

## **Florida Virtual School Impact on the Graduation Rate of a Higher Education Honors Program**

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### **Abstract**

While higher education institutions seek to increase college admissions' predictions of student success, they have largely overlooked examining possible impacts of online distance education classes completed in high school. Using information from an undergraduate honors program, this study analyzed whether an indicator of undergraduate student success can be influenced by such courses. The results suggest that high-achieving Florida Virtual School students admitted to an honors program do not graduate at a higher rate than students who have not completed online distance education classes. However, the study provides a method that can address the sample limitation and guide future research to determine how postsecondary non-honors student applicants are affected by online distance education courses completed in high school.

**Keywords:** Distance Education, Undergraduate Admissions, Honors Program

### **Reviewing the Literature**

In considering what it means to be a successful undergraduate student, quality of life is certainly an important consideration. One way of attempting to ensure students may have a positive college experience, and quality of life, is to re-examine admissions metrics and assumptions. There has been a substantial amount of research on what criteria may be used effectively to forecast success in undergraduate college admissions. For instance, based on research efforts in the 1950s and 1960s, GPA and SAT scores are used by admission offices as a means of admission today. By examining data from the 1980s to the 1990s, these data points (commonly used as predictors) were also confirmed by Burton and Ramist (2001) as predictors of success. Furthermore, when Rohr (2012) analyzed data regarding 803 first-time-in-college (FTIC) students at small liberal arts colleges admitted from 1992 to 1998, he found that as GPA and SAT increased, there was a direct correlation in the retention of students in STEM fields. Specifically, if GPA increased one point, the chance of graduating doubled (Rohr, 2012). A similar result was found with SAT. Rohr's (2012) research revealed that as SAT scores increased, the retention rate would increase by 0.3%. Additional researchers who have demonstrated that GPA and SAT scores were reliable metrics include Oseguera (2005) and Burton and Ramist (2001).

A study by Kretchmar and Farmer (2013) verified how Advanced Placement (AP) courses, International Baccalaureate (IB), and Dual Enrollment (DE) have altered how college admissions officers assess students applying for college. This study evaluated the number of advanced coursework courses to discover the impact on graduation rates across data from 3,626 students at University of North Carolina–Chapel Hill (Kretchmar & Farmer, 2013). It was discovered that students' first-year GPA would increase for each AP course they completed up until a student reached five courses. After five courses, there was no significant change in first-year GPA. Geiser and Santelices (2006) also discovered that the norm in the undergraduate admission process has become to examine the number of AP and honors courses an applicant completes.

AP and IB courses are viewed as more rigorous, and admission offices are weighing evidence of mastery of this material more heavily than traditional high school courses.

Regarding the growth and adoption of online distance education, Volery and Lord (2000) identified four contributing factors: alleviating capacity constraint, expanding access, capitalizing on emerging market opportunities, and catalyzing institutional transformation. The U. S. Department of Education (2014) reported that 25.8% of postsecondary students were enrolled in an online distance education course. An independent report by Watson, Pape, Murin, Gemin, and Vashaw (2014) estimated that 16% of K-12 students were enrolled in online distance education courses with a higher percentage of high school students compared to elementary students. Meanwhile, in some states (e.g., Florida), students must complete at least one online high school course to earn their diploma (Watson et al., 2014). Even with a large percentage of high school students enrolled in online distance education courses, and with this number growing (Watson et al., 2014), there remains a gap in the research concerning the impact of high school online distance education classes on the graduation and course completion rates of college students.

### **Methodology**

Due to the nature of the data and the research questions, a quantitative research study was conducted during the summer of 2017. The director of the honors program at a large, metropolitan university in Florida provided the needed data regarding students admitted in the years 2010, 2011, and 2012. This large, public, research university in Florida had a student population greater than 30,000 students. It offers more than 100 different degree programs at all three higher education levels. For more than 10 years, the institution has incorporated distance education in its curricula. For many of the high school students included in this study, completion of a Florida Virtual School course was encouraged because it was a graduation requirement in the State of Florida (Watson et al., 2014).

A logistic regression model was used to determine if the distance education variables had any statistical significance in predicting graduation. These variables included: if any online distance education classes were completed (Yes or No), the number of online distance education classes completed (number), and the online distance education GPA for the student (number). The theoretical framework used in this study was general system theory (Bertalanffy, 1968). The input used in this study was the honors program sample. The logistic regression was the process that included variables detailing the distance education courses. The output was the graduation of the students. The last item examined was the correlation matrix. This analysis determined whether a correlation existed between the distance education variable and the academic success variables used by admission offices.

### **Findings**

Kretchmar and Farmer's (2013) work was the foundation for the first research question that examined how online distance education classes in high school affected the graduation rate in four or six years. Kretchmar and Farmer (2013) concluded that as the number of AP classes increased (up to five), the first-year freshman GPA increased as well. In the current study, the

same logic was used except it was applied to online distance education classes and examined its relationship to graduation rates.

### ***Research Question One***

The logistic regression analysis evaluated whether there was significance among the online distance education variables. In following the required procedures of this test, first, a casewise test was used in SPSS to remove the outliers, and then a Hosmer and Lemeshow test confirmed that the model was a good fit (Hosmer & Lemeshow, 2000). This test passed and allowed the online distance education variable to be evaluated in both the four- and six-year models. The four-year regression found the  $p$ -value for Florida Virtual School (Yes/No) to be  $p = .976$ ,  $df = 1$ , and  $n = 1359$ . In the six-year regression, the  $p$ -value for Florida Virtual School (Yes/No) was  $p = .546$ ,  $df = 1$ , and  $n = 409$ . In both models, this variable was not found to be significant in the graduation rate of four to six years. These findings are described in Callahan (2017) in greater detail. These results suggest that, when framed in the context of general system theory, an honors population admission office would not benefit from evaluating online distance education classes when the main outcome focus for the office is to determine whether a student will graduate in four or six years.

The general system theory framework allows for the admission process (the process) to change the variables used for admission (the input) and examine them for changes in the graduation rate (the output). This framework allows for the many systems of higher education to be isolated. With the isolation, each of the subsystems can be tested and improved (Moore & Kearsley, as cited in Rovai, 2003; Potts & Hagan, 2000; Saba, 1999). In this study, the admission system is being tested and improved. The logistic regression model allows for a change in the input variables; therefore, online distance education variables can be tested, and how these variables affect the output can be learned about.

### ***Research Question Two***

Building on research question one, research question two examined if the number of online distance education classes had an effect on the graduation rate in four or six years. This question was grounded in logic that this finding could produce similar results to the study conducted by Kretchmar and Famer (2013). SPSS and logistic regression were used to examine the potential impact. As before, the required procedures for this test were performed: a casewise test and a Hosmer and Lemeshow test (Hosmer & Lemeshow, 2000). The latter test confirmed that the model was a good fit and online distance education course data could be evaluated in both the four- and six-year models. The four-year regression model produced a  $p$ -value for high school online distance education credits variable  $p = .587$ ,  $df = 1$ , and  $n = 1359$ . The four-year model was not found to be significant. The six-year model, however, was found to be significant. This model found the  $p$ -value was  $p = .000$ ,  $df = 1$ ,  $n = 409$ , and a  $B = -.902$ . As was also found in the study by Callahan (2017), the negative coefficient suggests that with more high school online distance education classes completed, it is less likely that an honors student will graduate from a post-secondary institution compared to a student who took no high school distance education classes.

### ***Research Question Three***

Research question three built on Rohr's (2012) findings that high school GPA had an impact on graduation. This question examined whether the high school online distance education GPA could assist in determining if a student would graduate postsecondary school in four or six years. To determine whether the high school online distance education variables were significant, the statistical test used for this question was logistic regression. By following the same steps as in the first two questions, the casewise test removed the outliers, and the Hosmer and Lemeshow (2000) test provided the evidence that the model had a good fit. These analyses allowed for the model to test the online distance education GPA variable in both the four and six-year models. In the four-year regression model, the  $p$ -value for high school online distance education GPA was  $p = .525$ ,  $df = 1$ , and  $n = 364$ . The last thing examined was the six-year regression model. The  $p$ -value for the high school online distance education GPA was  $.089$ ,  $df = 1$ , and  $n = 111$ . In this question, as in question one, this variable was not found to be significant in the graduation rate of four to six years. Therefore, when framed in the context of general system theory, an honors population admission office would not benefit from evaluating high school online distance education GPA when the main outcome for the office is whether a student will graduate in four or six years.

### ***Limitations***

In reviewing and interpreting these data, it is critical to recognize that the honors college sample analyzed in this study does not represent that average institution's entire student body or application pool. As honors program data, this sample is comprised of high-achieving students with a six-year graduation rate of greater than 76%. The students in this program tend to graduate at a rate more than five percentage points higher than the entire study body, based on the "online facts page" of the participating institution. If research were to examine the institution's entire student body, it is safe to assume that the results would be different, and because of that, it is suggested that this research is conducted when such data is available.

## **Discussion and Conclusion**

This study explored online distance education information and the implications that it might have on admission decision models. We proposed that one way of attempting to ensure students may have a positive college experience and quality of life was to re-examine admissions metrics and assumptions. Rohr (2012), along with Kretchmar and Farmer (2013), provided the foundational research for this study. By evaluating online distance education classes completed in high school, the number of those distance education classes completed, and the distance education GPA of the classes, this study attempted to provide information to improve undergraduate admission models. Findings suggest that of the three high school online distance education variables studied, only the total number of distance education credits provided insight into the possibility of graduation. While distance education GPA and a yes/no variable for distance education were not found to be significant, admission offices now have confirmation that they are not missing valuable insight on the future performance by not evaluating these variables in the undergraduate honors program admission application.

The goal of the study was to provide a way to select students more likely to graduate from a higher education institution in a four- or six-year time frame. The admission data collected from

an honors program at a Research 1 institution in the state of Florida were challenging to find as very few admission offices stored high school online distance education information in a database. The results of this study were intended to either confirm that this information is not needed or to (1) reveal the need for additional data to be retained by admission offices and (2) provide evidence for them to consider adding online distance education information to students' application files.

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