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Higher education and performance: examining at-risk populations in an online environment



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Using data from a Master's of Public Administration (MPA) program at a Mid-western regional university in the United States, this paper studies whether Learning Management Systems (LMS) have equivalent outputs relative to more traditional educational delivery systems. In essence, are current generation LMS, used for online only instruction, equivalent to traditional teaching models when examining race and gender? This study examined certain output criteria using regression analysis and found no statistically significant difference between online and on-ground students in terms of their MPA degree GPA. However, African American student performance was relatively weaker than non-African American students in terms of GPA regardless of whether they were admitted into the online or on-ground program. This finding is consistent with other studies examining on-ground only performance. We posit that this difference was caused by their lower grades before they entered into this master's program. To combat the gap, fair grading is a good but not sufficient practice, and additional resources and remedial approaches should be in place in order to better prepare African American students as competitive as other racial groups.

The shift across the United States among institutions of higher education to diversify their course delivery to include on-ground, hybrid, and online courses is a trend that is well documented and is continuing to

accelerate. Public Administration programs that offer advanced graduate degrees have been at the vanguard of this trend. One interesting by-product of this movement entails the possibility of stronger performance outcomes for certain at-risk populations. Several studies have documented the challenges associated with retaining and ultimately graduating minorities¹ and males in higher education². A number of these studies have shown lower performance outcomes among minorities and males³. However, these studies primarily focused on traditional on-ground instruction. Might an online curriculum increase the performance outcomes of these populations of students in a Master's of Public Administration (MPA) program?

Table 1 shows the total number of master's degrees conferred to males, African-Americans and Hispanics reported by the National Center for Educational Statistics, a division of the U.S. Department of Education. The Center grouped the public administration degree with other eight degrees including human services, community organization and advocacy, public policy analysis, education policy analysis, health policy analysis, international policy analysis, youth services/administration, and social work. An examination of Table 1 finds that the total number of degrees conferred to African-Americans, Hispanics, and Men have continued to increase over the reporting period. However, when

¹ Educationally at risk minorities in the United States refers to African American and Hispanic origin students.

² A. Seidman, *Minority student retention: Resources for practitioners*, „New Directions for Institutional Research” 2005, No. 125, pp. 7–24, <http://dx.doi.org/10.1002/ir.136>; S.L. Desjardins, D.A. Ahlburg, B.P. McCall, *A Temporal Investigation of Factors Related to Timely Degree Completion*, „Journal of Higher Education” 2002, Vol. 73, No. 5, pp. 555–581, <http://dx.doi.org/10.1353/jhe.2002.0042>; D.F. Carter, *Key issues in the persistence of underrepresented minority students*, „New Directions for Institutional Research” 2006, No. 130, pp. 33–46, <http://dx.doi.org/10.1002/ir.178>; L.R. Hatch, K. Mommsen, *The Widening Gap in American Higher Education*, „Journal of Black Studies” 1984, Vol. 14, No. 4, pp. 457–476, <http://dx.doi.org/10.1177/002193478401400404>; W.R. Allen, *The Color of Success: African-American College Student Outcomes at Predominantly White and Historically Black Public Colleges and Universities*, „Harvard Educational Review” 1992, Vol. 62, No. 1, pp. 26–45, <http://dx.doi.org/10.17763/haer.62.1.wv5627665007v701>; T. Robert, J. Luke, T. Elon, L. Terrell, *Black male collegians: Increasing access, retention, and persistence in higher education*, Jossey-Bass, 2014; H.A. Moore, B. Keith, *Human capital, social integration, and tournaments: A test of graduate student success models*, „The American Sociologist” 1992, Vol. 23, No. 2, pp. 52–71, <http://dx.doi.org/10.1007/BF02691908>; S. Hu, E.P. St. John, *Student persistence in a public higher education system: Understanding racial and ethnic differences*, „Journal of Higher Education” 2001, Vol. 72, No. 3, pp. 265–286, <http://dx.doi.org/10.2307/2649332>; B.J. Cook, D.I. Córdoba, *Minorities in higher education twenty-second annual status report: 2007 supplement*, <http://minority-health.pitt.edu/996/>.

³ Unless otherwise indicated the term „male” refers to the entire population of males regardless of race.

Table 1. Masters degrees conferred: by gender and race

Year	Total	African American	Hispanic	Male
2007–2008	33,029	6,168	2,772	8,140
2008–2009	33,933	6,419	2,921	8,346
2009–2010	35,729	6,869	3,395	8,865
2010–2011	38,634	7,344	3,696	9,793
2011–2012	41,680	7,986	4,183	10,475

Source: U.S. Department of Education, *National Center for Education Statistics*. 2007–2012.

compared to the total population of graduates, the percentage of African-American and male master's degrees awarded has held steady over the reporting period at 19% and 25% respectively. The Hispanic percentage of total degrees awarded has held steady at 10% since the 2009–10 reporting year.

Table 2. Master's degrees conferred: public administration only by gender

Year	Total	Male
2007-2008	9,669	4,026
2008-2009	9,669	3,948
2009-2010	10,801	4,515
2010-2011	11,957	5,008
2011-2012	12,926	5,441

Source: U.S. Department of Education, *National Center for Education Statistics*. 2007-2012.

Table 2 presents a more focused examination of MPA programs only. The total number of degrees conferred to men has increased over the reporting period while the actual percentage of MPA degrees awarded to males has remained constant at 42%⁴. No data was able to be obtained detailing race and ethnicity for MPA programs only.

The data outlined in table 1 and table 2 are consistent with the research related to minority and male retention in higher education and raise the question

as to whether males and African Americans perform better (higher GPA) in online versus on-ground programs?

Review of related literature

The literature on student retention in higher education focuses primarily on the relationship between the skills and abilities that students bring with them and their institutional experiences⁵. Within the context of an MPA Program, one of the components of student success in the classroom deals with the notion of self-efficacy and the impact that the instructor has on its development; learned behavior centers on this concept. Specifically, self-efficacy is an individual's self-perception of competence that directly impacts motivation⁶. The development of a student's efficacy generally requires goals that are task specific and situational⁷. Consequently, students with high levels of efficacy are more likely to set larger goals for themselves and develop strategies to acquire skills and knowledge⁸. This academic self-efficacy has a positive impact on retention rates in an education setting. An interesting point is that instructors can impact student efficacy. Within an education setting, students model the attitude and behaviors of instructors⁹. Additionally, McCall¹⁰ found that a student's belief in his or her ability to perform a certain task could be influenced by instructors. Student interaction with the instructor is a critical factor in an online environment¹¹. This could be due to the frequency and quality of student-

⁴ For the 2008–2009 reporting period the actual male percentage of total was 41%.

⁵ V. Tinto, *Dropouts from Higher Education: A Theoretical Synthesis of the Recent Literature*, „A Review of Educational Research” 1975, Vol. 45, No. 1, pp. 89–125, <http://dx.doi.org/10.1080/1463631022000005016>.

⁶ F. Pajares, *Self-Efficacy Beliefs in Academic Settings*, „Review of Educational Research” 1996, Vol. 66, pp. 543–578, <http://dx.doi.org/10.3102/00346543066004543>.

⁷ A. Bandura, *Social foundations of thought and action: A social cognitive theory*, Prentice Hall, Englewood Cliffs 1986; A. Bandura, *Social cognitive theory*, [in:] R. Vasta (ed.), *Annals of Child Development*. Vol. 6. *Six theories of child development*, JAI Press, Greenwich 1989.

⁸ F. Pajares, op.cit.; T.P. Dooley, W.D. Schreckhise, *Evaluating Social Cognitive Theory in Action: An Assessment of the Youth Development Program's Impact on Secondary Student Retention in Selected Mississippi Delta Communities*, „Youth & Society” 2013, <http://dx.doi.org/10.1353/jhe.2002.0042>.

⁹ A. Bandura, *Self-efficacy: Toward a unifying theory of behavioral change*, „Psychological Review” 1977, Vol. 84, No. 2, pp. 191–215, <http://dx.doi.org/10.1037/0033-295X.84.2.191>; D.H. Schunk, *Social-self interaction and achievement behavior*, „Educational Psychologist” 1999, Vol. 34, No. 4, pp. 219–227, http://dx.doi.org/10.1207/s15326985ep3404_3.

¹⁰ H. McCall, *When successful alternative students “disengage” from regular school*, „Reclaiming Children and Youth” 2003, Vol. 12, No. 2, pp. 113–117.

¹¹ K. Swan, *Building learning communities in online courses: The importance of interaction*. „Education, Communication & Information” 2002, Vol. 2, No. 1, pp. 23–49, <http://dx.doi.org/10.1080/1463631022000005016>.

instructor interaction in a synchronous environment as indicated by Endo and Harpel¹².

The primary tool instructors' use in higher education to administer an online curriculum is the Learning Management System (LMS). There are a variety of learning management systems used in the United States in higher education, such as Moodle, Coursera and Canvas but by far the most ubiquitous is Blackboard. The LMS allow professors to shift the delivery of classroom related content from a traditional face-to-face synchronous learning environment to a virtual asynchronous learning environment. New technologies, such as real-time compressed video, high capacity video lectures, interactive quizzes, synchronous chat, and asynchronous discussion exercises, when done properly, enhance the learning environment substantially via online delivery. When done properly, online instruction can have the same level of rigor and quality as on-ground instruction¹³. A number of studies, classifying students as either online or on-ground, have indicated no significant differences in examination scores between on-ground and online courses¹⁴. Looking specifically at MPA Programs¹⁵ found no significant distinctions between online and on-ground student performance outcomes.

Many scholars have documented the strengths of asynchronous learning within the context of LMS. LMS are primarily focused on the logistics of managing learners and learner activities¹⁶. The LMS establishes a framework that allows the instructor to handle all aspects of the learning process from the delivery and management of instructional content to the delivery and management of learning goals¹⁷. In addition to content delivery, LMS can handle course registration, skill gap analysis, and reporting¹⁸. One possible effect that has not been well documented is the impact of asynchronous learning on minorities and men. While Scheer¹⁹ found no significant differences in outcomes relative to online versus on ground MPA program performance outcomes, that study did not examine the impact of an online asynchronous environment with respect to race. This study seeks to address that question. Specifically, do online performance outcomes

have equivalent outputs for students with differing ethnicities or gender relative to more traditional educational delivery systems?

Research design and model specification

The data from the present study was obtained using a cross-sectional design and a sample of 550 graduate MPA students taught at a regional university in central Illinois, from the Fall semester of 2007 to the Spring semester of 2012. Students apply for and are admitted into either the online or on-ground program. Thus, students self-select their status as either online or on-ground. Admission into either mode of the MPA Program is a formal process that requires a minimum of a 2.5 grade point average (GPA), completion of application materials, and a writing sample. This university has a substantial enrollment of both African American and male students in its MPA Program. By examining a single program, the researchers eliminate the problem of intra-agency group differences. From the Fall of 2007 to the Fall 2012, the MPA Program included both on-ground and online curricula.

The dependent variable, student performance, consisted of student-level GPA at graduation. The dependent variable was evaluated relative to how the independent variables of race, international status, gender, online versus on-ground status, and undergraduate GPA impacted it. The unit of analysis for this study was the individual students graduated from the MPA program.

Organization of data analysis

This section provides an overview of how the data was analyzed. First, we examined the overall distribution of the data collected. The distribution consisted of the following variables: race, gender, undergraduate GPA, online enrollment status, and international status²⁰. The purpose of running descriptive statistics was to learn about the content of the populations and to indicate the similarities or differences within those populations. Next, bivariate association tests were conducted to determine the strengths and directions

¹² J.J. Endo, R.L. Harpel, *The effect of student-faculty interaction on students' educational outcomes*, „Research in Higher Education” 1982, Vol. 16, No. 2, pp. 115–138, <http://dx.doi.org/10.1007/BF00973505>.

¹³ J.L.M. Brown, *Online Learning: A Comparison of Web-Based and Land-Based Courses*, „Quarterly Review of Distance Education” 2012, Vol. 13, No. 1, pp. 39–42.

¹⁴ Y. Lou, R.M. Bernard, P.C. Abrami, *Media and pedagogy in undergraduate distance education: A theory-based meta-analysis of empirical literature*, „Educational Technology Research and Development” 2006, Vol. 54, No. 2, pp. 141–176, <http://dx.doi.org/10.1007/s11423-006-8252-x>; B. Means, Y. Toyama, R. Murphy, M. Bakia, K. Jones, *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*, US Department of Education, Washington DC 2009.

¹⁵ T.J. Scheer, *Exploring the impact of distance learning on MPA students*, „Journal of Public Affairs Education” 2001, Vol. 7, No. 2, pp. 101–115.

¹⁶ G.L.S.C. Oates, *Teacher Student Racial Congruence, Teacher Perceptions, and Test Performance*, „Social Science Quarterly” 2003, Vol. 84, No. 3, pp. 508–525, <http://dx.doi.org/10.1111/1540-6237.8403002>.

¹⁷ W.R. Watson, S.L. Watson, *What are Learning Management Systems, What are They Not, and What should they Become?* „TechTrends” 2007, Vol. 51, No. 2, pp. 28–34.

¹⁸ K. Gilhooly, *Making e-learning effective*, „Computerworld” 2001, Vol. 35, No. 29, pp. 52–53.

¹⁹ T.J. Scheer, op.cit.

²⁰ Selection of these populations was based on the population distribution of groups enrolled in the MPA Program.

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of association between variables included in the study. Finally, three ordinary least squares (OLS) multiple regression models were tested looking at three distinct populations of MPA students, online, on-ground, and combined²¹. All computations for analyzing the quantitative individual-level data were conducted with Statistical Package for Social Science (SPSS). The null hypothesis was rejected at the $p < 0.05$ level of significance.

Findings

The bivariate association tests revealed that student undergraduate degree GPA was positively associated with their MPA degree GPA, moderate and statistically significant. African American students had lower average MPA degree GPA and lower average undergraduate degree GPA, comparing to non-African American students.

Table 3 details key characteristics associated with the population of MPA students enrolled in both the online and on ground MPA program.

Table 3. Student characteristics by online and on-ground programs²²

	Online (N=145)	On-ground (N=254)
African American	13.8%	18.1%
Hispanic	5.5%	1.6%
Male	46.9%	44.9%

When compared to the on-ground students, the online program had fewer African Americans but more Hispanic origin students, and more male students. All but one international student enrolled in the on-ground program.

When compared to the on-ground students, online students had a higher average undergraduate GPA. That difference was statistically significant ($t = 2.804$ with a p value .005). At the time of MPA graduation, there was no statistically significant difference in

Table 4. GPA comparison between online and on-ground students

	Undergraduate GPA		MPA GPA	
	Online	On ground	Online	On ground
Mean	3.29	3.17	3.75	3.7
STD	0.42	0.42	0.25	0.25
Skewness	-0.24	0.13	-1.32	-0.93
Kurtosis	-0.58	-0.73	1.72	0.15

the average GPA in these two groups. This finding is consistent with the literature regarding online vs. on-ground education outcomes²³.

The multiple regression model with five predictors produced adjusted $R^2 = .227$, $F(5, 249) = 15.6$, $p < .001$. As can be seen in Table 5, consistent with the association analysis, undergraduate degree GPA is a good indicator of success in the MPA degree. Male students were doing better than female students but it was not statistically significant. African American students performed weaker than non-African American students by an average of 0.189 GPA points after controlling for the other variables in the model. Hispanic origin student performance was not statistically significant from other students. Additionally, international student performance was not insignificant.

Table 5. Model I: Predicting On-ground MPA Student GPA

	B	SE	β
Constant Gender	3.15 .051	.116 .028	.100
African American	-.189	.038	-.290**
Hispanic	-.117	.113	-.059
International	.078	.066	.066
Undergraduate GPA	.178	.035	.301**

* $p < .05$, ** $p < .001$

The multiple regression model with five predictors produced adjusted $R^2 = .146$, $F(5, 143) = 5.88$, $p < .001$. As can be seen in table 6, higher undergraduate degree GPA signals higher MPA degree GPA. African American students performed weaker than non-African American students by an average of 0.210 GPA points after controlling for the other variables in the model. In the online program, male students performed weaker than female students. However, this difference was not statistically significant. Neither Hispanic origin nor international student status were statistically significant.

Table 6. Model II: Predicting Online MPA Student GPA

	B	SE	β
Constant Gender	3.31 -.014	.161 .039	-.029
African American	-.210	.057	-.294**
Hispanic	-.064	.085	-.060
International	.272	.233	.091
Undergraduate GPA	.143	.048	.239*

* $p < .05$, ** $p < .001$

²¹ All populations were included in the 3 regression models ie. Blacks, Caucasians, Males, Hispanics, international students. The social demographics variables, race, gender, international status were coded as dichotomous.

²² The majority of MPA students were between ages 25 to 44 when they attended the program. When compared to the on-ground students, online students tended to be older in all the four categories.

²³ Y. Lou, R.M. Bernard, P.C. Abrami, op.cit.; T.J. Scheer, op.cit.

Table 7. Model III: Predicting All MPA student GPA

	B	SE	β
Constant Gender	3.21 .025	.093 .023	.049
African American	-.197	.031	-.293**
Hispanic	-.82	.067	-.057
International	.096	.064	.069
Undergraduate GPA	.163	.028	.276**
Online status	.019	.024	.037

*p < .05, **p < .001

The multiple regression model with six predictors produced adjusted $R^2 = .204$, $F(6, 393) = 17.79$, $p < .001$. As can be seen in table 7, undergraduate GPA had a significant positive regression weight, after controlling for the other variables in the model. African American students, on average, graduated with 0.197 GPA points lower than non-African American students, when controlling for other variables in the model. Lastly, gender Hispanic origin, international student status, and online enrollment status did not make any statistically significant difference and did not contribute to the multiple regression model.

Discussion

The primary aim of this study was to determine if differences existed in performance outcomes for at-risk populations enrolled in an MPA program and if online mode of delivery impacted that performance. While there was no statistically significant difference between online and on-ground student GPAs, African American student performance across all three models was significantly lower. If the GPA difference could be caused by classroom discrimination, we expect that interactions with instructors in an online environment could help to eliminate that impact. However, this study did not prove that online education was able to close the gap. The GPA gap between African American and non-African American students was consistent in the online and on-ground programs.

Every faculty member in this MPA program is expected to offer both online and on-ground classes. In online sessions, students may never disclose their ethnic background to the instructors. The fact that there was no statistically significant difference be-

tween the online and the on-ground student average GPAs showed, at least to some degree, the faculty members had been engaging in procedural fairness in their grading. A possible explanation for the slightly smaller gap among on-ground students was that meeting regularly in the classroom each week might have motivated African American students to concentrate on their study more than otherwise.

Our study showed that undergraduate GPA had a statistically significant impact on students' MPA GPA. Therefore it is rational to infer that the relatively lower GPA among African American students in this master's program could be caused by some historical factors before they entered into this master's program. For example, African American students may have been on different grading scales or put on different expectations at schools where they obtained their undergraduate or k-12 educations.

At this university, the academic help services are open to all students. There are also student life organizations, student clubs, and campus activities that target minority students. In this study, the majority of students were full-time employees of government agencies and nonprofit organizations and they had to balance their busy schedules among job, family, and school responsibilities. Comparing to on-ground students, online students were less likely to use these campus services or participating in campus activities. Since all on-ground classes were offered at nights, on-ground students tended to be on campus only when they had classes. Many on-ground students were not active in participating in campus activities or seeking academic help services either. From this perspective, the on-ground students were similar to the online students, which make these two groups comparable.

In the future, it would be useful to separate students who use these services or participate in campus activities from other who do not and test whether the services and activities help to reduce the academic gap between African American and non-African American students.

In examining K-12 education, a number of studies have been done and have consistently found that instructor expectations for student performance and ability is consistently biased and related to the race of the student²⁴. This type of discrimination in educational experience could have profound influence in African American students' learning behaviors and their self-expectations.

²⁴ E.C. Minor, *Racial Differences in Teacher Perception of Student Ability*, „Teachers College Record” 2014, Vol. 116, No. 10, s. 1–22; C. McKown, R. Weinstein, *Teacher expectations, classroom context, and the achievement gap*, „Journal of School Psychology” 2008, Vol. 46, No. 3, pp. 235–261; R.L. Pigott, E.L. Cowen, *Teacher race, child race, racial congruence, and teacher ratings of children's school adjustment*, „Journal of School Psychology” 2000, Vol. 38, No. 2, pp. 177–195, [http://dx.doi.org/10.1016/S0022-4405\(99\)00041-2](http://dx.doi.org/10.1016/S0022-4405(99)00041-2); K.L. Alexander, D.R. Entwisle, M.S. Thompson, *School performance, status relations, and the structure of sentiment: Bringing the teacher back in*, „American Sociological Review” 1987, pp. 665–682; P.B. McGrady, J.R. Reynolds, *Racial Mismatch in the Classroom Beyond Black-white Differences*, „Sociology of Education” 2013, Vol. 86, No. 1, pp. 3–17, <http://dx.doi.org/10.1177/0038040712444857>; R.F. Ferguson, *Teachers' perceptions and expectations and the black-white test score gap*, „Urban Education” 2003, Vol. 38, No. 4, pp. 460–507, <http://dx.doi.org/10.1177/0042085903038004006>; G.L.S.C. Oates, op.cit.

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In a study, comparing African American students with non-African American student test scores for students entering graduate school, Miller (1995) found that African American Students had lower overall verbal and quantitative scores on the Graduate Records Exam (GRE)²⁵ and where the least represented among students with high GRE scores. Possible linkages to instructor bias in K-12 education and lower overall performance outputs, in graduate school, should be explored by future researchers.

Conclusion

Much of the higher education literature addressing African American students has moved on to address issues related to retention. While retention in higher education is extraordinarily important, there are some limitations to that line of inquiry. Students leave college for a variety of reasons, not all of them related to their ability to perform or to their levels of self-efficacy. Those exogenous reasons include familial responsibilities, cost concerns, and a whole host of other elements. By seeking to address retention, without adequately exploring issues related to African American performance, illustrates a gap in the literature. Our current study seeks to fill the gap, particularly as it relates to online graduate education.

The implications for online course design and delivery to African American students arising from this study may be substantial and suggest possible research beyond the scope of this inquiry. One obvious factor which may have a tremendous impact on African American student performance outputs in an online environment concern both the quality of and frequency of interactions with the instructor²⁶. Our study raises the question of whether more frequent interactions with the instructor, in an online environment, coupled with intensive feedback could help to close the gap between African American and non-African American GPA performance. Other research in the field shows positive findings related to level of instructor interaction and student efficacy in building online communities²⁷.

Additionally, this study is one of the few to quantitatively measure the GPA performance of African American students both online and on-ground enrolled in an MPA program. Although the students were from a Mid-western regional university in the United States, our methodology could be useful to other scholars and our findings can be compared with similar studies in other countries.

This study builds on the work of Scheer²⁸ in terms of illustrating undergraduate GPA as a significant predictor of performance in an MPA program. Fur-

ther, this study illustrates the challenges impacting African American students in higher education. The relatively weaker performance of African American students in this program maybe reveal a deeper issue of educational experience discrimination which happened before they reach the graduate school level.

We posit that to combat the discrimination, fair grading is good but not sufficient remediation. Our education system has to come up with more mechanisms to better prepare African American students as competitive as other racial groups. These actions must be taken and continue to be implemented throughout K-12 and into college education.

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²⁵ The Graduate Records Exam (GRE) is a standardized test taken by undergraduate students in the United States and in some other parts of the world to gain entry into some graduate university programs.

²⁶ J.J. Endo, R.L. Harpel, op.cit.

²⁷ P. Shea, C.S. Li, K. Swan, A. Pickett, *Developing learning community in online asynchronous college courses: The role of teaching presence*, „Journal of Asynchronous Learning Networks” 2005, Vol. 9, No. 4, pp. 59–82.

²⁸ T.J. Scheer, op.cit.

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