School-Level Predictors of Academic and Athletic Success

For decades, a debate over the appropriate role of athletics in the school environment was waged between supporters and critics. Supporters of interscholastic athletics argued the health and discipline benefits of athletics made it beneficial for students to participate in order to develop the whole person (Gullick, 1910; Hawes, 1924; Holmes, 1909; Howe, 1923; Pickell, 1920; Robertson, 1937; Wiley, 1925). Critics argued athletics brought out the worst in students and the community, siphoned much needed resources away from academics, and negatively impacted the non-athlete (Atkinson, 1939; Booth, 1928; Gould, 1920; Hall, 1905; Pangle, 1956; Parlin, 1903; Prettyman, 1905; Tawney, 1904; Wade; 1909; Waldo, 1903).

As interscholastic athletics became more acceptable, the debate turned to the affects of athletics on academic success. Studies began to focus on whether athletic participation positively or negatively affected the academic performance of a student-athlete (Broh, 2002; Coleman, 1961; Eitle & Eitle, 2002; Hanks & Eckland, 1976; Hauser & Lueptow, 1978; Linnenbrink & Pintrich, 2002; Lipscomb, 2006; Maloney & McCormick, 1993; Picou, 1978; Purdy, Eitzen, & Hufnagle, 1982; Spady, 1970; Spreitzer & Pugh 1973). In a majority of studies, athletic participation was found to have at least some level of positive affect on academic performance for student-athletes.

Conceptual Framework

Balfanz, Legters, West, and Weber (2007) used a three-pronged framework mapping the sources of influence on the overall academic performance of schools. The first prong is the federal education laws and regulations. Accountability measures put pressure on schools to perform and outlines how schools will be assessed. The second prong consists of state policy decisions. Individual states have tremendous latitude over curriculum standards, graduation rate objectives, and subgroup accountability. Individual schools have little to no control over the first two prongs. The third prong consists of school-level variables. The authors identify five key school variables that predict academic success: resources, enrollment size, geographic location, student demographics, and past academic achievement. These variables differentiate one school from another. The authors used graduation rate instead of Adequate Yearly Progress (AYP) status to distinguish high-performing and low-performing schools since state regulations for AYP varied widely.

Purpose of the Study

The purpose of this study was four-fold. First, it measured the ability of selected school-level variables to predict the overall academic success of Georgia public high schools that competed in the GHSA (classes AAAAA, AAAA, and AAA) for the 2010-11 school year. Second, it sought to determine if significant differences existed between high-performing schools and low-performing schools in athletic achievement for the 2011-12 school year. Third, it sought to determine how well the selected school-level variables predicted athletic department success for the 2010-11 school year. Fourth, data from the prior two years (2008-09 and 2009-10 school years) was used to cross-validate the statistical model in order to see if the model holds up over time.

Research Questions

The four research questions in the study were:
1. Are selected school level variables (percentage of minority students; percentage of students with disabilities; percentage of economically disadvantaged students; math and

English/Language Arts GHSGT scores; graduation rate) significant predictors of a school's academic performance for the 2011-12 academic year?

2. Is there a significant difference between high performing and low performing schools on the total number of Directors Cup points earned for the 2011-12 academic year?

3. Are selected school-level variables (percentage of minority students; percentage of students with disabilities; percentage of economically disadvantaged students; math and English/Language Arts GHSGT scores; graduation rate) significant predictors of a school's total Directors Cup points for the 2011-12 academic year?

4. Are selected school-level variables (percentage of minority students; percentage of students with disabilities; percentage of economically disadvantaged students; math and English/Language Arts GHSGT scores; graduation rate) significant predictors of a school's total Directors Cup points for the academic years 2008-09 and 2009-10?

5.

Methodology

A nonexperimental multivariate ex post facto correlational design and a group comparison design were utilized. This design was necessary as variables could not be manipulated, samples could not be randomized, and data were gathered from completed events. Logistic regression was used to identify the variables most likely to predict academic performance. Differences between high and low performing schools on athletic performance were measured using a Mann-Whitney U test. Negative binomial and Poisson regression models were employed to measure the predictive ability of the selected school-level variables on a school's athletic performance. All statistical procedures were completed using SPSS version 21.

The predictor variables were the percentage of minority students, percentage of students with disabilities, percentage of economically disadvantaged students, combined math and English/Language Arts GHSGT scores, and the percentage of students graduating with their cohort. The dependent variables were academic performance, Directors Cup points, and playoff performance.

Participants

The population examined in this study included all Georgia public high schools competing in the GHSA classifications AAAAA, AAAA, and AAA during the academic years 2008-2010. The GHSA based the classifications on enrollment numbers. Classifications AA and A were excluded from the study due to the large numbers of private schools in those divisions. Private schools did not fit in the study as they did not have the same accountability measures as public schools. Outlier cases and multi-campus schools were also eliminated from the study.

Procedures

After the Institutional Review Board for Valdosta State University granted permission to conduct the research, the data for this study was collected from four sources: (a) the Accountability Report Cards for each school as reported by the Georgia Department of Education, (b) National Center for Education Statistics, (c) the Regions Directors Cup rankings as reported by the Georgia Athletic Directors Association (GADA), and (d) Georgia Prep Country website. Each school's accountability report card contained data relating to each school's GHSGT results by subgroup, graduation rate by subgroup, and GHSGT participation rate.

The Directors Cup points were gathered from the GADA. Specific point totals for individual sports are found on the website for the 2009-10 and 2010-11 academic years. Hardcopies of the individual sport totals for the 2008-09 academic year were obtained from the GADA. Additional athletic data were gathered from the Georgia Prep Country website.

Logistic regression was used to determine how well the selected school-level variables (percentage of minority students, percentage of students with disabilities, percentage of economically disadvantaged students, combined math and English/Language Arts GHSGT scores, and graduation rate) predicted a school's academic performance classified as high-performing and low-performing. A Mann-Whitney U test was used to measure differences between academically high-performing schools and low-performing schools on athletic performance as determined by total Directors Cup points and points earned in eight different sports. Negative binomial and Poisson regression were used to determine how well the selected school-level variables predicted a school's athletic performance as measured by total Directors Cup points and playoff performance in eight different sports. The negative binomial regression model was cross-validated using data from two prior school years.

Results
The predictor variables were able to accurately predict academic performance for over 82% of schools. While the percentage of minority students, graduation rate, and GHSGT scores were significant predictors in two out of the three classifications, the percentage of economically disadvantaged students was not a significant predictor. Significant differences existed between high-performing and low-performing schools in terms of overall athletic performance in GHSA classifications AAA and AAAA. Academic predictors (GHSGT scores and graduation rate) were linked to athletic achievement. Demographic variables (percentage of economically disadvantaged students and minority students) were significant predictors in classification AAA, but not in the larger classifications.

Implications
The selected school-level variables were found to predict overall academic and athletic performance. These variables should be thoroughly understood by building-level leaders and athletic directors. When variables that are associated with low-performance in the classroom or on the athletic field are present in a school, leadership must take steps to circumvent the negative effects of that variable in order to improve performance. Understanding those variables and finding ways to minimize their effects is crucial moving forward.