

The Predictive Nature of Mentoring Student Academic Progress, Mentor Educational Background, and Mentor Tenure Among High School Dropouts Who Graduated From an Educational Management Organization

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Abstract: Using official school data from a sample of 3,461 students enrolled in Grad Solutions, an Educational Management Organization (EMO), from 2015 through 2018, we conducted a quantitative cross-sectional research design study to understand the predictive nature by which students who dropped out of high school and re-enrolled in Grad Solutions graduated high school. The authors used logistic regression to examine the extent to which students' credits upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and tenure as a mentor on whether a student graduates or drops out from Grad Solutions. All variables of study significantly predicted $p < .001$ and $p < .01$, an increase and decrease in the odds by which students graduated high school or dropped out of high school. Implications are drawn for designers of mentoring and intervention programs as well as EMOs.

Archambault, Janosz, Dupéré, Brault, and McAndrew (2017) theorized that the high school dropout phenomenon is linked to negative consequences, which may distress individuals and society. Wood, Kiperman, Esch, Leroux, and Truscott (2017) noted that this dropout phenomenon has led to increasingly high rates of unemployment, incarceration, and mortality. For example, Parr and Bonitz (2015) found that 45.7% of high school dropouts were employed, while high school graduates had an employment rate of 68.1%. The authors further noted that both employment rates fall extremely short of the 86.7% employment rate of college graduates.

Over the past few decades, stakeholders in education, business, and politics have established a plethora of initiatives, strategies, interventions, and policies aimed at addressing the persisting dropout phenomenon across the United States (Doll, Eslami, & Walters, 2013). For example, evidence-based programs and initiatives such as Blueprints for Healthy Youth Development, Office of Justice programs, National Registry of Evidence-Based Programs and Practices, and What Works Clearinghouse to name a few, have been developed to address the dropout phenomenon (Iachini, Rogelberg, Terry, & Lutz, 2016). Unfortunately, there is very little research on implementation and effectiveness of these interventions, practices, and policies (Freeman & Simonsen, 2015). Freeman and Simonsen (2015) found that of the 19 high school recovery programs identified by What Works Clearinghouse, only five recovery programs have research supporting positive results in improving graduation rates and lowering dropout rates.

High school dropout recovery programs are the result of initiatives and policies formed to address the dropout phenomenon, which eventually paved the way for the advent of charter schools (Lembreck & Peterson, 2013). The initial intent of the formation of charter schools was for teachers, parents, and community partners to develop a school that promotes innovation and addresses the needs of the local students (Roch & Sai, 2018). However, stakeholders noted difficulties in the business management of the schools and in educating students at the same time, which led charter schools to outsource the business managerial requirements with Educational Management Organizations (EMOs; Garcia, Barber, & Molnar, 2009).

According to Hickman and Anderson (2019), many of the policies and initiatives established in education have been crafted through collaborations between businesses and community stakeholders. The authors further noted that two of the best-known forms of collaboration are Charter Management Organizations (CMOs) and Educational Management Organizations (EMOs). Farrell, Wohlstetter, and Smith (2012) noted that CMOs are nonprofit organizations that manage a network of public charter schools that share several elements or goals toward educational success. Conversely, EMOs manage a school district or charter public school that receives public funds for a profit (Miron & Urschel, 2010). According to Eastman (2017), EMOs provide services that may include curriculum creation, hiring teachers, school management, and provision of necessary educational materials such as books, computers, and pencils. Moreover, one of the roles promoted by EMOs

has been employing mentors to support the students working toward high school completion (Hickman & Anderson, 2019).

Based on results of traditional brick and mortar schools, recovery schools, and charter schools toward improving graduation rates and lowering dropout rates of at-risk youth, EMOs emerged due to increasing pressure for districts to improve students' learning outcomes by fostering entrepreneurial and competitive spirits in the public schools (Bulkley & Hicks, 2005; Miron, 2008). Miron and Urschel (2009) found that EMO expertise tends to be the capacity to aid schools in attaining clarity of educational and managerial vision. Miron and Urschel (2009) further noted that EMOs tend to manage schools under contract and that the for-profit education management organizations are businesses that seek to make returns through their service delivery to schools and districts. Moreover, EMOs often bring innovations to those schools outsourced to them, while operating within the necessary guidelines and principles of those schools and districts (Miron & Urschel, 2009).

Though some EMOs that engage in whole school management exist, many are focused on specific supplemental services which include after school tutoring, teacher professional development, and special educational services (Bulkley & Burch, 2011). Bulkley and Burch also noted that EMOs are involved in professional training of teachers and managers, providing additional instructional services for at-risk students, and implementing face-to-face and online mentoring programs aimed at helping students graduate high school. Cupidore (2017) found that principals from public schools agreed that EMOs help improve the performance of students through innovative instructional and assessment packages they make available to public schools.

Despite recent emergence of EMOs into public education awareness, very little research has been conducted and published by EMOs. In a recent study, Hickman and Anderson (2019) examined the perceived impact of mentors among former high school dropouts who graduated high school. The authors surveyed high school graduates, who were once high school dropouts, from the EMO Grad Solutions located in Mesa, Arizona. These graduates identified what turned out to be five key characteristics exhibited by Grad Solutions mentors. These research participants identified that their mentors were helpful in their diploma-completion process by displaying skills in communication, encouragement, motivation, understanding, and caring. They further attributed having the opportunity to enroll in an EMO such as Grad Solutions as the difference they missed from their traditional schools from which they initially dropped out (Hickman & Anderson, 2019).

Although the aforementioned researchers illuminate important findings regarding EMOs and high school dropouts, we have found no research that has quantitatively examined the impact EMO mentors have on the pathway of former high school dropouts who later graduate from high school. More specifically, further research is warranted that could examine the predictive nature of mentors' educational background, mentors' monthly student progress, and mentors' tenure as well as students' credits upon enrollment and students' credits remaining after enrollment on high school graduation in an effort to address the documented problem of high school dropouts (Hickman & Heinrich, 2011).

The purpose of this quantitative, cross-sectional design study is to examine the predictive nature by which students' credits upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and tenure as a mentor on whether a student graduates or drops out from Grad Solutions. By conducting a logistic regression analysis of the aforementioned variables, we examined how the variables are related or unrelated toward predicting the odds of how students progress and eventually graduate from high school.

Research Questions

What is the predictive nature of students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and tenure as a mentor on whether a student graduates or drops out?

H0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$

In the population, the odds of the independent variables students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and mentors' tenure increasing the likelihood of the dependent variable graduating or dropping out of high school equals zero.

H1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$

In the population, the odds of the independent variables of students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and mentors' tenure increasing the likelihood of the dependent variable graduating or dropping out of high school equals zero.

Method

Given that the purpose of this study was to analyze

the significance of the relationship between the variables of study that predicted whether former high school dropouts either graduated or dropped out of the EMO Grad Solutions, it was appropriate to use a quantitative cross-sectional design. For this study, secondary data from Grad Solutions was analyzed. The variables of study were pulled from the main data source and exported to IBM SPSS®, a software platform for advanced statistical analyses. No identifying markers for student and mentor names were provided in the data set. The variables chosen for this study were based not only on a lack of research to address high school dropouts, but also based on variables deemed important for understanding the predictive nature by which students who once dropped out of school eventually graduated from school.

Rather than sample those students who graduated or dropped out of Grad Solutions, we examined the entire population of students who graduated or dropped out from Grad Solutions from July 2015 through July 2018 for our study and analysis. This yielded a sample of 3,461 students, which exceeded the recommended sample size of 92 using regression analysis, medium effect of .15, power of .80, and 5 predictor variables using G*Power sample size calculation.

Independent Variable

Credits Needed Upon Enrollment. Credits upon enrollment was defined as how many credits the student needs to graduate high school. Official school data were obtained from the high school the student transferred from upon enrolling at Grad Solutions. Example credits would be 3, 4, 4.5, etc. credits to complete in order to graduate.

Credits Remaining. Credits remaining was based on the formula of Credits Upon Enrollment minus Credits Earned in the program. For example, if a student comes to the program needing five credits to graduate and they earned two credits during their tenure at Grad Solutions, the value for credits remaining would be three ($5 - 2 = 3$). Values for credits remaining were derived from official school data.

Mentor Educational Background. Mentors were coded as 0 = noneducational background and 1 = educational background. To be considered having an educational background, they had to have graduated with a college degree in education and worked previously in an educational school setting. Not all mentors employed by Grad Solutions have educational backgrounds, hence the dichotomous coding.

Mentor Student Progress. Mentor student progress was defined as the percentage each student progresses on a monthly basis toward completing their courses. For example, if a student has completed 50% of the course

over a given month, the mentor is said to have helped the student make 50% progress. Progress made by students is charged to mentors in terms of holding mentors accountable to student progress and is recorded each month. The higher the percentage of students making monthly progress, the higher the impact the mentor is attributed to have in helping students graduate.

Mentor Tenure. Mentor tenure was defined as the length of time in days the mentor has been with Grad Solutions. Mentors' start and exit dates were calculated in SPSS to create time in program based on days.

Dependent Variable

Completion Status. Completion status was defined as a student either having graduated or dropped out regardless of reason, from Grad Solutions. The categories were dummy coded as Dropped out = 0 and Graduated = 1.

This study used binary logistic regression to predict the likelihood of whether at-risk male and female students enrolled at Grad Solutions graduated or dropped out of school. Logistic regression allowed the researchers to examine which independent variables were likely to increase or decrease the probability of graduating high school. An analysis of -2LL chi-square was used to examine the goodness-of-fit model of the independent variables (i.e., students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and mentor tenure) and the dependent variable (i.e., graduated or dropped out of high school).

Results

The research question for this study examined to what extent the variables students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and mentors' tenure predicted whether at-risk male and female adolescents will graduate or drop out of high school.

The sample consisted of 3,641 high school students enrolled in Grad Solutions, an Educational Management Organization, to complete their high school degree from July 2015–July 2018 who had once dropped out of high school. Of the 3,641 students enrolled, 86.7% did not graduate from Grad Solutions with their high school degree, compared to 13.3% who did graduate from Grad Solutions with their high school degree. The average age of students was 21.98 years and 23.4% reported that they were Minorities, while 42% reported they were male and 58% reported they were female. Other student characteristics included 15.1% ELL status, 11.9% enrolled in special education classes, 11.2% with IEPs, and 4.6% homeless. See Table 1 for complete summary.

Table 1.

Demographic Characteristics of Participants from July 2015–July 2018

Variable	n	Percent
Total enrolled students	3,641	
Average Age	21.98	
Gender		
Male		42%
Female		58%
Minority		23.4%
ELL status		15.1%
Enrolled in special education		11.9%
IEPs		11.2%
Homeless		4.6%
Program Results		
Received diploma		13.3%
Did not receive diploma		86.7%

The students in the sample were mentored by 24 mentors employed by Grad Solutions. Mentors' caseloads of students averaged approximately 144 students. The average tenure of the mentors was 33.64 months and 58.1% were female, compared to 41.9% male. Of the

24 mentors, 30.5% had an educational background compared to 69.5% of mentors not having an educational background prior to being hired by Grad Solutions. See Table 2 for complete summary.

Table 2.

Demographic Characteristics of Mentors

Variable	n	Percent
Total Number of Mentors	24	
Average Approximate Caseload	144	
Average Tenure of Mentors in Months	33.64	
Gender		
Male		41.9
Female		58.1
Mentors With Educational Background		30.5
Mentors Without Educational Background		69.5

In addition, the means and standard deviations of the independent variables (i.e., students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and

mentors' tenure), and dependent variable (i.e., graduating or dropping out of high school) are presented in Table 3. Moreover, a correlation matrix of the predictor variables is presented in Table 4.

Table 3

Means and Standard Deviations of Variables

Variable	Mean	SD
Mentor Tenure at GS	33.64	16.88
Student Percentage Progress	.71	.31
Mentor Educational Background	.30	.46
Credits Remaining Upon Enrollment	11.54	6.09
Average Credits Earned Per Year	2.71	1.66

Table 4

Correlation Matrix of Variables

	Mentor Tenure at GS	Student Percentage x Mentor	Mentor Educational Background	Credits Remaining Upon Enrollment	Average Credits Earned Per Year
Mentor Tenure at GS	1.000				
Student Percentage x Mentor	.167	1.000			
Mentor Educational Background	.243	.025	1.000		
Credits Remaining Upon Enrollment	.050	-.022	-.057	1.000	
Average Credits Earned Per Year	-.022	-.072	-.077	.520	1.000

The aforementioned variables accounted for the logistic regression equation and were entered simultaneously as predictors of completing the program and graduating from high school. All variables in the model significantly predicted high school graduation. More specifically, holding all other independent variables constant, for a one-unit increase (SD = 16.88) in mentor's tenure at Grad Solutions, the odds of graduating high school were increased by approximately 4%. In addition, holding all other independent variables constant, for a one-unit increase (SD = .30) in mentors having an educational background, the odds of graduating high

school were increased by approximately 86%. Also, holding all other independent variables constant, for a one-unit increase (SD = 31.29) in percentage of mentor's monthly student progress toward graduation, the odds of graduating high school were increased by approximately 4,711%. Also, of note, holding all other independent variables constant, for a one-unit increase (SD = 6.1) in credits needed upon enrollment to graduate, the odds of graduating high school were decreased by approximately 183%. Finally, holding all other independent variables constant, for a one-unit increase (SD = 1.6) in credits earned once enrolled, the odds of graduating high school

were increased by approximately 16%. Overall, the model chi-square was found to be significant ($X^2 = 672.55$ $df = 5$, $p < .001$). Moreover, Nagelkerke's pseudo R^2

indicated a high goodness-of-fit as the model accounted for approximately 34% of the variance. See Table 5 for summary of the logistic regression equation variables.

Table 5

Variables in the Equation

Variables		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Mentor Tenure at GS	.035	.004	65.029	1	.000 *	1.035	1.027	1.044
	Student Percentage x Mentor	3.874	.312	154.344	1	.000 *	48.111	26.113	88.643
	Does Mentor Have Educational Background?	.623	.129	23.209	1	.000 *	1.864	1.447	2.402
	Average Credits Earned Per Year	.150	.049	9.268	1	.002**	1.162	1.055	1.280
	Credits Remaining Upon Enrollment	-.186	.016	134.130	1	.000 *	.830	.805	.857
	Constant	-5.079	.420	146.105	1	.000 *	.006		

* $p < .001$

** $p < .01$

Discussion

This quantitative logistic regression study attempted to provide an empirical model that investigated the predictive nature of students' credits earned upon enrollment, students' credits remaining after enrollment, mentors' educational background, percentage of mentors' monthly student progress toward graduation, and tenure as a mentor on whether a student graduates or drops out in a mentoring program at the Grad Solutions EMO.

The results are pertinent in this study, as we found all the independent variables were significant predictors of whether a student graduates or drops out of high school. Moreover, the findings of our study underscore the importance of considering such factors in mentoring at-risk adolescents toward graduating high school.

A mentor's tenure employed at Grad Solutions significantly increased the odds of graduating high school. That is, for every increase in tenure employed,

the odds of graduating increased 4%. Such a finding supports research that mentees look for and benefit from experienced mentors because of the vast wealth of their experiences and networks of connections (Straus, Johnson, Marquez, & Feldman, 2013). The wealth of experience of a mentor appears to be facilitating productive relationships and provisions of solutions to a mentee's challenges. Indeed, researchers have noted that the longer one is employed at the same position, the more likely that employee can garner relevant experiences that will enable one to be efficient (Roch & Sai, 2018). Thus, it appears that longer tenured mentors can benefit programs by way of their experience in guiding and directing the educational pathway of success for their mentees. Conversely, inexperienced mentors may not understand the logistics and nuances involved in mentoring (Ambrosetti, 2012). This finding supports researchers who found that at-risk students who had more experienced teachers and mentors are more likely to succeed than those who encountered inexperienced teachers and mentors (Silver, Saunders, & Zarate, 2008).

Mentor's educational background significantly increased the odds of graduating high school. That is, the odds of graduating increased 86% when students were paired with mentors with an educational background. This is an important finding, as students who were not paired with mentors with an educational background were less likely to graduate. Such findings support research that when mentors have specialized expertise and experience as it pertains to a given program, the effectiveness of the mentors increases, as do programmatic outcomes (St-Jean & Audet, 2009). Given that mentors with educational backgrounds are rooted in the educational management mission of Grad Solutions, it seems inherent students benefited from mentors with an educational background as such mentors are more likely to offer useful educational information and experiences that help these at-risk adolescents to navigate the educational system and graduate.

Credits students needed upon enrollment to Grad Solutions significantly decreased the odds of graduating high school. That is, for every increase in credits needed to graduate high school upon enrollment to Grad Solutions, the odds of graduating decreased 183%. Researchers have found that dropouts who attend dropout recovery schools and charter schools tend to need more credits to graduate and be more at risk for dropout (Wood et al., 2017). Our findings support research by Silver, Saunders, and Zarate (2008) in that high school students who exhibited successive failures in academic settings had significantly reduced graduation rates. Thus, based on our research and past research, it is likely that when high school dropouts enroll in dropout recovery schools, charter schools, and EMOs burdened

with numerous credits to graduate, they tend to give up their academic pursuits and drop out of school once again.

Such a finding is important for high school dropout recovery schools, charter schools, and EMOs to understand who benefits from their programs. In conducting post-hoc analyses, we found that students who enrolled in Grad Solutions needing 4–5 credits to graduate benefitted the most. That is, students needing 4–5 credits had a graduation rate of 38%. Given that the overall graduation rate of Grad Solutions during the time frame of this study was approximately 13%, it appears targeting students in this range is most beneficial for student learning outcomes and success, as well as institutional effectiveness.

Credits earned by students while enrolled in Grad Solutions significantly increased the odds of graduating high school. That is, for every increase in credits a student needs upon enrolling to Grad Solutions, the odds of graduating increased 16%. In other words, the more progress students make (the more credits they earn), the longer they are in Graduate Solutions, and thus, more likely to graduate. This is in line with researchers who have shown that lack of credits earned is a performance characteristic associated with students not graduating college (e.g., Burrus & Roberts, 2012), and that graduation probabilities are positive factors linked to earning more credits among students (Calcagno, Crosta, Bailey, & Jenkins, 2006). Calcagno et al. (2006) further noted that students who completed increasing amounts of their program are likely to complete their educational program. Adelman's (1999) study, which analyzed national data among students seeking to complete their degrees, demonstrated that credits earned predicted whether a student completes a degree or not and that those who earned lower amounts of credits had fewer chances of completing their degrees. In other words, students who earn more credits when enrolled in a program are likely to see the possibility of progressing, which may provide encouragement to complete the program.

Mentor's monthly student progress toward graduation at Grad Solutions significantly increased the odds of graduating high school. That is, for every increase in monthly student progress toward graduation, the odds of graduating increased 4,711%. Indeed, a mentor's monthly student progress was the most robust predictor toward students graduating in the model. The more progress mentors helped students make each month, the greater the chances of former dropouts completing credits for courses and beating the odds and graduating high school. Such a finding suggests the need for recruiting, training, and accountability of mentors in mentoring programs targeted toward high school dropouts.

Limitations

When interpreting the findings, there are several limitations that should be considered. First, our sample size ($n = 3,461$) was very large. Because our sample was so large, the test value or r values from the logistic regression analysis are smaller than what would be found in a smaller sample size. That is, as a sample size increases, variation decreases. Moreover, replicating a study with such a large sample size may be challenging. Second, we examined former dropout students in general. What would be helpful in future research is to unpack this model by gender and ethnicity. Perhaps differences exist in the model based on such demographic variables. Finally, this study was delimited to one Education Management Organization in the Southwest region of the United States. Future researchers may want to collaborate with other EMOs, charter schools, and dropout recovery schools from other regions of the United States. Such research efforts could address replication and the possibility of new outcomes in reducing the high school dropout rate based on regional differences.

Conclusion

Despite such limitations, our study has merit. We learned in our study that it is important to recruit mentors with an educational background. Those mentors with educational backgrounds have more success with their students in terms of students making progress and graduating high school. Indeed, those students with mentors with an educational background have a clear advantage, as such mentors are former teachers, principals, and counselors and have experiences in and knowledge of the education system and what it takes to help students succeed in an educational environment, compared to mentors that do not have an educational background.

It is also important to train mentors working with the population of students who have dropped out of high school. For example, Hickman and Anderson (2019) found that students who had dropped out of high school and who later graduated from Grad Solutions attributed their success to mentors who excelled in communication, encouragement, motivation, understanding, and caring. Those schools, agencies, programs, etc., working with students who drop out of high school may want to consider providing training geared toward the five themes found in Hickman and Anderson's (2019) study.

Not only are recruiting the right mentors and training mentors important for success in working with high school dropouts, avoiding turnover is important. Indeed, we found that the longer the tenure of mentors, the more positive results were gained in terms of credits earned and graduating high school. Researchers have found that turnover among teachers, counselors, and mentors has

a negative impact on educational outcomes of students, especially students who are at risk of dropping out and those who have dropped out (Hsieh & Nguyen, 2019).

Working with the population of high school dropouts is challenging. However, research efforts by Education Management Organizations (EMOs), such as Grad Solutions, are paving the way for the next generation of what we know about high school dropouts and how to manage their educational needs effectively to increase their chances of graduating high school. Perhaps researchers can track such former high school dropouts who graduated from EMOs into postsecondary education and beyond. Such an effort may increase our understanding of high school dropouts and the effectiveness of EMOs.

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