the mind, occupations, employment, vocations, life skills, community, family, culture, and character development. Interdisciplinary tasks can also include goal oriented activities, steps to self-determination, applied programming that helps students grow to understand their world, and provide preparation for work or college. These can include career and technical education offered through intermediate school districts, employment and life skills courses/credits usually directly related to use in the community and living after graduation. This study identified ninety-three high school courses from the school's offering and each individual student's transcript per semester for a total number of relevant courses taken during their high school enrollment.

***School factors, interventions, and supports*** - Listed school contributions and school controlled support systems that guide programming and actions that encourage students to succeed in their courses and school.

***Special education services*** - Specially planned instruction with unique strategies designed for specific students requiring more supports to access and make progress in the curriculum. Services can be delivered in the general education classroom or special education classroom. These include required courses in core academic topics or for support tasks in resource class time.

***Students with disabilities*** - Students receiving special education services as designated by the Individualized Education Plan (IEP) and a recognized diagnosis of disability.

***Transfer*** - Students moving from school to another school changing the location of their enrollment to another schools and continuing their course of study.

## CHAPTER II

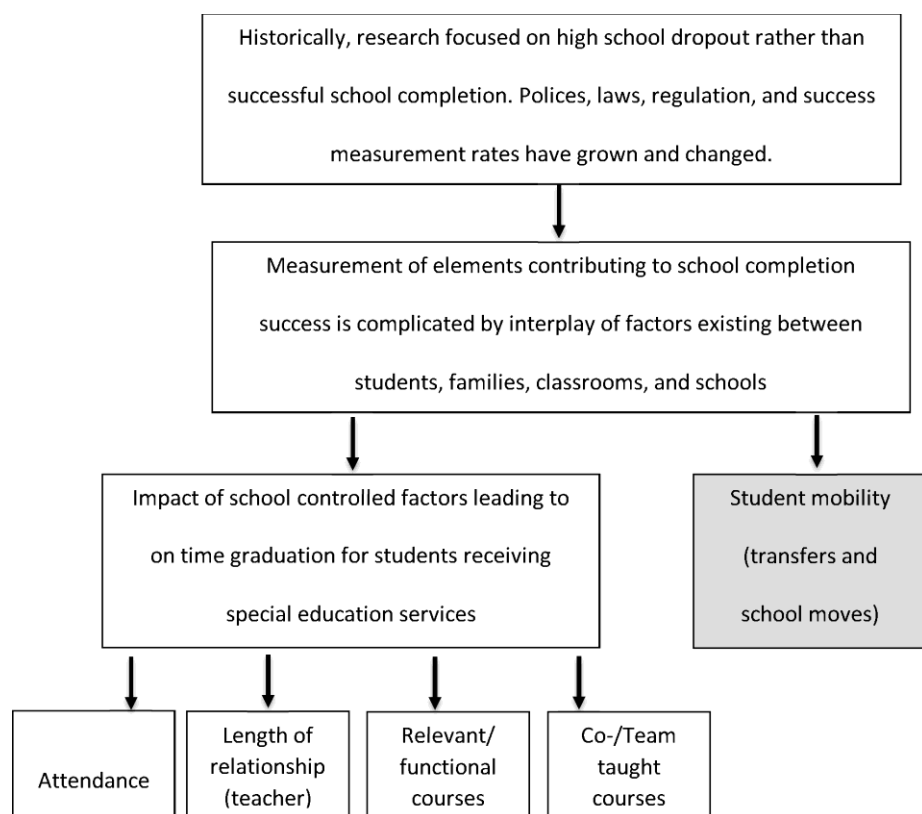
### REVIEW OF RELATED LITERATURE

This chapter will provide a framework including historical research initially focused on dropout and currently highlighting Michigan high school completion rates. Beginning with the past policies, laws, regulations, reform, and improvements, this information leads us to the changes that help schools make policies and measurements in order to comply with policies and use important data to make sure all students are successful from the nation to the state of Michigan. This information is especially important for all educational stakeholders, professionals, policy makers, and especially students due to the critical nature of success in school. Graduation from high school cannot be underestimated because of the significant value it adds for students and our communities. Research shows that students who leave high school without earning a diploma “have worse health, economic, legal, and civic outcomes” (Balfanz, 2016, p. 49). This leads to an actual cost of billions every year for communities and represents “so much lost potential in an economy and country that needs their talents” (p. 49). Information will also be presented defining and connecting the factors that possibly affect student’s path to graduation including the components directly related to the study and the alterable actions of schools that may impact graduation.

#### **History**

Historically, the focus for educational programming and research is turning from dropout prevention to ensuring that all students graduate prepared for postsecondary success. While there continues to be considerable room for improvement, those changes to increase graduation and post-secondary success from the last twenty five years have begun to offer hope. Reform and

changes mean that accountability is more academically focused, college prep course enrollment increases, more students take standardized tests required for post-secondary training/school, and there is a concentrated effort to improve the lowest performing groups (Balfanz, 2009a). Policy and action continue to need a focus on making sure all students are successful.



*Figure 1.* Dissertation flow of evidence for possible school contributions toward higher graduation rates for students receiving special education services.

A specific historical pattern that affects school completion success for students with disabilities is a lack of research (Aud et al., 2012). This scarcity of data is concerning (Thurlow & Johnson, 2011; Wilkins & Huckabee, 2014) because there is little to no focus on specific subgroups including students with disabilities. Barron (2013) states specifically that studies seldom include graduation rates of students receiving special education services and calls for

more knowledge in all related areas. As schools face complexity and influences on graduation rates for students with disabilities, they need to know more about the relationships and factors that contribute. These will be especially significant as educational decisions are made for programming and services but little research examines these concerns (Barron, 2013).

Furthermore, core practices and current areas of focus such as rigor and accountability through testing fail to closely and effectively examine why students perform poorly and fail. There is a need to be more focused on determining how to help students be more successful in classes and get better grades which will both push student to higher achievement (including test scores) and keep more students in school (Allensworth & Easton, 2007).

Within this reform and noted lack of research, in order to better understand the needs/structures of current special education policies, programming, and data, historical perspective is needed. It is equally important to have an understanding about laws and regulations focused on all schools and the total population of students as compared to those focused only on students with disabilities. General and special education policy origins and histories are intertwined from a history of exclusion (1893–1954) to one of the seminal court cases in education history: *Brown v. Board of Education of Topeka* (Esteves & Rao, 2008). This case determined that it was against the law to discriminate against “a group of individuals for arbitrary reasons” (Project IDEAL, 2017). Specifically, the case determined that educational segregation based on race violated a student’s right to educational opportunity which led to current understandings that all students (regardless of race, gender, disability) have a right to a public education (Esteves & Rao, 2008). From that case to our newest education policy, it is even more important to consider general education policies and regulations right alongside those

for special education. Despite past exclusion, current laws are complicated by more recent beliefs that students with disabilities are general education students first (Samuels, 2016).

Federal law, policy, and funding prior to 1975 was largely focused on policies for all students. In 1965, the Elementary and Secondary Education Act (ESEA) guided K-12 education, provided some direct grant assistance to help education students with disabilities, and attempted to close academic gaps for diverse students but did not include accountability for states and schools (Thinguri, 2010). While this set of regulations included the establishment of standards, it did not hold states accountable. With the publication of *A Nation at Risk* (U.S. National Commission on Excellence in Education, 1983) and data from the National Assessment of Educational Progress (NAEP), the federal government enacted the Improvement America's School Act (IASA) in 1994. It was an attempt to tie federal dollars to rigorous academic content standards and schools were allowed to develop their own guidelines (Thinguri, 2010). These federal laws and policies changed in 2002 with the No Child Left Behind Act (NCLB). This policy increased federal involvement and introduced accountability as an enforcement mechanism for all school students. NCLB included six reform principles: accountability from Annual Yearly Progress, highly qualified teachers, increased flexibility and local control, parent input and choice, required scientific based practices, and options for parents (Project IDEAL, 2017).

While general education regulations were changing and building, landmark school court cases helped to lead advocacy groups to put the needs of students with disabilities at the forefront. *Brown v. Board of Education* (1954) set a precedent for families and advocates which continued in the 1970's with two court cases considered catalysts in the revision of how schools provided services for students with disabilities (Wright, 2010). First, *Pennsylvania Association*



*for Retarded Children (PARC) v. Commonwealth of Pennsylvania* (1971) considered the exclusion of students with disabilities from public schools. It led to an agreement that more parental participation was needed in placement decisions and a process to resolve disputes (Wright, 2010). *Mills v. Board of Education of District of Columbia* (1972) examined the practice of discipline through suspension, expulsion, and excluding students with disabilities. The district's main defense centered on the high cost of educating students with disabilities (Wright, 2010). These two cases specifically led to federal legislation in 1975 and PL 94-142 (Project IDEAL, 2017).

The Education for All Handicapped Children Act (EAHCA) is widely documented and as the first major federal policy designed to significantly improve the education of students with disabilities (Wright, 2010). It was enacted to specifically attempt to assure equal access for students with disabilities and compliance for schools (Project IDEAL, 2017). Prior to that, students with disabilities were largely segregated and not at all included in our local public schools, let alone encouraged to succeed or graduate. They were in state institutions and restrictive settings receiving basic needs but not an education (USDE, 2011). The EAHCA was established in response to this need for specific legislation and policy for students with disabilities, condition of education for most students with disabilities, the court cases, and congressional concern. The law had four purposes to improve access to education for students with disabilities: (a) improved identification and education, (b) evaluation of the success of these measures, (c) providing due process, and (d) free appropriate public education (USDE, 2011). It was amended in 1986 assuring a larger age range serviced and more parental role (Project IDEAL, 2017).

Special education policy and law has been amended and renamed several times since EAHCA. The law was renamed and then reauthorized as the Individuals With Disabilities Education Act (IDEA) in 1997. IDEA and the resulting amendments support states and local schools in protecting rights, meeting needs, and improving school results for students of all ages with disabilities (USDE, 2011). IDEA mandates programming and provides an infrastructure of supports, assurance of high quality early interventions, and services available in neighborhood schools as much as possible. IDEA was amended as the Individuals with Disabilities Education Improvement Act (IDEIA) in 2004, which aligned it with new federal policies in general education law and NCLB including the monitoring of student progress, identification clarification, and required transition planning at age 16 (Project IDEAL, 2017). IDEA continues to be the federal law requiring students to serve the education needs of students with disabilities.

Most recently, the ESEA was reauthorized, passed in 2015, and enacted in 2017. The Every Student Succeeds Act (ESSA) replaced and reauthorized NCLB in 2017 with commitment to success for all students (including those with disabilities) as the K–12 guiding federal education document (USDE, 2017). This policy for all students highlights protections for America’s disadvantaged and high-need students which include: high academic standards for all, statewide assessments, innovation, high quality preschool, and accountability for low performing schools where progress is not being made or graduation rates are low (USDE, 2017). While ESSA is general education policy for all students, specific areas of the law apply directly to the education of students with disabilities. ESSA continues to require the report for performance of students with disabilities as both part of the whole student population and applicable subgroups (Samuels, 2016). Specific accountability standards are also included in ESSA including the cap of students with disabilities who can take alternate assessments and attention on graduation rates

(Samuels, 2016). The emphasis on accountability for schools, rigorous academic standards, discipline policies, and charter school enrollment are other areas of ESSA that potentially impact special education and students with disabilities (Agoratus, 2016).

In response to these federal general education policy changes, IDEA was amended and necessary revisions were made to ensure consistency with new education federal policy as it directly relates to students with disabilities. Those include definitions for teaching content/methods, definitions of high school diploma, qualification for special education teachers, revision of alternate assessments, and cross reference/technical corrections as given in the ESSA. With the approval of ESSA, the MDE (2017) submitted an ESSA Plan to the U.S. Department of Education (USDE) on April 17, 2017, and was approved in November. State policies for special education remain reflective of IDEA and the enactment of ESSA remains fluid (MDE, 2017). Specific areas of Michigan's ESSA plan that correlate directly to special education include supports for assessment, strategy supports, identification, academic achievement, transitions, student attendance as a school quality measurement, graduation rate, and parent/family involvement for any student in a special population. The subsequent changes are detailed in Michigan's Administrative Rules for Special Education (MDE, 2018). Those most recent changes reflect policy revisions in discipline and continued encouragement for general education rigor and access.

### **Measurement of Graduation Rate**

Historically, research and policies have focused on preventing secondary students from dropping out of school but have moved to a more formal calculation of graduation rate emphasizing school completion. This is an important shift because in order to determine accurate rates schools, districts, and states need the correct information, comparable methods, and

appropriate accountability systems (Schifter, 2011). The NCES began keeping data on dropout and completion rates for our nation's high schools in 1988 with trend information available from the 1970s. Since 1972, event dropout rates (percent of high school students who left school between the beginning of one school year through the start of the next without earning a diploma or alternate form) have trended downward, from 6.1% in 1972 to 3.4% in 2009 (Chapman et al., 2011).

Since that time, different methods involving the estimation of graduation rate have been used to account for the rate at which students are leaving and graduating from high school in the United States. Methods involving the estimation of the percentage of students leaving in a given year with a diploma compared to the percentage of all students ("leaver"), percentage of students receiving special education services graduating compared to the total population of students receiving those services ("event"), and percentage of students entering the 9th grade with exit four years later ("cohort") have been used (Schifter, 2011). Status calculations have also been made determining the percent of individuals in a given age range and not enrolled in a school who have or have not received a diploma or alternate credential (Chapman et al., 2011). In the 2017 annual update of *Building a Grad Nation*, DePaoli et al. (2017) list even more estimates used to calculate graduation rates such as Cumulative Promotion Index, Jay Greene's efforts at the Manhattan Institute, Promoting Power Index, and the Averaged Freshman Graduation Rate. Many of these methods were limited in their ability to measure high school graduation (Schifter, 2011). As an example, using models of completion for high school categorized as "still in" or "dropout" hides much of the complexity behind problems with graduation (Bradley & Renzulli, 2011). Many of these were also estimates that did not accurately account for or calculate any of the factors affecting graduation (DePaoli et al., 2017).

The 2005 Graduation Rate Compact agreed to by all fifty governors with the National Governors Association and the 2008 federal regulation adoption requires all states to use the four year Adjusted Cohort Graduation Rate (ACGR) which is the first method to adjust for size of expected graduating class allowing for an accurate calculation of the students graduating on time (DePaoli et al., 2017). Since the 2011–2012 school year, federal policies have turned the focus to completion rates and a uniform method to gather important information through the ACGR (Balfanz, 2016; Cortiella, 2013; Schifter, 2011). This rate is specifically defined as

the number of students who graduate in four years with a regular high school diploma divided by the number of students who form the adjusted cohort for the graduating class. From the beginning of ninth grade, students who are entering that grade for the first time form a cohort that is subsequently adjusted by adding any students who transfer in to the cohort over the next three years and subtracting any students how transfer out, emigrate to another country, or die during that same period. (DePaoli et al., 2017, p. 9)

This has created a common formula for collecting data about graduation rates across the states providing data on individual subgroups, where progress is or is not being made, which students continue to graduate at higher or lower levels, and where gaps are closing or persisting (DePaoli et al., 2017).

As authors of Grad Nation reports, Balfanz (2016) and DePaoli et al. (2017) have deemed the ACGR as a gold standard and far superior than other methods for uniform and transparent reporting across the states. But, Balfanz (2016) states that this calculation is not without problems. These annual updates on the Grad Nation reports and updates through Johns Hopkins University from 2016, 2017, and 2018 call for specific changes and improvements in ACGR with its measurement of graduation across our nation. Reports from both years call on policy

makers to resolve issues in the collection and reporting regulations because currently states have set different definitions and components which affects the uniformity, transparency, accuracy, and comparability of the data (Balfanz, 2016; DePaoli et al., 2017). While the general ACGR formula from 2008 sought to bring consistency, no strict definitions for transfers from schools, removal from cohort, “regular” diplomas, and the identification of different subgroups have led to serious discrepancies (Balfanz, 2016). Balfanz continues to state that this threatens to undermine the process, push students off track to graduate at the district/school level, and possibly lower the quality of diplomas.

In this call to accurately measure and have each state strictly follow the general ACGR rate formula, policy makers need to address the questions of validity of a rising graduation rate and doubt over authenticity issues (Balfanz, 2016; DePaoli et al., 2017). These have given way to specific items for clarification in the ACGR rate and policy which include basic improvements for setting clear definitions regarding first time ninth graders, a timeline for four year graduation, requirements for a “regular” diploma, treatment of students receiving special education services in the data, and accounting for alternative schools (DePaoli et al., 2017). Both Grad Nation reports also responded to questions of ACGR validity with check and balance measures on the existing 5 years of data. The ACGR was compared to SAT, ACT, AP, and graduation exit exam scores to ensure that students were successful after high school and high standards for diplomas existed (Balfanz, 2016). The same 2016 report measured the reported ACGR against state enrollment numbers for total student population. No evidence was found that students were removed from cohorts so that states could show that they were graduating more students (Balfanz, 2016). While data did not exist to prove a large scale or serious national trend, there is still a need to continue to increase the nation’s confidence in the measurement of progress and

challenge for successfully graduating students across our schools, districts, and states (DePaoli et al., 2017). Michigan’s ESSA plan has specific goals set for graduation rates of students with disabilities. The report states that the ACGR calculation used previously will be used to determine four, five, and six year cohort overall graduation rates. The 2015–2016 school year graduation rate of 57.12% (four year cohort) was used as a baseline to establish yearly goals. The long term goal (2024–2025 school year) graduation rate for students with disabilities was set at 97.44%.

### **Complex Interplay of Factors**

While there is a complex history of data and policies paired with a lack of specific research detailing the complex factors related to graduation rates for students with special needs, there is research available regarding the school and personal factors that encourage on time graduation for all students (Barrington & Hendricks, 1989; Barron, 2013; Scruggs et al., 2010). This effort of managing the path to keep students in school in order for them to graduate is difficult because its causes are many and very complex creating a confluence of contextual factors that interact to blur elements even more when combined (Balfanz, 2009b). These factors and their measurable characteristics include: student’s performance in courses (GPA/test scores), teacher characteristics, absences rates, economic/demographic backgrounds, gender, race, health, family stability, prior school experiences in elementary/middle school, mobility from school to school, age at entry to high school, type of curriculum, and teaching service models (Allensworth & Easton, 2007). Recent policy recommendations from “Building A Graduation Nation” (Balfanz, 2016) include further evidence of the factors in schools that all students need in order to complete school successfully and ready for postsecondary goals. Those include positive relationships with caring adults, strong tailored instruction, supports and measures to meet goals,

and the connection of learning to life. Balfanz continues by recognizing evidence based plans to improve high schools by making sure students have engagement opportunities, early warning systems for potential problems, supports for students who are off track, and relationships through formal and informal mentoring. Course failure (GPA), behavior issues, and attendance are particularly high yield and predictive measures of on time graduation.

Within this research considering factors that impact student's graduation outcomes, there is an important study with strong associations and findings when special education is a factor. Through the What Works Clearinghouse (WWC) and Institute of Education Sciences through the USDE, Burke (2015) identifies a study of graduation outcomes for students attending schools in Oregon. In this research, four indicators (grade 8 attendance, grade 8 GPA, grade 9 attendance, and grade 9 GPA) were identified as dependable and valuable indicators for on time graduation. More importantly, when the influence of demographic, achievement, and behavioral characteristics were considered, only gender, English learner student status, and the above four factors were associated with graduation outcomes. Specifically, the study found that on time graduation rates are more strongly associated with attendance and achievement in grade eight and grade nine than special education status. Race/ethnicity, special education status, state achievement scores, and specific suspension/expulsion rates were found not associated with graduation in a statistically significant way. This study directly suggests and guides further research in focusing attention on strategies for dealing with attendance and achievement factors rather than other community and demographic factors.

When considering research in educational factors such as these, the type of intervention appears to be most important overall variable in exploring these complex factors (Scruggs et al., 2010). Thurlow, Sinclair, and Johnson (2002) provide four broad intervention components of



interventions that enhance motivation to stay in school and have good effort which encourages graduation. Programs and services that (a) provide opportunities for success in schoolwork, (b) caring and supportive environments, (c) clear communication of relevance of education to future, and (d) address student's personal problems. OSEP calls for and funds research that identify interventions that encourage students to stay in school. The authors identified basic and intensive levels of intervention and many models that include supplemental services, different forms of alternative education, and school wide restructuring for all. From this research, programs that promoted relationships, affiliation, and problem solving skills were deemed most successful.

There are two more broad categories that directly define the types of control available in the study of contributing factors that interplay when considering success for students in our schools. Factors are considered alterable (able to be changed by intervention or programming) or unalterable factors that students arrive at school with and may not ever change (i.e. native language, socioeconomic status, ethnicity, or gender). Bradley and Renzulli (2011) further defined these alterable/unalterable categories in their discussion of theoretical models for a study regarding students "pushed" or "pulled" out of school before successful graduation. They defined types of factors as within a school that discourage students from staying in school and failing to create connections. Essentially, some school policies themselves could prevent graduation for students. The authors further defined factors from outside of the school that were based more on cultural and economic issues emphasizing the importance of focusing on these alterable variables when dealing with student engagement and students in special education continuing in school. Educators and researchers need to recognize the difference between variables that educators and others can influence versus those variables that are static. This is essential when considering interventions for helping students in special education be successful

(Thurlow & Johnson, 2011). In the field of special education, there exists the “capacity to positively alter learning experiences through accommodation, remediation, alteration of assessment/curriculum” and differ instructional strategies and practices through these alterable factors. These must be the focus of efforts to keep students on the path to graduation and increase school completion (Thurlow & Johnson, 2011).

### **Mobility**

Within all the different types of factors affecting graduation, there are broad elements that reach all outcomes. One of those factors, school mobility (student transfers and moves) is widespread and often unrecognized in our schools. Furthermore, the reasons for moves and their subsequent consequences are widely varied, incredibly complex, and even considered a “moving target” for educators and policy makers (Beatty, 2010; Rumberger, 2015). Rumberger describes this confounding of factors surrounding the topic of mobility as a “snowball effect” meaning the potential for a move to harm a student is complex and impossible show cause on what the outcomes may have been without a move. This contextual and confounding situation has also been noticed by other studies and researchers. In a 2012 study, Gasper, DeLuca, and Estacion describe a move as just part of a long process of disengagement that leads to not graduating. The authors of that study also describe the process as a continuum with steps of withdrawal in which switching schools is just one point or symptom. This specifically, impacts the ACGR and mandated accounting rate also. One of the problems with this type of calculation is the effect of mobility. In the 2016 Grad Nation report, Balfanz describes an example in which districts and states “might have succeeded in elevating their graduation rates through looser definitions of who is and is not counted” (p. 39) depending on their enrollment period which is not specifically defined at the federal level. At the very least, this report states, this provides good reason for

federal and state policy to be more specific and for districts to create more accurate enrollment data.

Despite these difficulties, mobility as a component must be considered in educational programming and research. Student mobility is not a single studied factor in this research but directly affects the data examined. A change in schools is directly related to two of the studied factors: attendance and length of relationship with case manager. Students who moved in and out of the studied West Michigan high school did not have complete records in two of the four factor categories (co-team taught classes and years spent with case manager). This was especially evident in the determination of student's record of participation in co and team taught courses because schools do not consistently record this data on transcripts that are forwarded to receiving schools.

Because of the complexity behind student mobility definitions and policies, a specific definition can be difficult to ascertain. Mobility is common (Fiel, Haskins, & Lopez Turley, 2013) and described as a fact of life in US schools because the majority of school children and young adults move at least one time over their educational career with many of these students moving more than once (Rumberger, 2015). While common, it's important to remember that not all youths who move experience disruption to school environment and mobility does not work the same way for all students (Gasper et al., 2012). Mobility is also defined within research as a word for a complex set of possibilities with many kinds of changes that all have a potential to disrupt learning (Beatty, 2010). For the purposes of this study, extensive research did yield common general definitions for student mobility. A 2012 study from Fantuzzo, LeBoeuf, Chen, Rouse, and Culhane obtained early school mobility through enrollment records by determining when a student attended a different school within the district any time between each of the

kindergarten, first-, second-, and third-grade school years (zero to three possible moves). This student change was considered a move and coded as mobile. The MDE and Michigan Student Data System (MSDS; see <https://cepi.state.mi.us/msds/>) consider a student mobile when a change in records occurs: (a) enrolling after the start of the school year, (b) exit between school years, and (c) exit the district prior to the start of the school year. For the purposes of this study, high school students included in their four year cohort group graduation data with a recorded move one time or more in their transcript and class schedule records were flagged.

Within a general definition of school and student mobility, there are categories for types of moves. Many of these can be considered alterable and controlled by the educational setting. Others are unalterable and another component of the student population within a district or school. Rumberger (2015) describes three dimensions for a cause behind a student move: initiated by student, family or school; involuntary or voluntary (strategic or reactive; Fiel et al., 2013); and transfers between schools. He also highlights the idea that some of the causes of moves are far more disruptive than others. For the purposes of this study, no data was available regarding the type or cause of move. This research is included in order to contribute to the definition of mobility and its effect on the data collected.

More categories that researchers study as possible factors in school success and achievement for students who switch schools are: timing of move (Fiel et al., 2013; Reynolds, Herbers, & Chen, 2013); number of moves (Beatty, 2010; Gasper et al., 2012; Reynolds et al., 2013; Rumberger, 2015); and residential or family move (Beatty, 2010; Fiel et al., 2013; Reynolds et al., 2013; Rumberger, 2015). Other types of moves include changes that occur for various reasons within a family/student environment: change accompanied by disruptions at home and variation in students ability or strategies to deal with stress or withstand the effects of

a move (Fiel et al., 2013; Rumberger, 2015); promotional moves (Rumberger, 2015); non-promotional moves (Gasper et al., 2012); school closure (Rumberger, 2015); programming or location altered by school (Fiel et al., 2013); and economic foreclosure within the geographic area/community and family (Rumberger, 2015).

Two of the researched contextual and confounding factors present in school mobility data are also components in this study: attendance and relationships with adults in the educational setting. Absenteeism is a unique factor on its own but further complicated when paired with mobility. Students who switch schools have higher rates of absenteeism (Gasper et al., 2012) and previous research suggests that absenteeism only partially explains some of the risks associated with school change (Fantuzzo et al., 2012). Despite a consistent negative association between school mobility and reading/math achievement in previous studies, the Fantuzzo et al. study produced mixed results when controls were present for absenteeism. Lower attendance rates showed lower test scores in reading and math and a direct significant association with more problems in social and task engagement. But, school mobility “was uniquely associated with achievement” at younger ages especially in reading and math with partial mediating effect providing only “minor evidence” between school mobility and resulting absenteeism. This study suggested that children who experience instability (specifically or in general at home or school surrounding the environments that also contribute to mobility) are more likely to disconnect from school (Fantuzzo et al., 2012). Student attendance is directly measured in this study of on time graduation within their four year cohort for students receiving special education services. For the purposes of this study, no controls exist for student mobility.

In a review of existing literature, many researchers (Beatty, 2010; Fiel et al., 2013; Gasper et al., 2012; Reynolds et al., 2013; Rumberger, 2015) also state that changing schools

does show harm to student's development because of the disruption in relationships with teachers and measures of social capital. Mobility can be a significant factor because of the loss of ties to important people which also creates stress, takes away resources, and severs connections (Gasper et al., 2012). This idea of social capital is vital because of the trust and "strong and enduring connections" between students/families and school personnel - especially student connections to teachers (South, Haynie, & Bose, 2005). It also becomes multidirectional in that relationships affect mobility while mobility affects the social capital and subsequent relationships (Fiel et al., 2013). Mobility can disrupt these relationships and one approach to minimizing harm is a stable connection with teacher and/or fostering bonds with competent caring adult (Beatty, 2010). Many studies that are reviewing the associations between mobility and drop out go as far as recommending the building of relationships with important persons (such as adults in the school and teachers) as a way to combat and prevent the possible effects of switching schools (Fiel et al., 2013). The length of relationship with special education case manager is a measured factor in this study of on time graduation within their four year cohort for students receiving special education services. It is directly related to students who have switched schools or moved as evidenced by shorter time spent with consistent educational personnel at this high school.

The complex interplay of factors present in high school completion research exists in specific graduation rate mobility research also. In relation to student school changes and attendance, most educational researchers agree that the issue of mobility for students is hard to measure, complex, and cannot be "causal" and reasons for this include many mediators in association to drop out (Beatty, 2010; South et al., 2005). The absence of policy and organization make it particularly hard to measure student mobility as there are no clear federal mandates

(Rumberger, 2015). Studies are also hard to interpret and have problems because of complexity of problem (i.e. reasons for and types of moves), limits of methods available to study in schools, and inconsistencies across those studies. In a review of literature, Reynolds et al. (2013) found that student/school mobility studies had mixed results regarding the link between mobility and high educational risks. As an example, some studies found that the risks associated with mobility were owed to other disadvantages experienced by students. At the same time, other studies showed the opposite - that school mobility predicts academic and other problems over family risk, economic status, previous/current achievement, and adjustment. In another 2012 review and study, other research showed that much of the difference in students who switch versus those who do not disappears when socio-economic status and prior achievement are taken into account (Gasper et al., 2012). This study found over half of the association with school change and dropout is explained by control for characteristics present before the ninth grade but a robust association still exists (despite selection bias in many studies). In a 2005 study, South et al. discovered that students who move were twice as likely to drop out from school as non-movers but differences in peer friendship networks most likely explained the rate change. The author also states that academic performance and decreased extracurricular/school engagement rates also explain a small portion of dropout rates. Even when further study attempted to disentangle the consequences of dropout from the effects of issues that were already present, it was found that the difference in dropout rate was largely accounted for by family structure and previous behavioral/academic experiences before entering high school (Beatty, 2010; Gasper et al., 2012).

Despite all of the confounding issues and limitations in study, research exists that shows the impact of student mobility on the factors contributing to high school graduation rates. Researchers agree that students are more likely to experience negative effects during change in

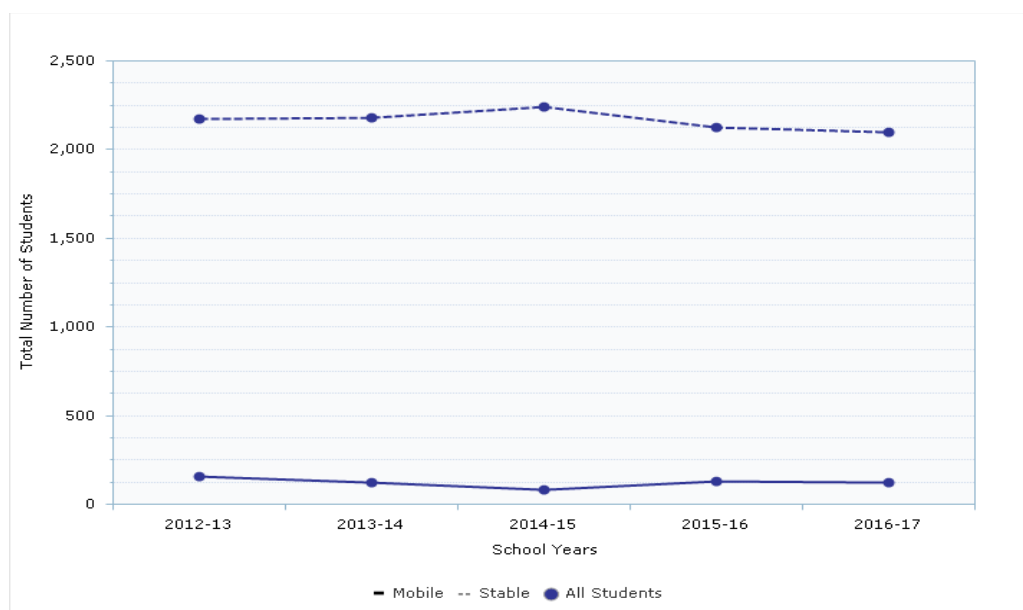
schools with most consistent and severe impacts on academic achievement and HS completion/increased dropout (Fiel et al., 2013; Rumberger, 2015). Gasper et al. (2012) specifically state that youth “who switch schools are more likely to demonstrate a wide array of negative behavioral and educational outcomes” which include dropping out of high school. Most studies can support a general consensus and have clear patterns that show moves (single or multiple and depending on the circumstances) can have adverse effects on students development and academics (Beatty, 2010). These adverse effects include increased dropout rates (South et al., 2005) and a consistent negative association between school mobility and reading/math achievement (Fantuzzo et al., 2012). Reynolds et al. (2013) summarizes by stating that affect rates were consistently negative even though it was smaller than effect of other factors (SES and home environment). His specific research showed that students who experience more school changes between kindergarten and 12th grade are less likely to graduate on time and more likely to drop out and that the greater number of moves and disruption to learning that a student experiences increases risks beyond those recorded regarding residential mobility and poverty. Other research suggests a significant relationship between mobility, lower student achievement, and dropout (Beatty, 2010). The relationship between school change and dropout varies depending on the propensity for switching schools especially when students switch schools for non-promotional reasons (Gasper et al., 2012; Reynolds et al., 2013; Rumberger, 2015).

### **Highly Mobile Schools**

While causal and exact impact is not possible to prove, many researchers agree that schools with high propensity for being mobile as a whole group are more at risk for negative impact on all students attending the school (Beatty, 2010; Fiel et al., 2013; Gasper et al., 2012; South et al., 2005). These students have more numerous and various risk factors for dropout with



depressed student achievement for most all students attending school (South et al., 2005). In a study using data from the National Assessment of Education Progress (U.S. Government Accountability Office, 2010) found that schools with high and low mobility rates were specifically defined as fewer than 10% of their students no longer enrolled (low) to more than 10% of students no longer enrolled (high) at the end of the school year. The School Superintendents Association (Fowler-Finn, 2001) describes the mobility rate calculation as the: “total of new student entries and withdrawals during the year divided by the total opening day official enrollment.” Schools considered to be experiencing a high mobility rate are over 70%. For the purposes of this study, high mobility school research was not a focus. As shown in Table 2, West Ottawa High School (WOHS) maintained a mobility rate well below 10% and a fairly stable mobility rate over extended school years.



*Figure 2. Student count mobility trend, West Ottawa High School. Reprinted from “Student Mobility for Ottawa ISD, West Ottawa Public Schools, West Ottawa High School, All Grades and All Students (2012–2017),” by MI School Data, 2018. Retrieved from <https://www.mischooldata.org>*

Table 2

*Mobility Rates for West Ottawa High School by Graduating Cohort Year*

School year	No. mobile students	No. stable students	% Mobile
2014–2015	81	2,239	3
2015–2016	130	2,127	6
2016–2017	123	2,097	5

*Note.* Data are from “Student Mobility for Ottawa ISD, West Ottawa Public Schools, West Ottawa High School, All Grades and All Students (2014–2017),” by MI School Data, 2017. Retrieved from <https://mischooldata.org>

**Attendance**

Mobility can also be defined as school attendance which is crucial for passing classes. Student’s rate of coming to school is also complicated to define because it can be influenced by many things including student behaviors and school conditions (Allensworth & Easton, 2007). Those school controlled conditions can positively impact attendance and can have independent and additive impacts on closing the achievement gap for success in school (Balfanz, 2009a). Attendance is one important alterable factor that can be influenced by teachers and parents to help students increase chances of graduation unlike unalterable factors like gender or being an English Language Learner (Allensworth & Easton, 2007). Missing school is a symptom of many factors inside and outside of school such as family issues or earlier school experiences (Burke, 2015). Attendance is especially important for the studied population of students receiving special education services. Students with disabilities are 1.4 times more likely to be chronically absent which puts them at academic risk even while they are already facing significant challenges. This exacerbates the achievement gap and has great potential to affect graduation rates (Rafa, 2017).

The significance and power of the attendance factor lies in its necessity regarding student engagement and success in school which is reflected in federal policy. The new ESSA of 2017 regulations gives states more power for determining their own accountability standards for attendance within parameters and measured under school quality or student success sections. ESSA established federal collection systems for student absentee rates through the Office of Civil Rights beginning in 2013–2014. This is the first time federal law has specifically mentioned the measure and also included provisions for chronic attendance issues. Specific attendance factors are included in two places: a list of metrics for total state population with subgroups disseminated that states must submit and allocation of federal dollars to train educators in ways to reduce student absences. The policies contain no formal definition except to stipulate the inclusion of excused and unexcused absences (Attendance Works, 2015). Regarding school mobility and attendance, there are few laws and educational policies in existence with some being developed. Current policies are mostly related to homelessness as that factor affects students in our nation's schools. The McKinney-Vento Homeless Act of 1987 reauthorized as part of NCLB in 2001 and 2009 Homelessness Prevention Program reach a portion of the population of students affected by school change. They provide funds and assistance to address related problems with additional links to Title 1 (Beatty, 2010). There are current calls for a national data set, programmatic action with “interdisciplinary research, and cross-cutting system solutions” (Beatty, 2010). Mobility through specific school attendance is now directly measured as part of Michigan's ESSA plan. All schools are required to report attendance yearly and high schools are required to have a course of action if absences are chronic as part of the indicators for School Quality and Success Component.

Researchers have also investigated the thresholds and varying rates (acceptable to chronic) attendance issues. Definitions vary from fifteen or more days to a 6 - 10% percentage threshold that are different by each state definition (Rafa, 2017). Burke (2015) identifies problems occurring at around less than 80% (approximately 10 days per semester) school attendance after analyzing for comparison in probability and based on a review of other research. Allensworth and Easton (2007) defined extremely high absences rates in public schools as missing one or more months of classes each semester. Moderate levels were one to two weeks of absence per semester. The authors further defined calculation as counted course by course then aggregated into total absences. Through Michigan's Center for Educational Performance and Information and the MSDS, chronic absence is defined as a student who has been enrolled in a kindergarten through twelfth grade school district for at least 10 days and is absent for 10% or more of that time period. Absences are calculated for a student by subtracting day attended from total possible attendance and divided by total possible to calculate percentage.

Attendance has long been studied and is now a measured portion of federal and state school policy. There are numerous researchers and data that find attendance as a factor that can accurately predict student failure or success. Balfanz (2009b) began his studies at the middle school level and found that both the number of days a student misses and how a student's attendance compares with peers signals disengagement and a danger of falling off the graduation path. He specifically states that we know this because students who come every day, behave, and get good grades graduate in high numbers. His studies further show that school districts with low graduation rates usually have significant and often unrecognized chronic absenteeism which further links the issue to graduation rates and student success. In 2014, Wilkins and Huckabee provided a literature map of dropout prevention strategies that specifically highlights studies

including rates for students receiving special education services. This study stated that many successful interventions (for all students) share monitoring for attendance as factor. Attendance is such an important factor that when considering a number of background characteristics that can predict failure (from freshman year) all other factor relationships were very small when compared to attendance. Only a very small amount of differences across student's freshman year absence rate can be explained by personal demographics and economic characteristics.

Two other educational researchers and studies recognize attendance as a major factor in school policy and ultimately success. Allensworth and Easton (2007) conducted a study of Chicago Public Schools which focused on freshman staying on track to graduate on time. Their initial review found an abundance of established research showing the correlation between success in school leading to graduation and attendance. For the studied freshman class in Chicago, authors found that only a small portion of attendance patterns can be explained by background characteristics. Course attendance was eight times more predictive of ninth grade course failure than eighth grade test scores. Freshman absences rates were used to predict 63% of variation in course failures with testing data providing only 8%. Incoming achievement was not at all predictive of failure with high absences rates considered. Just one week of absence for a Chicago area freshman was associated with a much greater likelihood of failure regardless of incoming grades and achievement. This is because attendance is necessary and required for learning the material, attendance is likely included in grading practices, and because those students performing poorly are least likely to attend. Their further research in high school dropout rates showed that this causes a downward spiral with gradual disengagement where more and more school is missed making it increasingly difficult to ever return to school with a less than 10% chance of graduating on time. Academic preparation was important for this study

but student's behaviors (i.e., course attendance) was more predictive of better grades and more success. Students with high rates of absence have largely disengaged from school. This study also found that it is not just extremely low attendance that is problematic. High achieving students from Chicago Public high schools that missed more than one week of school indicated achievement problems and moderate levels of absences were also cause for concern. One to two weeks of absence per semester are associated with a substantially reduced probability of graduating. Based on this extensive study, attendance is clearly a vital part of graduating from high school and is the most essential requirement for avoiding course failure (Allensworth & Easton, 2007).

Burke (2015) studied the issue as part of research regarding early identification of graduation outcomes that included special education status as control for student graduation rates. Attendance was specifically listed as an early warning factor that can guide policy and be changed through interventions. Burke also found attendance to be one of the most predictive indicators for graduation outcomes in grades eight and nine providing strong early warning signals about students who may need additional support to graduate on time. His study controlled for other factors (race, special education status, English language learner, demographic, achievement, behaviors, and difference in schools) and found that attendance of less than 80% in grades 8-9 indicated which students would not graduate on time. Only a very small amount of differences across student's freshman year absence rate could be explained by personal demographics and economic characteristics: 77% of students with grade 8 attendance of less than 80% did not graduate on time; 83% of students with grade 9 attendance of less than 80% did not graduation time.

Many intervention programs recommend school strategies to take action regarding student attendance. Those include attendance monitoring, careful examination of school policy, and actions to improve attendance for programs. Evidence suggests that schools can influence the degree to which students miss class and early warning signs that are easily discernible (Allensworth & Easton, 2007). Schools must engage in monitoring, preventing, and measuring ways to increase good attendance by engaging students, responding to every absence, and changing poor attendance habits (Balfanz, 2009a). There are specific dropout prevention programs deal expressly with attendance. As an example, the TDRPP program includes intensive monitoring of student progress with daily or near daily attendance monitoring (Wilkins & Huckabee, 2014). Check and Connect programming prescribes continuous and systematic assessment of student school engagement levels specifically measured through attendance (Wilkins & Huckabee, 2014). Other examples of recommendations include statewide implementation plans, public awareness initiatives, early warning systems based on use of school level data, and school improvement efforts (Rafa, 2017).

There is an abundance of established research between success in school leading to graduation and attendance. Attendance is an established key early warning sign for dropping out of school (Rafa, 2017). Therefore, attendance has been selected as one of the independent variables for this study. Student level data will be collected and examined for students receiving special education services at the selected West Michigan high school.

### **Relevant and Functional Coursework**

Coursework that focuses on a student's future post high school can be defined in many ways and can be a factor in successful school completion. Relevant coursework can be seen as helping students grow, understand their world, and provide preparation for their future in either

college or the workforce. Further and more specifically, relevance is achieved when academic content is meaningful to students but not as units or programs that are not connected to academic content of students courses (Allensworth & Easton, 2007). More specific definitions of relevant and functional coursework include vocational schooling with career and technology education. Further, it extends to occupational curriculum concentration of at least three credits in one specific labor market area such as agriculture, business, marketing, healthcare, or other preparatory areas (Balfanz, 2009a). While relevancy can be defined as the number of career, employment, and life skills courses/credits taken that directly relate to use in employment or community living after graduation, it is not the same as a college preparatory course of study. Organizations from the business, policy, and testing focus claim that the same set of knowledge, skills, and capacities are needed for success in college and the workforce. These claims push the belief that college readiness leads to workforce preparation but evidence shows that relevant and functional courses need to be more than high school acquisition of academic knowledge and skills. That evidence points to the specific inclusion of career/technology experience (Balfanz, 2009a).

Allensworth and Easton (2007) find that relevant, functional, and meaningful coursework is key in addressing issues of dropout and failure. This evidence makes a powerful connection showing consistent themes from many sources that freshman year engagement and performance in school is high in places where students see relevance of what they are doing in school for their future. These perceptions of school having meaning are tied to their individual courses and the extent to which student see them as consequential coming from a connection to core instructional programming. The important connection is that higher perception of meaning leads to higher levels of engagement and even higher motivation to come to school for better attendance. In turn,



student outcomes improve for higher achievement and lower levels of dropout. Allensworth and Easton assert that when students see school as relevant to their future, courses feel more worthwhile and a positive cycle of achievement touches most factors that most directly affect graduation. These authors specifically found that course performance is better in schools where students see school as relevant to their future. Schools able to make connection between curriculum and student's futures have tendencies to fewer absences, lower failure rate, and higher grades. Thurlow et al. (2002) find much of the same connections. Their studies describe not graduating from high school is a long process of disengagement often preceded by course failure that can be prevented with a focus on school variables that would reduce dropout rates. They specifically identified an intervention component important to enhancing student motivation as clear communication of the relevance of education to future endeavors. It is clearly essential to engage students in coursework that develops knowledge, skills, and habits of mind in both academics, employment, and life skills by finding ways to value coursework for high schools that align with those tasks needed for post-secondary success (Balfanz, 2009a).

Many current recommendations on high school reform see the degree to which school is seen as relevant to student's future as an essential part of any intervention. It is important to point out that they require coherent, systemic inclusion in schools and are not only targeting those in need (Allensworth & Easton, 2007). The presence or participation in a relevant curriculum or employment skills instruction in connected, interdisciplinary programs is an established important factor. Wilkins and Huckabee (2014) state that several successful interventions for all students share career awareness/job training as factor. Many effective intervention programs recommend comprehensive programming that include components and focus on engaging students through relevant instruction and skills students need after school through job training,

career awareness, and exposure to postsecondary education. Specific dropout prevention programs deal expressly with and incorporate functional life skills within their comprehensive plans. As an example, Wilkins and Huckabee found that nine of the 11 comprehensive dropout prevention programs described in their review incorporated job training/career awareness. Some examples of those include the RENEW program in which facilitators helped students make plans for educational, employment, and adult life goals; and spent 12 months organizing a support team and getting the involvement of key agencies. TDRPP has students participate in college exposure activities with explicit connections to core academic courses. The Check and Connect Program focuses on life skills, problem-solving skills, interpersonal skills, and character building while in the FUTURES program students receive life-skills training, character development, cultural enrichment workshops, as well as career preparation activities. Back on Track programming offered a variety of vocational courses that were incorporated into academic content and established a relationship with a local College of Further Education through which students had access to accredited vocational and academic courses. Early Entrance students attend a College of Further of Education, and are motivated to succeed through development of a particular interest in the vocational courses they were pursuing. The TAKE CHARGE self-determination program has students attending individual, weekly coaching sessions on applying self-determination skills needed to develop an individualized transition plan and carry out a youth-led transition planning meeting (Wilkins & Huckabee, 2014).

In recent studies, Hattie (2009) found career interventions defined as “activities and experiences designed to increase knowledge of occupations, training paths, job search skills, and decision making strategies that include the integration of work, family, leisure, and community roles” (p. 151) as seeming to have a positive effect on student outcomes. Hattie calculated a

correlation of  $d = 0.38$  across 119 studies examining different types of programming with varying intensities that ranged from individual counseling to class interventions and career education. Hattie (2009) found that intensity of treatment within the different types of programs was the “only significant contributor to more positive outcomes” (p. 152).

This data (focused on all students) makes measurement of a life relevant curriculum an important factor for graduation research. It is included in this study as a count of relevant (employment or life skills) courses taken by students receiving special education services in the selected West Michigan high school.

### **Co/Team Taught Courses**

Another school alterable factor that has possible impact on school completion success is the way in which instructors deliver courses. Co-teaching is defined as two teachers (one general education and one special education or other specialist) working and partnering together in a single physical space/general education setting for the purpose of jointly sharing duties and delivering instruction to a specified diverse student population that includes students with disabilities. This definition includes professional planning and delivery of instruction using the following approaches and their variations based on student need: one teach, one assist; station teaching; parallel teaching; alternate teaching; team teaching; and one teach, one observe (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010; Hattie, 2009). In an article illustrating the complexities and collaborative nature of co-teaching, Marilyn Friend and her co-authors further defined this practice as a special education delivery vehicle with intent to make it possible for students needing special education instruction to access the general education curriculum while at the same time benefiting from the mandated supports/strategies necessary to individualize and nurture learning in flexible, deliberate ways to meet specific needs. The

practice is further clarified and justified by Friend et al. (2010) in terms of educators beliefs about the best ways to make sure students with disabilities interact with peers and in response to the increasing demands for just one person to keep up with necessary knowledge/skills to meet the diverse, complex, and instructional needs of the current, dynamic student population. Teachers work to address IEP goals and objectives while at the same time meeting learning needs of other students in the class through fluid roles, alternating responsibilities, and negotiating design/delivery of instruction with the chores of teaching (i.e., grading). The authors of this article specifically noted that co-teaching is often used interchangeably (but incorrectly) with collaboration or inclusion. It is also not the same as other instructional models pairing teachers with paraprofessionals, volunteers, or student's teachers (Friend et al., 2010).

Co-teaching is also different from team teaching. Team teaching is defined as more than one teacher with intact student groups and higher student-teacher ratios (Friend et al., 2010). Co-teaching is the specific practice of adding another teacher (for varying time period) which drastically reduces the student-teacher ratio and offers the chance to maximize all students learning providing both professionals act as instructors. This relies on the expertise of professionals in which team teaching remains very similar along with their priorities. In co-teaching, the general education teacher provides curriculum, pacing, and classroom management focus. The special education teacher takes on the process of learning, individual nature of unique needs, and the emphasis on teaching to mastery (Friend et al., 2010).

This definition and the practice of co-teaching is a recent application evolving rapidly and stemming from the federal legislation and policies that have grown and changed over the years. The implementation of this application is largely based on philosophical foundations in special education mandates that required students to receive services in the Least Restrictive

Environment (LRE; Friend et al., 2010). Beginning in the 1950's and through the 1960's, team teaching was a model for general education professionals to explore efficiency and effectiveness. As they explored, special education expanded rapidly with advocates questioning the separation of students receiving services. This resulted in litigation and legislation from which special education professionals entering general education classrooms was a natural extension of consultation and resources. The 1980s–1990s led to raised expectations for students with disabilities and rapidly increased reports of co-teaching programs and initiatives for teachers as a vehicle to which meet those new expectations (Friend et al., 2010). Interest in this model and method intensified considerably with requirements in the IDEA of 2004 and NCLB which included mandated high quality teachers, instruction in general education settings, and professional accountability for student progress in testing.

The complicated definition of co-teaching illustrates the intricacy of conceptualizing and studying the practice of collaboration in special education. Most studies and research focus on teacher roles, perceptions, relationships, program logistics, emerging understanding, and professional preparation rather than demonstrating any impact on student achievement or other key outcomes (Friend et al., 2010; Hattie, 2009). The absence of impact studies fails to supply even tentative answers which leaves this model as an educational practice not subjected to any intensive or systematic investigation leaving little support for either critics or supporters (Hattie, 2009). In a meta-analysis of special education interventions, Scruggs, Mastropieri, and McDuffie (2007) reviewed seventy studies focusing on instruction for students with disabilities. Previous reviews and this article concluded that available efficacy data for co-teaching were generally positive but limited and some are based on qualitative evidence.

Of the limited but available studies involving the impact of co-teaching/team teaching, the model's implementation and use as a strategy finds strength in its access to general education curriculum and straightforward approach to providing students with entitled education (Friend et al., 2010). Another factor that is most directly related to graduation is "inadequate credit accumulation" which can be considered a measurement of student's performance in courses (Allensworth & Easton, 2007). Students performed better in courses through this credit accumulation than expected in schools where there was more cooperation among teachers and those instructors feel responsible for all students which can be accomplished through co-taught or team taught courses. When there is more evidence that teachers trust and respect other teachers in the school, there is also more coherence of programming, both of which are associated with higher grades and lower rates of failure. Attendance is also better in schools where teachers work together in a coordinated way with above expected student performance in coursework (Allensworth & Easton, 2007). Qualitative evidence of impact shows some potential benefits to students who receive special education services with high success rates, exposure to peers with role models for appropriate behaviors, additional attention from school instructors, positive reports taking into account the strengths of both teachers, and creativity sparked from teachers being forced to plan together (Hattie, 2009; Scruggs et al., 2007).

In more recent studies, Hattie (2017) found that co-teaching was not an important point on the barometer of success when comparing to possible alternatives measuring in the low category of effectiveness when measured against the effects of alternative innovations. Hattie calculated a correlation of  $d = 0.19$  across 119 studies examining team/co-teaching and all students outcomes (achievement and attitudes). This method of teaching has no effect on his studied factors but does no harm. Hattie's updated effect sizes and studies released in 2018 found

the same effect size (possibly due to the absence of new studies). The Friend et al. (2010) study was able to summarize two studies that found more information on the impact of co-teaching on learning, behavior, perceptions, academic achievement, attendance and/or discipline. Those authors summarized a 2002 study and found that students with learning disabilities in co-teaching settings performed better on report card grades and had higher attendance than those students in single teacher classes although their testing scores were comparable. A 2006 study of students with disabilities across resources, co-teaching, and general education settings found no significant difference in achievement (Friend et al., 2010).

In an attempt to add to the body of research about the impact of co-teaching/team teaching, this has also been selected as a variable for this study. Student level data (number of co/team taught courses defined by having a special education teacher in the room) will be included in descriptive and calculated analyses.

## **Relationships**

Relationships between students and teachers matter and are a key factor in addressing issues of successful school completion (Allensworth & Easton, 2007). This relationship has many definitions from a field of research in both general and special education populations. Generally, the educational connections made can be interactions with and involvement of a committed and concerned educator (Thurlow & Johnson, 2011) or mentoring and support from an adult advocate (Wilkins & Huckabee, 2014). The construction of relationships with students includes skills to establish respect by the teacher and the allowance of the child's experience (home, culture) in the classroom. This also includes listening, empathy, care, facilitation of development, and positive regard for others by the teacher. These skills mean that the teacher exhibits care for learning each student as a person, understanding of others and content,

communicates message of purpose and priority, provides valuable feedback, and makes students feel safe (Hattie, 2009). In a study funded by the USDE through the Office of Special Education Programs (OSEP), relationships with school adults was determined to be a top intervention strategy for the prevention of high school dropout because of the persistence, continuity, and consistency provided. In that study's definition, relationship with school adults provided a way to show students that there was a person who would not give up on them or allow them to be distracted from schools. This person would be available to them and knew them providing a caring relationship that connected the student to the school (Thurlow et al., 2002).

In their literature review and mapping study of research that focused on graduation success for students with special needs, Wilkins and Huckabee (2014), identified and attempted to clarify this relationships presence in schools. Through their summary, it can be defined as any adult in the system providing at least 2 years of guidance, emotional support, role model, tangible support, or serving as parent figure. The relationship can include supportive guidance from a caring adult, smaller classes with family atmospheres, designated facilitators providing guidance and advice, role models who also get to know students on a 1:1 basis, or a coordinator providing tangible support. This person may or may not be a formal mentor but provides help when a student is struggling and pushes students to succeed. Identified adults serving in this capacity may also conduct family outreach and remain with the student through their enrollment in the school monitoring progress over time. This may mean any adult naturally acquired through school and not necessarily an "official" mentor (Wilkins & Huckabee, 2014).

Meaningful relationships with adults in the school are researched for both the general and special education populations with many of those studies finding a significant connection between positive adult relationships and success in school for students. Across educational



studies, this part of a caring and supportive school environment has been identified as one of the important components for enhancing student motivation to stay in school and work hard (Thurlow et al., 2002). In a specific study taking a close look at course grades, failures, and attendance for freshman in Chicago Public Schools, Allensworth and Easton (2007) identified the strength of relationship with a personality in the classroom and the construct behind a strong teacher-student relationship as one of the most distinguishing factors for schools in terms of course performance and ultimately graduation. They found evidence that teachers and schools matter in student performance which match efforts to address low achievement in the reduction of dropout rates. Their studies were “particularly noteworthy” (p. 32) in relation to completing school successfully because the data was collected at the school level and consistent with many of the national recommendations regarding high school reform. Furthermore, better attendance, higher grades, greater student engagement, lower rates of failure, and higher graduation rates become possible because students attend class more often when they have strong trusting relationships with instructors. These “school based relationships” develop as teachers and students work together to meet goals (Allensworth & Easton, 2007). A personal relationship with an informal mentor or teacher is another common factor in research, recommendations, and success at the secondary level. Allensworth and Easton found that schools with strong teacher-student relationships were more consistent and successful. This study of Chicago high school students found that students perform better in schools when there is a strong teacher-student relationship where grades, failure, and absences rates were “significantly better than expected” (p. 30).

Other studies support these authors. Students with special education services who have been interviewed after dropping out have identified poor relationships with teachers as a factor

making interaction with and involvement of committed and concerned educator/other adult at school important for improving attitudes and motivation to earn diploma (Thurlow & Johnson, 2011). Further, relationships were identified as challenging but successful factors in keeping students on the path to graduation through making sure the ratio of skilled adults to student need is balanced. This paired with teacher buy-in and support for keeping kids on track made the instructor a very important part of successful graduation for more students (Balfanz, 2009b). Wilkins and Huckabee (2014) explored programs that provide mentoring (formal and informal) and additional academic support which were also identified as important factors for intervention programs that keep students with special needs in school. The study also identified a caring adult/mentor helping a student to graduate as an essential part of creating a more successful path to completion of school. They also specifically identified a study that calculated the probability of dropping out based on the presence of a “helpful person” which showed a statistically significant lower chance of dropout. In other included studies, all participants identified teachers as important sources of support, providing academic support, pushing student to success, and fulfilling the role of a caring adult who monitored progress over time (Wilkins & Huckabee, 2014).

In recent studies, Hattie (2009) found teacher relationships at an important point on the barometer of success when comparing the factor to possible alternatives. His research looked for factors with the greatest impact on student achievement outcomes and connections with adults at school measured in the high category of effective when measured against the effects of alternative innovations. Hattie calculated a correlation of 0.34 ( $d = 0.72$ ) across 119 studies examining all person centered teacher variables and all students outcomes (achievement and attitudes). This translates into knowing that in classes with person centered teachers who develop

strong relationships with student's student engagement is high, there are higher student outcomes, and student attendance is better (Hattie, 2009).

Mentoring (formal and informal) and additional academic supports are important and recommended programming elements for intervention programs that keep all students (including those specifically receiving special education services) in school (Wilkins & Huckabee, 2014). Many of these involve assigning a caring, adult advocate serving as a service coordinator for students for their entire enrollment period. Through studies reviewed involving the Check and Connect system, the presence of these informal "mentors" and a connection to a caring adult were instrumental in staying in school. These personal relationships with advocates (teachers or other adults) play a very important role to keep students in school (Wilkins & Huckabee, 2014).

Through the WWC and the USDE, Thurlow and Johnson (2011) evaluated and summarized specific dropout prevention strategies providing general recommendations and specific programs for schools to access in the California Dropout Research Project. From that research and report, one programming suggestion was to assign adult advocates for at risk students as a target intervention which demonstrated positive effects based on the adult connection between student, family and school. As summarized in their report, the WWC further stated that this type of intervention of an "established connection between student and adult is critical as is the role of the adult in advocating for student and addressing social and emotional needs as well as academic needs" (p. 32). This WWC study found this programming factor was strongest among students who receive special education services and studies focused in that area. The report also incorporated specific programs investigated and reported through the National Dropout Prevention Center/Network and National Dropout Prevention Center for Students with Disabilities through Clemson University with support from USDE and OSEP. The Achievement

in Dropout Prevention and Excellence APEX program specifically modeled the use of a facilitator assigned to individual students at risk for not completing school successfully. This study and through all of these agencies also highlighted the work of the Check and Connect program which main component consists of a adult monitor who functions as the students case manager, mentor, and guide (Thurlow & Johnson, 2011).

Extensive research about these types of relationships show its importance in student's probability for graduation and has been selected as a variable for this study. Student's number of years with the same special education staff member will be examined and included in data analyses.

### **Summary**

This chapter provided a history of the policies, research, and legislation behind high school graduation rates for students receiving special education services. This included past measurement of the actual rate as it has become a more established part of school accountability. Factors that contribute to high school graduation for students receiving special education services can be complex and hard to study individually. These factors can be classified in many different ways including those alterable and unalterable by the school. One unalterable factor considered for the studied school was mobility because of its connection with the measured factors. The focus components and factors for this study include attendance, relevant/functional curriculum, co- and team taught courses, and relationships with teachers. The next chapter will utilize this data in order to explore and assess the relationship between the presence of a previous school experience (four factors) and the relationship to the graduation rate of students with special needs through an ex post facto design.

## CHAPTER III

### RESEARCH DESIGN AND METHODOLOGY

#### **Introduction**

The purpose of the study was to examine the gap between graduation rates for students receiving special education services and the total graduating population of the school. The examination of school controlled support data was considered to determine if a relationship existed between those factors and a student's on-time graduation with their student cohort group. Specifically, student progress related to school attendance, participation in relevant courses, enrollment in co- or team taught courses, and the length of their relationship with their case manager were collected and analyzed. The presence of this persistent gap in graduation rates, needed progress in order for this to change, and negative consequences of not receiving a diploma establish this as an important area of study. Further, it can provide better understandings and directly applicable findings for school programming and state policy while also contributing to the small body of knowledge regarding graduation for students in this specific population. This is imperative for school personnel and educational policy makers to consider because of the importance of successful graduation from high school for students with disabilities. This section describes the specifics for research design, population, data collection, and data analysis in this graduation rate study. Successful, on-time graduation and measured, school controlled factors were collected for students receiving special education services who graduate from a West Michigan high school in the years 2015, 2016, and 2017. Data were analyzed using the SAS software program through Wilcoxon rank sum test.

## Research Questions

The guiding questions for this study are: How were special education graduation rate outcomes associated with student attendance, participation in relevant or functional coursework, length of relationship with special education instructor/case manager, and participation in co/team taught classes? What characteristics do high school students receiving special education services and who graduate share that are a result of specific actions, intervention, and programs? Do special education graduation outcomes differ in participation for co- or team taught classes, length of established relationship with adult at school, participation in relevant curriculum, and attendance? The study will look for possible relationships involving the four factors and graduation rates for diploma seeking students in special education receiving special education services through the following research questions:

1. Is there a relationship between graduation of students receiving special education services and their placement in co-taught or team taught classes?
2. Is there a relationship between graduation of students receiving special education services and the length of time they are guided by the same case manager/SE instructor?
3. Is there a relationship between graduation of students receiving special education services and participation in employment or applied programming providing a relevant curriculum?
4. Is there a relationship between graduation of students receiving special education services and their school attendance?

## Design

In order to explore and assess the relationship between the presence of a previous school experience (four factors) and the graduation rate of students with special needs, an ex post facto study was the best research design to use in order to answer questions. This design investigates and explores actions and programming that have already occurred (Watson, 2012). This design is also most appropriate and useful for investigating the relationship between the dependent and independent variables when randomization or manipulation of independent variables is not possible. It does provide valuable information for the field of special education and secondary education regarding graduation rates for students with special needs. This graduation rate and school alterable supports quantitative study is non-experimental because of the impossibility of random selection. The design and plan stem from the nature of a longitudinal study with its purpose focused on description of the form and actions of school alterable conditions (Gall, Gall, & Borg, 2007) studying the graduation rates of cohorts of students receiving special education services over a three year period. It is best described as non-experimental, ex-post facto due to the study of the level of the independent variable based on participants and events that occurred in the past (Lammers & Badia, 2005). This provides valuable data because comparisons can be made between groups of participants with similar backgrounds exposed to different conditions based on their natural history even without random assignment. The dependent variable of this type of study is then used to measure participation or treatment level in order to determine if meaningful differences exist. Random assignment or active manipulation of the independent variable do not occur and groups may be biased in different and unknown ways. Participants are grouped and considered within a treatment based on membership in that group and past history (Lammers & Badia, 2005).

## Population and Sample

The target population for this study was pulled from the students receiving special education services graduating over three years at WOHS located in Holland, Michigan. The school serves a diverse student population comprised of approximately 2000–2300 ninth through twelfth grade students. The most recent ethnic distribution of this high school's student population was 47% Caucasian, 37% Hispanic, 9% Asian, 4% two or more races, and 3% African American (WOPS, 2017). The high school campus consists of two buildings with community college courses on site. Their mission includes preparing all students to be college, career, and life ready.

Using the MDE's Center for Educational Performance and Information Dashboard (MI School Data, 2017), WOHS consistently performs above the state average but in comparable ways to similar schools by demographic across the state. MISchoolData puts schools in the same category as WOHS based on the number of students enrolled, the student-teacher ratio, percentage of students eligible for Free and Reduced Lunch, and the amount of money the school spends per student. For the purposes of this study, we can compare this school to similar schools or the state using four specific factors (along with the diversity information provided by the school website) detailed by this state resource. For the first factor of comparison, during the years of study (2014–2017) WOHS averaged a Free and Reduced Lunch rate of about 36% while the entire state's rate was 38%. Second and during those same years, WOHS graduation rate for all students ranged between 93% and 95% while schools of similar demographics ranged from 94% to 95%. The state's average graduation rate for all students for the same time period was steady at 80%. The next factor has more variability but is also a data point for this study. The West Ottawa graduation rate for students with disabilities from 2014 to 2017 had a wider range



of 75%–84% while similar schools ranged from 64% to 68%. The state’s graduation rate average for the same time period ranged from 55% to 57%. The last factor is on track attendance for all students and also a measured data point in this study. During the school years 2015–2017, students at WOHS attended at a rate of 89%–90%. Similar schools had a steady rate of 89% while the state averaged 80%–81% attendance.

### **Participants**

For the specific special education population under study, the MDE MSDS and WOHS data management systems (Infinite Campus) were used to determine the total number of students receiving special education services enrolled during their twelfth grade year graduating for the cohort 2014–2015, 2015–2016, and 2016–2017 school years. From this described high school population, the total number of students receiving special education services expected to graduate during the three study school years was 131 students. Students who transferred to other schools during their senior year were included in the study through a projection of credit accumulation for state required expected courses if the student had continued at this or any high school. This list included only students with an Individualized Education Plan (IEP) and receiving academic special education services.

For the purposes of this study, 16 students were specifically excluded from this list for a final total population of 115 eligible students receiving special education services during the years of study. Of the 16 excluded students, twelve were students on the more severe spectrum of disabilities receiving extensive special education support. These students were all enrolled in a special education course of study leading to a certificate of completion. This course of study does not lead to a diploma and does not count toward graduation rate. Because this would have a false bearing on the factors possible relationships and on the graduation outcome, these students were

removed. Two of the sixteen removed students were part of the 2014 cohort and listed as graduates for 2015. Because they did not graduate on time (1 year late) and were not a part of the three year population sample, their data was not considered. One of the students was listed as a graduate of this high school but did not physically attend the school and was listed for special education transcript purposes only. The last of the excluded 16 students was not included because that student had only 20 total days of enrollment at this high school. The total studied student population of 115 also excluded any double entries for students who continued in their studies and were listed as a member of more than 1 cohort year. For the purposes of data analysis and study, the total population number will be listed as these 115 students receiving special education services and considered able to graduate over these 3 school years. When needed for further analysis, students were also grouped, compared, and labeled by graduating year.

### **Data Collection and Procedure**

School records were accessed by volunteer West Ottawa school staff in a review of records available through Infinite Campus (online district data management system) and MDE MSDS. Infinite Campus is a system used by the district and school to record student demographic information, attendance, discipline, courses, scheduling, teacher grade books, online parent access “portal,” and information management. For the purposes of this study, Infinite Campus was used to access and confirm student transcripts for cohort determination, attendance totals, graduation status, and courses taken (teacher of record and relevant curriculum). School staff collected all data by each of the four independent variables and then coded to remove any personally identifying information before submitted to researcher. Transcripts (for attendance, co-/team taught courses, and functional coursework), Schedule B Caseload worksheets (MSDS), and Infinite Campus teacher schedules were printed for all school

years necessary resulting in complete records of students in the total student population. These were also forwarded to a volunteer special education staff member for collection and coding.

Ex-post facto, archival data collection occurred in order to complete the necessary student level information record needed for this study. The high school principal and the district special education director authorized collection and use of these data. A guarantee of confidentiality was included and approved by these administrators. Student names were not released to researcher and all information was coded to protect confidentiality. It was determined that the coded data did not require an informed consent process.

### **Independent Variable Data Collection**

Specific data collection and measurement were determined and communicated prior to archival data collection. Google Sheets were used to organize one data chart with needed coded material. Columns were created for demographic and independent variable data: graduation year, graduation status and end type, case manager relationship years, total days attended with total possible days of enrollment, number of relevant courses taken, and number of co-/team taught courses. Student names were listed and coded using two letters and two numbers. Coding key was held by school district to ensure confidentiality. Each of the four independent variables were measured and recorded using the following descriptions.

1. *Attendance.* Using a WOHS transcript from Infinite Campus, the number of days a student was absent for their total enrollment period (all school years) was recorded. The number of actual days they were enrolled at the school was also recorded for a proportional measurement showing actual student attendance allowing for partial enrollment. This was coded as missed class ratio in order to analyze the data in SAS software.

2. *Duration of relationship with case manager/informal mentor.* Using Worksheet B caseload lists (MSDS) for all special education instructors in the school years 2011–2012 through 2016–2017, students were located on each list for each school year enrolled at this school. The highest number of years with the same special education case manager/instructor was listed for each student along with the total school years of WOHS attendance. Enrollment and a relationship with a case manager for any length of time during the school year counted as 1 year. This variable was coded as new same case manager ratio for analysis in SAS software.
3. *Relevant curriculum.* This is defined in research as work helping students grow, understand their world, and provide preparation for work or college in which academic content is meaningful to students and connected to school (Allensworth & Easton, 2007). Specific definitions of relevant and functional coursework include vocational schooling with career and technology education, occupational curriculum concentration in specific labor market area like agriculture, business, marketing, healthcare, and other preparatory areas (Balfanz, 2009a). Using this as a basis, the number of CTC/employment and life skills courses/credits taken/passed as defined by coursework directly related to use in employment or community living after graduation was listed. Ninety-three high school courses were identified (see Appendix A). This list was compared to each student's WOHS transcript and the number of courses was recorded. This data point was not listed as a ratio because the number of courses possible varied greatly based on each student's individual experience. This number of relevant courses was labeled as such for use in the SAS software analysis.

4. *Team/co-taught courses.* Student's course schedules were examined by specific course taken and lead teacher listed. Each course was checked against a master list of all co-/team taught courses by semester for the 2011–2012 through 2016–2017 school years. Master list of all described courses was compiled by WOHS school counselor after checking all special education teacher schedules for the applicable school years in order to determine team and co-taught courses by instructor name when referring back to individual student schedule. Courses were identified as co-/team taught by the scheduled and physical presence of a certified special education instructor for the class period. The number of actual co-/team taught courses they were enrolled in was presented along with total number of courses possible for each enrolled semester. This allowed for proportional measurement showing actual co-/team taught courses participation allowing for partial enrollment (not all 4 years). The last variable was coded as team taught ratio for analysis in SAS software

### **Dependent Variable Data Collection**

Graduation rate is part of the federally required reporting program and measured through cohort calculations. MI School Data (2017) lists the following definition for Michigan's calculation on its website: The "four-year adjusted cohort graduation rate" is calculated by tracking individual students from the time they were enrolled as first-time ninth-graders, with a 4-year expected completion rate. The formula accounts for students who leave school and return later, for students retained in a grade and stay in school, and for students who transferred into and out of the public school system." It also requires students to have attended two or more count days and reported to the state for one or more count days. Graduation rate data at the student level was collected for this study using the same cohort, four year measurement. It is identified

as one of the following two categories for each individual in the specified study sample which is different than the state definition.

- *On time graduation.* Student receiving special education services received diploma four years after beginning their high school course work as computed through their school year cohort based on the year ending eighth grade and entering the high school. Student data cells were labeled as graduate for analysis in SAS software.
- *Not graduating/drop out.* Student receiving special education services did not receive diploma four years after entering high school as computed through their cohort. This was a four year only measure of graduation and was not dependent on future plans to transfer, continue, or end education. Students not receiving a diploma were labeled as DNF (did not finish) for data analysis in SAS software.

### **Data Analysis**

In order to analyze collected, coded data and answer the research questions, two statistical tests were used to determine possible relationship between the four school factors and the graduation rate of students receiving special education services. The dependent variable was on time graduation for the described population over three school years in one high school. The independent variables were participation in co- and team taught courses, length of relationship with case manager, participation in relevant coursework, and student attendance. The Wilcoxon rank sum test was used to analyze descriptive and coded information for all four research questions generating a test statistic. Descriptive statistics (minimum, median, maximum, mean, standard deviation) for all four factors (one at a time) were also determined and used to explore the degree of the relationship between each of the four variables individually and student graduation rate. The test statistic from the non-parametric test (Wilcoxon rank sum) was used in

the Monte Carlo test to compare data and explore or describe any relationships among variables with a dichotomous, categorical variable (students who graduated within four years and students who did not). The Wilcoxon test is considered better able to use available information in non-normal distribution shape of real-world data in populations frequently encountered in education, psychology, and much like the one from this study (Sawilowsky, 1990). This test is applied to data from two samples that are independent (not identical), can be ordinal, and are not paired testing the differences between two populations. The test does not require normal distribution of scores which was essential in this study (Triola, 1998). The null hypothesis (no statistical significant difference) of a Wilcoxon test assumes that the median scores or ranks are equal. The calculations for test statistic are similar to that of a t-test but exact values are calculated due to the small sample size (Purdue University Department of Statistics, n.d.). The test statistic is then used within the Monte Carlo test which samples the median over and over measuring the proportion of time that the test statistic is larger or smaller resulting in an approximate p value determining equality or difference in the rank scores (Caffo, n.d.). Rejecting the null hypothesis (statistical significant difference) in these tests means that there is evidence that one set of scores or ranks is shifted or different from the other. The determination is made when the test statistic is calculated as the sum of the ranks of the median values (University of Virginia Library, n.d.).

### **Summary**

Chapter 3 outlines the methodology for this study of the graduation rate gap between students who receive special education services and their total school population. These methods further define the purpose of this study which is to describe and assess the support systems that may or may not have helped students receiving special education services be successful and graduate from high school within 4 years. This ex-post facto, quantitative, longitudinal research

design study was conducted using past data to compare graduation results and identify any relationships to the school alterable independent variables based on student level data collected. In the next chapter, descriptive and comparison information for all four research questions will be analyzed. Data will be examined to quantify the degree of the relationship between each of the four variables individually and student graduation rate.



## CHAPTER IV

### ANALYSIS OF DATA

#### **Introduction**

The purpose of this study is to examine graduation rate gaps for students receiving special education services considering school level data, interventions, actions, and programming. The overarching questions were: How were special education graduation rate outcomes associated with student attendance, participation in relevant or functional coursework, length of relationship with special education instructor/case manager, and participation in co/team taught classes? What characteristics do high school students receiving special education services and who graduate share that are a result of specific actions, intervention, and programs? Do special education graduation outcomes differ in participation for co- or team taught classes, length of established relationship with adult at school, participation in relevant curriculum, and attendance?

This study looked for possible relationships involving school factors and examined graduation rates (received diploma or did not finish after four years of high school) from 3 school years (2014–2015, 2015–2016, and 2016–2017) of students attending a West Michigan high school using their school transcripts, course lists, and school course data. The study sought to examine the activities and programming that possibly assisted students receiving special education services in attaining a diploma within 4 years/with their peer cohort.

In order to analyze collected and coded data then answer the research questions, the Wilcoxon and Monte Carlo tests were used to analyze descriptive and coded information for all

six research questions. Descriptive statistics (minimum, median, maximum, mean, and standard deviation) for all four factors (participation in co/team taught courses, length of relationship with case manager, participation in relevant curriculum, and attendance) one at a time were determined for each graduating year and in a combined sample total. In this chapter, charts will be used to quantify the degree of the relationship between each of the four variables individually and student graduation rate. Median rates were computed to compare data and explore or describe any relationships between a dichotomous, categorical variable (students who graduated within 4 years and students who did not) and the four studied factors for each of the graduating years and for the combined total sample. Comparisons will be presented in charts and analyzed.

### **Research Questions**

The guiding questions are: How were special education graduation rate outcomes associated with student attendance, participation in relevant or functional coursework, length of relationship with special education instructor/case manager, and participation in co/team taught classes? What characteristics do high school students receiving special education services and who graduate share that are a result of specific actions, intervention, and programs? Do special education graduation outcomes differ in participation for co- or team taught classes, length of established relationship with adult at school, participation in relevant curriculum, and attendance? The study looked for possible relationships involving the four factors and graduation rates for diploma seeking students in special education receiving special education services through the following research questions:

1. Is the graduation rate of students receiving special education services related to their placement in co-taught or team taught classes?

2. Is the graduation rate of students receiving special education services related to length of time they are guided by the same case manager/SE instructor?
3. Is the graduation rate of students receiving special education services related to participation in employment programming providing a relevant curriculum?
4. Is the graduation rate of students receiving special education services related to their school attendance?

### **Organization of Data Interpretation**

The data being analyzed consist of 115 student records for each of the four variables. Descriptive and comparison data will be presented based on graduating year for each cohort and as a combined rate. This will be presented in chart form and through sample number. Descriptive data will be presented first in separate charts for each graduating cohort year and also as a combined total sample. Then, the medians of all groups (cohort year and total sample) were compared for a significant difference in graduating rate indicating a possible relationship to individual variables. This is presented in a single chart including all groups. Non parametric tests were used to test the remaining comparisons due to small sample size.

### **Analysis of Descriptive Characteristics for Student Level Data**

Descriptive data including the minimum, median, maximum, mean, and standard deviations were calculated for each graduating cohort year in order to examine those rates and compare groups graduating with a diploma within four years and not graduating/receiving a diploma during the same time period.

The 2014–2015 school year graduating cohort students who did not graduate had a range of 5 to 10 co- or team taught courses over their total attendance period with a median of 7.50

courses. The number of years spent with the same case manager ranged from 2 to 5 with a median of 3.50 years. The total number of relevant courses taken during their high school enrollment ranged from 0.10 to 0.28 with a median of 0.19 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0.20 to 0.24 classes with a median of 0.28 for students who did not graduate.

Table 3

*Characteristics of High School Students Receiving Special Education Services Who Did Not Graduate in the 2014–2015 School Year as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	5.00	7.50	10.00	16.750000	17.291232
Number of years with same case manager	2.00	3.50	5.00	25.000000	15.962008
Relevant courses per semester	0.10	0.19	0.28	21.878049	17.218870
Percentage of class missed	0.20	0.28	0.24	21.024390	17.335159

Note. *n* = 2.

Table 4

*Characteristics of High School Students Receiving Special Education Services Who Did Graduate in the 2014–2015 School Year as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	0.00	9.00	23.00	22.256098	17.291232
Number of years with same case manager	1.00	4.00	4.00	21.853659	15.962008
Relevant courses per semester	0.04	0.15	0.42	24.500000	17.218870
Percentage of class missed	0.00	0.05	0.24	42.000000	17.335159

Note. *n* = 41.

The 2014–2015 school year graduating cohort students who did graduate had a range of 0 to 23 co- or team taught courses over their total attendance period with a median of 9 courses. The number of years spent with the same case manager ranged from 1 to 4 with a median of 4 years. The total number of relevant courses taken during their high school enrollment ranged from 0.04 to 0.42 with a median of 0.15 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0.00 to 0.24 classes with a median of 0.05 for students who did graduate.

Table 5

*Characteristics of High School Students Receiving Special Education Services Who Did Not Graduate in the 2015–2016 School Year as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	8.00	12.00	18.00	17.833333	12.913916
Number of years with same case manager	4.00	4.00	4.00	20.000000	11.313708
Relevant courses per semester	0.10	0.13	0.15	13.000000	12.814255
Percentage of class missed	0.01	0.04	0.16	12.000000	12.955545

*Note.*  $n = 3$ .

The 2015–2016 school year graduating cohort students who did not graduate had a range of 8 to 18 co- or team taught courses over their total attendance period with a median of 12.00 courses. The number of years spent with the same case manager remained at 4 years for all students. The total number of relevant courses taken during their high school enrollment ranged from 0.10 to 0.15 with a median of 0.13 courses. The proportion of classes missed during a

student's actual high school enrollment ranged from 0.01 to 0.16 classes with a median of 0.04 for students who did not graduate.

Table 6

*Characteristics of High School Students Receiving Special Education Services Who Did Graduate in the 2015–2016 School Year as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	1.00	8.50	20.00	13.520833	12.913916
Number of years with same case manager	1.00	3.50	4.00	13.250000	11.313708
Relevant courses per semester	0.05	0.13	0.33	14.125000	12.814255
Percentage of class missed	0.01	0.06	0.27	14.250000	12.955545

*Note.*  $n = 24$ .

The 2015–2016 school year graduating cohort students who did graduate had a range of 1 to 20 co- or team taught courses over their total attendance period with a median of 8.50 courses. The number of years spent with the same case manager ranged from 1 to 4 with a median of 3.50 years. The total number of relevant courses taken during their high school enrollment ranged from 0.05 to 0.33 with a median of 0.13 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0.01 to 0.27 classes with a median of 0.06 for students who did graduate.

The 2016–2017 school year graduating cohort students who did not graduate had a range of 1.00 to 14.00 co- or team taught courses over their total attendance period with a median of 4.00 courses. The number of years spent with the same case manager ranged from 2 to 4 years for all students with a median of 2 years. The total number of relevant courses taken during their

high school enrollment ranged from 0 to 0.12 with a median of 0.06 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0.02 to 0.16 classes with a median of 0.04 for students who did not graduate.

Table 7

*Characteristics of High School Students Receiving Special Education Services Who Did Not Graduate in the 2016–2017 School Year as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	1.00	4.00	14.00	13.200000	27.628488
Number of years with same case manager	2.00	2.00	4.00	17.100000	23.931721
Relevant courses per semester	0.00	0.06	0.12	11.300000	27.546105
Percentage of class missed	0.02	0.04	0.16	0.070000	21.200000

Note. *n* = 5.

Table 8

*Characteristics of High School Students Receiving Special Education Services Who Did Graduate in the 2016–2017 School Year as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	0.00	10.50	19.00	24.2250	27.628488
Number of years with same case manager	1.00	4.00	4.00	23.9317	23.73750
Relevant courses per semester	0.04	0.13	0.42	24.4625	27.546105
Percentage of class missed	0.01	0.05	0.25	23.2250	27.681449

Note. *n* = 40.

The 2016–2017 school year graduating cohort students who did graduate had a range of 0 to 19 co- or team taught courses over their total attendance period with a median of 10.50

courses. The number of years spent with the same case manager ranged from 1 to 4 with a median of 4 years. The total number of relevant courses taken during their high school enrollment ranged from 0.04 to 0.42 with a median of 0.13 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0.01 to 0.25 classes with a median of 0.05 for students who did graduate.

When all three years of students receiving special education services who did not graduate are considered together, the entire population had a range of 0.02 to 0.38 co- or team taught courses over their total attendance period with a median of 0.22 courses. The number of years spent with the same case manager ranged from 2 to 5 years for all students with a median of 4 years. The total number of relevant courses taken during their high school enrollment ranged from 0 to 0.28 with a median of 0.11 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0.01 to 0.35 classes with a median of 0.05 classes for all students who did not graduate.

Table 9

*Characteristics of High School Students Receiving Special Education Services Who Did Not Graduate for All Three School Years as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	0.02	0.22	0.38	0.22	0.09
Number of years with same case manager	2.00	4.00	5.00	3.30	1.16
Relevant courses per semester	0.00	0.11	0.28	0.11	0.07
Percentage of class missed	0.01	0.05	0.35	0.11	0.11

*Note.*  $n = 10$ .



When all three years of students receiving special education services who did graduate are considered together, the entire population had a range of 0 to 0.48 co- or team taught courses over their total attendance period with a median of 0.23 courses. The number of years spent with the same case manager ranged from 1 to 4 years for all students with a median of 4 years. The total number of relevant courses taken during their high school enrollment ranged from 0.04 to 0.27 with a median of 0.05 courses. The proportion of classes missed during a student's actual high school enrollment ranged from 0 to 0.27 classes with a median of 0.05 classes for all students who did not graduate.

Table 10

*Characteristics of High School Students Receiving Special Education Services Who Did Graduate for All Three School Years as a Result of Specific School Actions, Interventions, and Programs*

Variable	Min.	Median	Max.	<i>M</i>	<i>SD</i>
Team taught courses per semester	0.00	0.23	0.48	0.23	0.11
Number of years with same case manager	1.00	4.00	4.00	3.33	0.92
Relevant courses per semester	0.04	0.13	0.42	0.15	0.08
Percentage of class missed	0.00	0.05	0.27	0.07	0.06

*Note.*  $n = 105$ .

The comparison data presented for each graduating cohort year and the total sample (combined) show that there was no significant difference in the median graduation rate for any of the four variables for the group of students receiving special education services graduating in 2016. The comparison data also showed no significant difference in the median graduation rate for any of the four variables for the total sample group of 115 students in all three school years

(combined). No significant difference was found in the median graduation rates for students receiving special education services graduating in 2015 for the variables considering co- or team taught courses per semester, length of relationship (years) with the same case manager, and participation in relevant courses per semester. No significant difference was found in the median graduation rates for students receiving special education services graduating in 2017 for the variables considering co- or team taught courses per semester, length of relationship (years) with the same case manager, and attendance measured through the percentage of courses missed. A significant difference in median graduation rates ( $p = 0.056$ ) was found for students graduating in 2015 when considering their attendance measured by percentage of courses missed. A significant difference in median graduation rates ( $p = 0.0319$ ) was found for students graduating in 2017 when considering the proportion of courses they took with relevant curriculum.

Table 11

*Wilcoxon Rank Sum Two Sample Test Comparing the Median Graduation Rates for Students Receiving Special Education Services*

	<i>S</i> ( <i>p</i> -value)			
	2014–2015 <sup>a</sup>	2015–2016 <sup>b</sup>	2016–2017 <sup>c</sup>	Total <sup>d</sup>
Team taught courses per semester	33.5000 (0.5695)	53.5000 (0.4109)	66.0000 (0.0827)	480.5000 (0.3309)
Number of years with same case manager	50.0000 (0.6036)	60.0000 (0.2330)	85.5000 (0.1984)	585.0000 (0.9503)
Relevant courses per semester	49.0000 (0.7550)	39.0000 (0.8605)	56.5000 (0.0319)	414.5000 (0.1034)
Percentage of class missed	84.000 (0.0056)	36.0000 (0.6746)	106.0000 (0.7638)	643.0000 (0.5389)

<sup>a</sup> $n = 43$ . <sup>b</sup> $n = 27$ . <sup>c</sup> $n = 45$ . <sup>d</sup> $n = 115$ .

## **Interpretation of Data**

Descriptive and comparison data were collected and computed to examine the graduation rate of students receiving special education services over the course of three school years (2014–2015, 2015–2016, and 2016–2017). Four school action and programming level variables were considered for possible relationship with successful completion of high school for these students.

### **Research Question 1**

Is the graduation rate of students receiving special education services related to their placement in co-taught or team taught classes?

No significant difference exists between the median graduation rate of students receiving special education services and their placement in co or team taught courses.

### **Research Question 2**

Is the graduation rate of students receiving special education services related to length of time they are guided by the same case manager/SE instructor?

No significant difference exists between the median graduation rate of students receiving special education services and the length of relationship (years) they are guided by the same case manager/SE instructor.

### **Research Question 3**

Is the graduation rate of students receiving special education services related to participation in employment programming providing a relevant curriculum?

No significant difference exists between the median graduation rate of students receiving special education services and their participation in relevant courses for two of the graduating cohort years (2014–2015, 2015–2016) and the combined student sample. A significant difference exists in the median graduation rate of students receiving special education services and their

participation in relevant courses for the cohort of students graduating in the year 2017. A Wilcoxon rank sum test was used to determine whether or not participation in relevant coursework affected the graduation rate for students receiving special education services in 2017 by measuring whether or not the median ranks differed from each other. There was a positive significant difference between students who did graduate and those who did not ( $p = 0.0319$ ). Students who did not graduate in 2017 ( $n = 5$ ) participated in relevant coursework at rates ranging from zero to five classes. Students who did graduate ( $n = 40$ ) participated in relevant coursework at rates ranging from two to twenty classes. The largest groups of students who received special education services and graduated in 2017 participated in a range of four to seven classes (11 students in four relevant courses, 7 students in five relevant courses, 5 students in six relevant courses, and 5 students in seven relevant courses). There were 2 students who participated in each of the following number of courses: 2 courses, 3 courses, 8 courses, and 10 courses. One student participated in each of the following course categories: 9 courses, 11 courses, 15 courses, and 20 relevant courses. Students who graduated in 2017 participated in more relevant courses. Therefore, it is concluded that there was a positive significant difference for participation in relevant courses in 2016–2017 and the rate at which students receiving special education services graduated in four years.

#### **Research Question 4**

Is the graduation rate of students receiving special education services related to their school attendance?

No significant difference exists between the median graduation rate of students receiving special education services and their attendance measured by percentage of class missed for two of the graduating cohort years (2016, 2017) and the combined student sample. A significant

difference exists in the median graduation rate of students receiving special education services and their attendance measured by percentage of classes missed for the cohort of students graduating in the year 2015. A Wilcoxon rank sum test was used to determine whether or not attendance (percentage of class missed) affected the graduation rate for students receiving special education services in 2014–2015 based on whether or not the median ranks differed from each other. There was a positive significant difference between students who did graduate and those who did not ( $p = 0.056$ ). Students who did not graduate ( $n = 2$ ) missed 20% and 35% of school (days missed factored by individual total days enrolled). The majority of students who did graduate ( $n = 41$ ) missed school in a range of 0%–10% (22 students missed school 0%–5% and 14 students missed school 6%–10% of the time). Four students who graduated in 2015 missed school in a range of 10%–15% of the time. Students who graduated in 2015 missed class at a lower percentage than students who did not graduate in 2015. Therefore, it is concluded that there was a positive significant difference for attendance (percentage of class missed) in 2014–2015 and the rate at which students receiving special education services graduated in four years.

All comparison data considered the median graduation rate calculated from the Statistic (S) value computed through the Wilcoxon Two Sample Test. P value obtained using Monte Carlo Estimates for the Exact Test through SAS 9.4.

### **Summary**

This study used quantitative, non-experimental research to explore the relationships between the graduation rate of students receiving special education services and four school controlled intervention and programming factors. Statistical significance for this study is based on a 95% confidence level. The significance of Wilcoxon and Monte Carlo test results used in this study are identified by the median score  $p$ -values as compared to the significance level:  $p \leq$

0.05 indicating a significant difference in the median of each factor;  $p \geq 0.05$  indicating no statistical difference. The application of test results related to all four research questions are discussed in the next chapter including findings and conclusions. Limitations, assumptions, and design controls will be discussed. Implications for future research will be outlined and described.

## CHAPTER V

### FINDINGS, CONCLUSIONS, AND IMPLICATIONS

#### **Introduction**

This chapter begins with a brief summary of the study detailing purpose, questions, data collected, and research design. It continues with findings based on the statistical analysis performed. After the findings are summarized, limitations, assumptions, and design controls are laid out for consideration before detailed results discussion and implications are presented. Following the analysis of any restraints, conclusions are organized through the study's purpose and questions bringing the research full circle including state and school level suggestions. Implications and practical suggestions for addressing the graduation rate of students receiving special education services in Michigan are listed along with ideas for how this can be accomplished. Finally, any needs or ways to complete more study through future research and work to be done are put forth along with their possible significance and contribution to the field of special education research.

#### **Summary of Study**

The purpose of this study was to examine the persistent gap in on time graduation rates for students receiving special education services compared to the graduation rates for the general population of students. It was especially important to investigate this issue because of the breadth of research detailing the negative consequences for students with special needs who do not graduate and receive a diploma. This research study assessed the question: How were special education graduation rate outcomes associated with student attendance, participation in relevant

or functional coursework, length of relationship with special education instructor/case manager, and participation in co/team taught classes? More specifically, the characteristics of high school students receiving special education services and who graduate on time were examined using factors that were a result of specific school actions, intervention, and programming. Specific research questions included an intended measurement of a possible relationship between graduation of students receiving special education services and each of the four factors.

This study assessed the on time graduation rates for students receiving special education services during the 2014-2015, 2015-2016, and 2016-2017 school years. Information was also gathered from the school's data management service, teacher/student schedules, and special education caseload rosters to determine if graduation rates were significantly higher if students participated in more supportive, functional ways.

This study used a qualitative, non-experimental research design and non-parametric statistical tests to evaluate relationship between the graduation rates for students receiving special education services and the rates at which students participated in or were impacted by four school intervention or programming factors (participation in co- or team taught courses, length of relationship with their case manager, participation in relevant curriculum, and individual attendance rates).

## **Findings**

Descriptive and comparison data were collected and computed for each of the three cohort years and the total population sample to examine the graduation rate of students receiving special education services over the course of three school years. When the data of four school action and programming level variables were considered for possible relationship with successful completion of high school students receiving special education services, no significant difference



was found to exist between the median graduation rate of students receiving special education services and their placement in co or team taught courses or the length of relationship they were guided by the same case manager/SE instructor.

When the graduation rate for these students was considered in relation to the impact of their participation in relevant coursework, results were mixed. No significant difference existed in the median graduation rate for two of the graduating cohort years (2014-2015, 2015-2016) and the combined student sample. A significant difference existed in the median graduation rate of students receiving special education services and their participation in relevant courses for the cohort of students graduating in the year 2017. Those students who graduated in 2017 participated in more relevant courses.

Similar conclusions can be drawn for the graduation rate for these students when considered in relation to their school attendance. No significant difference existed between the median graduation rate of students receiving special education services and their attendance measured by percentage of class missed for two of the graduating cohort years (2015-2016, 2016-2017) and the combined student sample. A significant difference existed in the median graduation rate of students receiving special education services and their attendance measured by percentage of classes missed for the cohort of students graduating in the year 2015. Students who graduated in 2015 missed class at a lower percentage than students who did not graduate in 2015.

The results of this study determined that no significant enrollment differences in median graduation rates for students receiving special education occur for two of the factors (length of relationship with case manager and participation in co-/team taught courses). It also determined that those median graduation rates have a significant difference in two separate graduating years (but not the total population) for attendance and participation in relevant coursework. This could

be interpreted to mean that this school's work toward improving attendance and the inclusion of courses providing a functional focus helps students to graduate. Further research is needed to make deeper and more detailed interpretation statements.

### **Limitations, Assumptions, and Design Controls**

Limitations to the study begin with its design. An ex post facto design (not experimental) without control groups is limited in the ability to infer and generalize. Random manipulations of factors (four independent variables) and predictor variables was not possible. It was also impossible to determine with certainty that the predictor variable may be the cause of any significant differences in graduation rate and relationships rather than another variable. Causation was not possible to determine because safeguards to do this do not exist (Watson, 2012).

The sample for this ex post facto study involved some assumptions and delimitations. The population itself did not have random assignment and the factors (independent variables) were unable to be manipulated or controlled. Variation was achieved by selecting all participants receiving special education services that were eligible to receive a diploma ending the school years 2015, 2016, and 2017. Eligibility for inclusion in sample included all members of the cohort years that participated in a course of study concluding in the award of a high school diploma.

This study sought to collect data from an experience that had already occurred and after the fact. An ex post facto design was used to gather data from existing student records and did not provide safeguards with less evidence to infer cause or relationships (Watson, 2012). Records were examined from a convenient sample of graduates and attendees previously described. Data and information were collected to measure graduation status, attendance,

duration of relationship/length of time with special education case manager, relevant curriculum participation, and participation in team/co-taught courses that had all previously occurred before the beginning of the study (Watson, 2012).

A further limit of this study was the issue of a population drawn from a single school and district. This school and district was selected based on its diversity rates and demonstration of graduation gap consistent with national data. Further research including a comparison of schools or replication study done on another Michigan high school would possibly show greater impact and contribute to the body of research around this problem. This was complicated by the nature of the student level data needed for the information and proportions used in statistical analysis. School administration and personnel have to give permission and volunteer their time to collect then code the student data. This coding was necessary to protect the identity of students but also to acknowledge that the lead researcher was employed by the school and district. While valuable, this data was not available from state archived data or easily accessed. Further research and multiple school studies are further complicated by the difficulty of comparison at a national or state to state level. This was not possible due to variances across those states with one of the biggest differences being some states requirements of an exit graduation exam. Differences in graduation requirements within our states and between districts also contributes to the lack of special education research studies. It remains difficult to study this population at this specific level of available student data.

### **Conclusions**

The specific problem addressed in this study was the persistent gap in graduation rates when total student population was compared to the rate at which students receiving special education services graduated. This was apparent in the initial, state, and district level published

data. Once the student level data was compiled, coded, and analyzed, it became evident that the graduation gap was not as large as it initially appeared. When students who were on another course of study in which they exited high school without a diploma were excluded from graduation rate calculations, only ten students (out of 115) were considered as not graduating. While this is excellent news for the school and a testament to the programming/interventions they use to enable students to graduate, it limited the calculations and interpretation of this study's collected data. When students who are not pursuing a diploma (often those who are more severely impaired) are included in the graduation gap data, it skewed the actual gap in graduation rates and hid the complexity of the problems students receiving special education services encounter on the path to graduation (Bradley & Renzulli, 2011). It also doesn't help administrators and educators make data-based decisions on the impact of school actions because groups of students included in the data do not participate in all of the programming factors.

### **Implications**

One of the main pillars of purpose and intent for this study was to make information from the student level data available for state policy decisions in determining and analyzing graduation rates for students receiving special education services. This becomes a strong element in the clarification and tightening of federal and state graduation rate calculations. This was also recognized in studies about increasing the graduation rate for all students. Allensworth & Easton state that "factors that matter most for student success are those that are most in the control of the school" (p 37) in their 2007 study of staying on track in Chicago public schools. More specifically, both the 2017 and 2018 Grad Nation reports from John Hopkins University continuously call for our nation and state to get the graduation rate right. Those studies and authors state that the accuracy of the accepted Adjusted Cohort Graduation Rate (ACGR) needs

to be continually investigated, reported, and conducted at a deeper level which starts with individual districts who manage most of the data/record keeping. ACGR issues of clarity and variability hold meaningful consequences and need accountability. The 2017 update for the Grad Nation report strongly states that true data is only really available when there is consistency in how to treat counting (or not counting) students with disabilities in the graduation rate (DaPaoli et al., 2017). Specifically, the decision to include certain types of students who receive special education services whether or not they are diploma bound increases the variance in rates making comparison, in depth study, and educationally sound policy or decision making very difficult.

New and improved ways to determine district and state graduation rates need to be considered. This includes the recommendations from DePaoli et al. (2017) who state that there are many discrepancies in how states remove students from their graduating cohort, define diploma types, and place students in specific subgroups. The 2017 report more clearly defines and explains graduation rate gaps in subgroups by using percentage point calculations as an addition to ACGR (DaPaoli, 2017). A specific example of one area needing improvement and clarification is the issue of including cohort students and their rate of transfers between schools and post-secondary programming. When considering the entire student population (including all students regardless of course of study/diploma track), this process should clarify the identification of students who transfer prior to or at graduation. Schools could remove but count students not pursuing a diploma as transfers to post-secondary programming or other Michigan schools. Only those students who did not or are not connected to post-secondary program/employment system would count as not graduating. This would allow schools to total all students leaving the system without penalizing themselves by counting student who did not

intend to receive a diploma as “not graduating”. This still allows schools to account for the post-secondary success of all students.

A closer look at this option regarding students who transfer schools at any point in high school needs to take place at the state level after non-diploma bound students transferring to post-secondary programming are removed. According to John Hattie (2017), mobility between schools has a negative effect on reading and mathematics along with other general school and peer behavior factors. It is possible that some students and schools may choose to move or be removed from a cohort group once it has become evident that a student is not on track to graduate (DaPaoli et al., 2017) which would likely further jeopardize their path to graduation. The raw data from this high school was examined and students who were enrolled at the beginning of their senior year and transferred during that final, fourth year were included in their original cohort of the year they were expected to graduate (Interview, L. Otteman, 2018). Over the three school and cohort years of study, seven students who were pursuing a diploma had been removed from their cohort under the code of transferring to another school. Of those seven students, six of them were not on track to graduate at the start of their fourth and senior year at this high school. Reasons for their lack of credit accumulation were various: three students had passing grades in all classes but used resource class time and other support classes during their first three years resulting in not enough sections of required courses completed; two students had many courses in which they had failing grades with repeat courses taking the time reserved for more advanced required courses; and one student had excessive non-medical absences from school and multiple school transfers. This supports further study and consideration of the students who receive special education services and transfer schools at school and state levels. If schools and state education policy makers take a look at the total student graduation data while

also considering these two kinds of exits and transfers, it would clarify the needs, problems, and successes at the school and state level. It would also allow the measurement of both the total population and additionally the calculation of graduation rate by only those students actually pursuing a diploma which clarifies the effect of school interventions and programming. This type of calculation in future studies would also help measure the strength of the interventions and is discussed later in this chapter.

This study also sought to discover the implications of the specific graduation rate data presented and practical suggestions for addressing the graduation rate gap at just the school level because of the direct impact on it has school programming and services in Michigan. Exploratory graduation rate data identifying students who are actually pursuing a diploma and participating in the focused interventions/supports at the school and district level was directly highlighted in the stated significance of this study. The issue of who is and is not currently included in graduation rate calculations for students receiving special education services make things more complicated and harder to compare on a large scale basis. While the overall, national graduation rate continues to rise, the 2016 Grad Nation report acknowledged that there were claims students were being removed from the cohort rather than included as students who did not graduate. We need to take a closer look at the types of students who are removed from the calculation (Balfanz, 2016). The authors of the updated Grad Nation reports specifically state that a complete examination regarding this needs to determine if this is happening at the district level where most of the data/record keeping determining exclusion from cohort is managed (DaPaoli et al., 2017).

State and federal educational agencies will continue to collect larger samples and ranges of data. Schools need a detailed action plan of how they can do their own data collection for a

plan to improve interventions and graduation rates for students receiving special education services. The process of this study has shown a way to operationalize this type of process with exploratory formula or plan for schools to do so. High schools in Michigan have state data readily available and can start with the published graduation rates and numbers of students in the sub-group for students with disabilities through the Michigan Department of Education and MISchoolData. This is available by cohort year and in three to five year trends. School staff can then list students by name within the cohort year and determine course of study (diploma or non-diploma). From there, a list of students only pursuing a diploma can be created in order to study the effectiveness of school programming on successful, four year graduation. Each student receiving special education services and pursuing a diploma would need the following data points which are readily available in district data management systems: attendance rate (days absent/total days enrolled) and a list of functional courses taken each year of high school. The special education and high school office staff would need to provide special education teacher caseloads/teaching assignments in order to determine the number of years a student spends with their case manager and number of co-/team taught courses. (Simple changes in the school's labeling and course name process would make this easier to pull data.) From there, special education department meetings and full faculty meetings could have specified time to analyze data to determine if the actionable, alterable school level policies and practices help students with special education services to graduate. It would be important for schools to start with these four research based factors that have proven to make a difference for all students. Other factors could be researched and then studied based on individual schools and their differing programs.



### **Future Research**

More study regarding the graduation rates for students receiving special education services needs to be done to clarify the issues discovered here, contribute to the small body of knowledge that presently exists, and measure ways to improve the rates at which these students succeed in high school. One such example would be to repeat this study through its design and statistical testing using a Michigan high school with graduation rates that are considered to be failing or “low-graduation-rate” high schools with 67% or less of their students graduating (DaPaoli et al., 2018). Future researchers could obtain student level data related to the course of study (diploma bound versus non diploma seeking) for students receiving special education services first. This would assure there would be a large enough sample size of students actually working to receive a diploma and participating in the school interventions and programming that are being measured for possible impact on graduation. This would also provide an accurate picture of the actual graduation gap between students receiving special education peers and the total school population. Future studies should start with exploration into graduation gap data at the student level (as compared to starting with the state data showing consistent gap) so that study can focus more on whether or not a difference occurred in graduation rates when student’s course of study, post-secondary options, severity of disability, and transfers are considered.. This initial step evaluating the population prior to study would also provide more information and allow the measurement of effect size which this study was not able to produce due to a very small sample size (10 students not graduating). It was very hard to measure impact and an effect size with the non-parametric tests used in this study (due to the small sample) because of the processes of repeated sampling and an approximation of "p". This, along with a small sample size similar to the two examples that provided a significant difference in median graduation rates

in this study, limited calculations of power that can be done. Articles and research information exist regarding upcoming methods and the use of a similar larger data set but nothing that was actionable at this time or applicable for this study. Effect size shows the magnitude of change and can refer to the raw difference between group ranks, means, or scores. Before even starting a study, the power, sample size, and estimated effect size should be calculated (Sullivan & Feinn, 2012). In future research, an exploration of student level data (diploma bound versus not participating in that course of study) to ensure a large enough sample would prevent problems and allow for this effect size to be reported. In order to address that type of data for this study, studies and dissertations using the same Wilcoxon rank sum and Monte Carlo tests because of an unexpected small "n"/sample were reviewed. Commonly, the absence of effect size was explained through the use of raw data to operationalize the significant difference in a way that is not possible with larger data sets. A study of physical and earth science course enrollment and geographic community areas in the state of Texas was completed this way (Sanders, 2012). Another study summarized in Educational Research and Review (Gorucu, 2016) used raw data to explain the effect size when cooperative learning teaching techniques were used with an experiment and control group in physical education courses. The absence of an effect size was also reflected in the recommendations and theory presented previously in this chapter. The limitation of no effect size actually strengthens the recommendations of this study to continue to clarify, examine, and improve the calculations for graduation rate in accordance with the newest version of the Grad Nation report.

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## Appendix A

### Permission to Use Data from West Ottawa Public Schools

#### West Ottawa High School

*Preparing ALL students to be College, Career, and Life Ready*

North Bldg. 3685 Butlermut Dr. Holland, MI 49424 -- Phone (616) 786-1100

South Bldg. 3600 182nd Ave. Holland, MI 49424 -- Phone (616) 786-1100

Todd Tulgestke- Principal



Oct. 23, 2017

Western Michigan University  
1903 West Michigan Avenue  
Kalamazoo, MI 49008

Subject: Site Approval Letter

To whom it may concern:

This letter acknowledges that we have received and reviewed a request by Jennifer DeWaard to conduct a research project entitled "Special Education Factors and Graduation Rates" at West Ottawa High School and we approve of this research to be conducted at our facility.

When the researcher receives approval for her research project from the Western Michigan University's Institutional Review Board (WMU IRB), we agree to provide access for the approved research project. West Ottawa will provide needed data through past records review and ensure that it has been de-identified prior to release. The researcher (Jennifer DeWaard) will not have access to student names in order to protect confidentiality. If we have any concerns or need additional information, we will contact the Western Michigan University's IRB at (269) 387-8293.

Sincerely,

Todd Tulgestke  
Principal, WOHS  
(616) 786-1100  
tulgestket@westottawa.net

Tanya Uganski  
Special Education Director, WOHS  
(616) 786-2085  
uganski@westottawa.net

**Appendix B**  
**List of Functional Courses at West Ottawa High School**

Automotive Tech
Successful Living
Printing and Imaging Tech
Printmaking
Home and Auto
Culinary Basics
Tech Support Internship
Woods
Advanced Culinary Skills
Metals
Personal Computers
Healthcare Foundations
IB Visual Art
Mechatronics/Robotics
Web & Game Development
AP Computer Science
Fashion Design
Singles
Personal Finance
Accounting
Computer Application
Advanced Personal Finance
Foods
3D World
Principles of Tech
Emergency First Aid
Parenting
Home and Interior Design
Fashion Design for You & Other

Digital Art and Design
Printing and Imaging Tech
Culinary/Pastry Arts
Web Design
Auto 1
Health
Intro to Tech Design
Web Design
Career/Discovery
Employment Skills
Functional Social Studies work study
Child Development
Intro to Technology
Entrepreneur/Global Bus
Theatre/Forensics
Business Management
Marketing
Printing
Annuals Journalism
Teacher Academy
Home & Auto
Environmental/Ag Science
Parenthood Ed
Digital Photography
Visual Communication
Diesel/Heavy Equipment
Intro to Broadcast
Auto Body Repair
Introduction to Law
Cultural and Global Issues
Connections Academy
Jewelry and Fiber Design

Healthcare CNA
Journalistic Writing
Sports/Entertainment Marketing
Web Page Design
Info Tech
AP Art Studio Portfolio
Innovative Fashion Design
Programming in Visual Basic
Coding & Programming Applications
Healthy Living
Health Education
Life Skills 9-12
Personal Development
Welding
Pastry Arts & Baking
Debate
Theory of Knowledge IB
Design Arts
Graphic Design
Life Readiness
Advanced Personal Computers
Health Services
Electrical/Alt Energy
Engineering Design/Machine Tech
Work Based Learn
Public Safety/Security
Foods 2 Advanced Culinary
Lifeguard Training
Upward Bound
Metals Advanced
Community Based Vocational Skills
ROTC

## Appendix C

### Western Michigan University HSIRB Approval Letter



Date: December 12, 2017

To: Shaila Rao, Principal Investigator  
Jennifer DeWaard, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 17-12-07

This letter will serve as confirmation that your research project titled "Special Education Factors and Graduation Rates" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study."*** Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

**Reapproval of the project is required if it extends beyond the termination date stated below.**

The Board wishes you success in the pursuit of your research goals.

**Approval Termination:**

**December 11, 2018**

Office of the Vice President for Research  
Research Compliance Office  
1303 W. Michigan Ave., Kalamazoo, MI 49005-5456  
phone: 269.387-8263 or 269.387-8266  
www: wmicu.edu/research/compliance/rsr

campus: 251 W. Holland Hall