RESEARCH ARTICLES

A Preliminary Report on the Academic Performance of Pharmacy Students in a Distance Education Program

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Objectives. Specific objectives were to (1) compare the academic performance of students attending the founding versus distance campuses of one college of pharmacy and (2) investigate whether the campus attended was associated with first professional year academic performance.

Methods. Data regarding students' academic performance in specific courses and fall semester and cumulative first-professional-year grade point averages (GPAs) were retrieved. Campus attended, prepharmacy science and math GPA, pharmacy college admissions test (PCAT) composite score, highest prepharmacy academic degree, age, and gender were used to predict academic performance.

Results. Campus attended did not predict fall semester GPA ($p = 0.44$) or cumulative GPA ($p = 0.95$). Significant predictors were prepharmacy science and math GPA, PCAT composite score, and highest prepharmacy academic degree.

Conclusions. After the first academic year, students on the founding campus and distance campuses performed equally well after considering their prepharmacy academic preparation.

Keywords: distance education, academic performance, distance learning, doctor of pharmacy, educational technology, pharmacist shortage, assessment

INTRODUCTION

The United States has too few pharmacists.[1-3] For example, in its latest pharmacist employment survey, the National Association of Chain Drug Stores Foundation found 5,499 vacant chain pharmacy positions as of January 2003.[2] The State of Florida is experiencing similar pharmacist shortages. The population growth rate in Florida is among the highest in the nation, especially among older persons. These older persons are among the most likely to seek medical care, have prescriptions dispensed, and need high quality pharmacy services. Second, the annual number of pharmacy graduates from Florida's colleges of pharmacy per million persons was below the national average from 1990 to 1999 (17 per million versus 28 per million).[4]

The pharmacist shortage has been blamed for an upturn in dispensing errors and patient deaths.[5] The shortage has been cited as the reason for pharmacists having less time to counsel patients; fewer pharmacy school faculty members,[1] and the escalation in pharmacist salaries.[3] In response to this public health crisis, there has been a relative explosion in the number of pharmacy schools in the past decade.[6] However, starting a new pharmacy school or college is costly. The high cost of starting new pharmacy schools and the difficulties in finding qualified new faculty members have spurred exploration of other options for training pharmacists. For example, existing schools and colleges have increased their on-campus class sizes or, when there are space or resource constraints, they have used other means of increasing their class size, such as distance education programs.

Recently, with the requisite advances in technology in place, several colleges and schools of pharmacy have started distance programs. These programs include both synchronous (eg, Nova Southeastern University, Texas Tech University) and asynchronous (eg, University of Florida) curricular delivery methods. Some programs are primarily distance-based (eg, Creighton) with students coming to campus 1 or 2 weeks per year, versus hybrid programs (eg, University of Florida, Nova Southeastern University) where students regularly come to a local campus for routine interactions with faculty members and peers. In this fashion, a quality program can be offered to a larger number of students through a hybrid approach of combining educational technology with smaller numbers of faculty and staff members at the distance sites. Reliance on distance education programs has raised legit-

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imate questions about the impact on the quality of education[6] and leaves the profession with significant concerns about the quality of distance education programs. While distance education programs have been evaluated in other disciplines,[7-9] they have not been carefully examined in pharmacy education, especially asynchronous-hybrid delivery programs. For the most part, published articles and meeting abstracts (the majority) are descriptions of the implementation and operation of entry-level or non-traditional distance education programs, without accompanying program evaluation.[10-14] Evaluative studies of pharmacy-based distance education programs have been directed at individual courses[15-17] or continuing education or certificate program courses.[18]

In order to better meet the demand for pharmacists in the state, the University of Florida College of Pharmacy opened 3 campuses at a distance from the founding campus in Gainesville, Fla, in September 2002. The new campuses were located in Jacksonville, Orlando, and St. Petersburg, Fla. The college chose this option for a variety of reasons, including the lack of space to enlarge the Gainesville-based enrollment and to meet the College's strategic plan of improving its cultural diversity and access to a pharmacy education for persons with geographic limitations. With the doubling of the size of the entry-level class, the College faculty has entered into a continuous quality assessment program to monitor the academic progress of students in both the on-campus and distance education programs.

The specific objectives of this report were to (1) compare the academic performance, as measured by first-year grade point average, of students registered at the Gainesville and distance campuses, and (2) investigate whether the assignment to Gainesville or a distance campus was associated with first-professional-year academic performance.

A Brief Description of the Asynchronous, Hybrid Distance Education Program

Pharmacy students attending the distance education campuses in Jacksonville, Orlando, and St. Petersburg, Fla, view the lectures by Gainesville-based faculty by videostreaming technology via the Internet. Lectures are videotaped and can be viewed at students' computers within 2 to 3 hours of their presentation on the founding campus. After viewing the lectures presented at a distance, students are required to come to a local campus site on a regular basis (ie, 3 or 4 times per week). While at the local campus, students are required to participate in discussion sessions, case studies, review sessions, quizzes and examinations directed by faculty facilitators based at the local campus. Course activities and require-

ments are the same for students attending the founding campus in Gainesville and those at the distance campuses to enhance curricular comparability. Examinations are given at the same time across the 4 campus sites. Each campus has an on-site full-time director, coordinator of student affairs, and senior secretary who supervise the academic program, faculty advisement, extracurricular activities, pharmacy student organizations, service projects, and social gatherings. The local directors work with Gainesville-based course coordinators months prior to the semester to insure that the schedule of class meetings and examinations runs smoothly. Local, part-time faculty facilitators assist Gainesville-based course coordinators with implementing the active-learning sessions and examinations at each campus. During the course of the semester, Gainesville-based course coordinators travel to the distance campuses and participate in live examination reviews, question-and-answer sessions, and discussion sessions, in addition to using distance technologies to conduct these activities. This strategy of routinely using both live and distance interactions allows local and Gainesville-based faculty members to monitor distance-education students' progress on the course content and to gauge the information that was most difficult for them. Hence, the faculty members are able to subsequently focus on the more difficult material.

METHODS
Predictor Variables: Campus Assignment

The primary goal of this report was to compare the first-year academic performance of students attending the Gainesville campus versus those at the distance campuses. Students were assigned to campus using the following procedure. After a student was admitted, the college's Admissions Committee assigned students to their first or second preference for a campus site. The Admissions Committee reviewed individual students' circumstances and preferences before making the campus assignments. Students could petition the Admissions Committee to re-evaluate the assignment if they presented additional or clarifying information. Assignments were not done on a random basis or by academic criteria. For the most part, students assigned to their second preference indicated Gainesville as their first preference. Students assigned to their second preference were given the choice to attend one of the distance campuses after the Gainesville class was filled to provide them the opportunity to attend pharmacy school. Even so, most of the students at the distance campuses were assigned to one of those campuses because it was their first choice; St. Petersburg (64%); Orlando (62%), and; Jacksonville

Table 1. Comparison of Gainesville Campus and Distance Campuses on Sociodemographic Characteristics and Prepharmacy Admission Criteria

	Gainesville	Distance Campuses	Statistic	*p* value
Female Gender	64.8%	63.9%	$\chi^2 = 0.30$	0.87
Age, y (SD)	23.2 (4.85)	26.0 (6.26)	t = 4.02	0.001
Prepharmacy SMGPA* (SD)	3.42 (0.34)	3.13 (0.40)	t = 6.41	0.001
Maximum PCAT Composite	88.2 (10.2)	79.7 (15.4)	t = 5.33	0.001
BS degree or higher	25.0%	31.9%	$\chi^2 = 1.60$	0.21

*Science and Math Grade Point Average
SD=standard deviation

(55%). Data regarding individual students' campus assignment was obtained from the College's Office of Student Affairs. The Office of Student Affairs monitors which campus each student attends.

Campus-specific section numbers are assigned to each course and were used to verify campus assignment. Students were classified either as attending one of the 3 distance campuses (0) or the Gainesville campus (1).

Predictor Variables: Student Characteristics and Preadmission Criteria

Factors associated with academic performance in the first-year curriculum include prepharmacy grade point average (GPA),[19] including science and math grade point average (SMGPA),[20-21] scores on the Pharmacy College Admission Test (PCAT),[19,21] attainment of a prior degree,[21,22] and age. Students' pre-pharmacy SMGPA, maximum composite score on the PCAT, age, and gender (female = 0; male = 1) were retrieved from a database maintained by the Office of Student Affairs. The Office of Student Affairs routinely collects these data as part of the College's admission process. If a student submitted more than one PCAT for admission, the highest composite score was used. A student's attainment of a previous academic degree was categorized as either none or associate of arts (0), or bachelor of science or higher (1).

Academic Performance Outcomes

Data on students' first-year academic performance was collected from 2 primary sources. First, course-specific data were obtained directly from academic course coordinators for each class at the end of the fall 2002 semester. Second, students' cumulative fall semester GPA and cumulative first-professional-year GPA were obtained from the University's Office of the Registrar. Students' GPAs were obtained using a unique identifier and were linked with other student-specific preadmission, sociodemographic, and campus-assignment information using the identifier.

Statistical Analysis

The bivariate associations between gender, prior academic degree, and campus assignment were examined using Pearson's chi-square test. Since the academic outcomes of the courses taken during the fall semester were expected to be conceptually similar, mean differences in course-specific academic performance were compared using multiple analysis of variance (MANOVA). MANOVA was first used as an omnibus test to evaluate the significance of multiple correlated outcomes.[23] Post hoc comparisons were conducted and corrected for multiplicity of tests (Bonferonni).

In addition to examining these prepharmacy admission criteria separately, prediction of first-year academic performance was examined using multivariate models. The joint influence of the preadmission and student characteristics on the prediction of first academic year performance was evaluated using multiple regression. SPSS Version 10.0.05[24] was used to conduct the statistical analyses. The independent effect of campus assignment upon students' fall semester and first-academic-year performance was evaluated using hierarchical multiple regression techniques. If the change in explained variance (R^2) was statistically significant, then addition of the campus assignment measure added significantly to the prediction of fall and cumulative GPA. The a priori level of statistical significance was alpha = 0.05. The study was approved by the Health Sciences Institutional Review Board of the University of Florida.

RESULTS
Description of the Entering Class of 2002

Nearly 65% of the class was female. Females and males were evenly distributed across the Gainesville and distance campuses (Table 1). The average age for the Class of 2002 was 24.7 years (SD=5.8 years). On average, students attending the distance campuses were nearly 3 years older than students attending the Gainesville campus. The classes' average SMGPA was 3.27

Table 2. Academic Performance Comparison Between Gainesville (N=126) and Distance Campus Students (N=143) for Individual Classes and Fall Semester Grade Point Average

Course	Gainesville Mean (SD)	Distance Campuses Mean (SD)	p value†
Biochemistry (%)	74.3 (8.2)	74.0 (10.0)	0.24
Physiological Basis of Disease (points)	623 (60)	589 (74)	< 0.001
Dosage Forms 1 (points)	364 (32)	350 (32)	< 0.001
Fundamentals Med Chemistry (points)	169 (19)	163 (22)	0.04
Pharmacy Systems and Resources (%)	93.1 (3.4)	91.1 (5.0)	< 0.001

* Wilks' Lambda = 0.83, $F_{(6,262)}$ = 10.8, $p < 0.001$, Eta squared = 0.17

† Bonferroni pairwise comparisons with adjustment for multiple comparisons

Biochemistry Adjusted R-square = 0.00

Physiological Basis of Disease Adjusted R-square = 0.06

Dosage Forms 1 Adjusted R-square = 0.05

Fundamentals of Medicinal Chemistry Adjusted R-square = 0.01

Pharmacy Systems and Resources Adjusted R-square = 0.05

(SD=0.40) and the average maximum PCAT score was 83.7 (SD=13.9). Students attending the Gainesville campus scored significantly higher on both of these admission criteria. The average preadmission SMGPA was 3.42 for the Gainesville campus and 3.13 for the distance campuses (t = 6.41, $p < 0.001$), and the average PCAT was 88.2 for the Gainesville campus and 79.7 for the distance campuses (t = 5.33, $p < 0.001$). Finally, nearly 29% of entering students had obtained at least a bachelor's degree before entering the College (28.7%). The proportion obtaining a bachelor's degree was similar among students attending the Gainesville (25%) and distance campuses (nearly 32%).

Comparison of Academic Performance

Two indicators of academic performance were selected for this study. First, since fall semester was the first semester of the College's program and the students' first semester in the College, we compared the performance of students at the Gainesville campus with that of students at the distance campuses. Second, students' fall semester and cumulative first academic year GPA were examined. Students' spring semester GPA is not individually reported because of the high correlation between the fall semester GPA and the cumulative GPA (r = 0.95).

Academic Performance: Individual Fall Semester Classes

At the end of the fall 2002 semester, course performance indicators were higher for students attending the Gainesville campus, although not all of the differences were statistically significant (Table 2). The average percentage for *Pharmacy Systems and Resources* and the total number of points for *Physiological Basis of Disease*, *Dosage Forms*, and *Fundamentals of Medicinal*

Chemistry were statistically different and remained significant when the Bonferroni correction for multiple tests was applied. In the *Physiological Basis of Disease* class, the Gainesville campus students averaged 34 points (4.2%) higher. In the *Dosage Forms* and *Fundamentals of Chemistry* courses, the differences were 14 points (2.7%) and 6 points (3.0%) for the students at the Gainesville campus and the distant campuses, respectively. Finally, in the *Pharmacy Systems and Resources* course, the difference between the Gainesville and distant campuses was 2%. However, not all of the scores were statistically significantly different. The class average in the biochemistry course was 74.3% for the students in Gainesville and 74.0% for the distance campus students ($p = 0.24$).

Academic Performance: Fall Semester and Cumulative grade Point Average

The average GPA for students on the Gainesville campus was higher compared with that of students at the distance campuses for both the fall-semester and for the cumulative GPA at the end of the first academic year (Table 3). The average fall semester GPA for students attending the Gainesville campus was 3.01, compared with an average GPA of 2.77 for students attending one of the distance campuses. The average cumulative GPA at the end of the first academic year was 3.18 for the Gainesville campus students and 3.00 for the distance campus students.

Predictors of Academic Performance

The next step was to evaluate the impact of significant GPA predictors, other than campus assignment, by evaluating the relationship between preadmission and sociodemographic variables and GPA. First, the average age of students attending one of the distance campuses

Table 3. Association Sociodemographic, Admission Criteria, and Campus Attendance With Fall Semester and First-year Cumulative GPA

Predictor	Fall Semester	*p* Value	Cumulative GPA, Mean (SD)	*p* Value
Campus				
Gainesville	3.02 (0.55)		3.18 (0.49)	
Distance	2.77 (0.74)	0.004	3.00 (0.56)	0.005
Gender				
Male	2.88 (0.65)	0.77	3.09 (0.50)	0.96
Female	2.90 (0.68)		3.09 (0.54)	
Degree				
AA or less	2.81 (0.67)	0.002	3.03 (0.54)	0.009
BS or higher	3.09 (0.62)		3.22 (0.51)	

AA = associate of arts; BS = bachelor of science

was higher when compared with the average age of the Gainesville students. The correlations between students' ages and their fall semester and cumulative GPA were -0.09 ($p = 0.16$) and –0.02 ($p = 0.71$), respectively. Fall semester and cumulative GPAs for females and males were not significantly different (Table 3).

Next, the association between GPA and students' prepharmacy SMGPA and maximum PCAT was examined. Both were associated with students' performance during their first academic year in the College. The Pearson correlations between students' SMGPA and their fall semester and cumulative GPA were 0.44 ($p < 0.001$) and 0.42 ($p < 0.001$), respectively. The Pearson correlations between student's maximum PCAT and their fall semester GPA ($r = 0.30$, $p < 0.001$) and their cumulative GPA at the end of the first academic year ($r = 0.24$, $p < 0.001$) also were significant. Hence, SMGPA and PCAT were both correlated with campus assignment and GPA.

Finally, the association between students' prior academic experience and their GPA for the first semester was calculated. Students with a bachelor's degree or higher had significantly higher fall semester and cumulative GPAs compared with their colleagues with an associate of arts degree or no prior academic degree (Table 3). Given the joint association of the sociodemographic and preadmission academic performance with both campus assignment and academic performance, the independent influence of each predictor was examined next.

Multivariate Predictors of Academic Performance

Given these significant bivariate differences in first-academic-year performance between the Gainesville and distance campuses, it was important to evaluate the factors that (1) had the most impact on the GPA, and (2) independently predicted GPA after controlling for the other significant preadmission predictors. Whether the

student was a distance education student or a Gainesville campus student did not significantly influence the prediction of the fall semester (standardized coefficient $\beta = -0.05$) or cumulative GPA ($\beta = -0.01$) (Table 4). Although the unadjusted course-specific indicators and the GPA indicators of academic performance are lower on average for the distance campus students, the Gainesville campus and distance campus students performed equally well after controlling for age, prior academic degree at entry, prepharmacy SMGPA, and PCAT scores (Table 4).

When the other factors were controlled, the predictor most associated with GPA was the students' prepharmacy SMGPA. For example, the magnitude of the standardized regression coefficient for SMGPA was more than twice the magnitude of that for the highest academic degree at entry in the prediction of fall semester ($\beta = 0.43$ versus 0.21) and cumulative first academic year performance ($\beta = 0.41$ versus 0.19). Students with at least a bachelor of science degree at admission performed significantly better than students with an AA or no prior degree. Students' highest academic degree at entry into the College was a better predictor of GPA than their maximum PCAT score, although the standardized regression coefficients were similar in magnitude.

When the variable designating the campus attended was added to the model, after the sociodemographic and preadmission academic performance variables, prediction of neither fall semester GPA (R^2 change = 0.01, $p = 0.44$) nor cumulative GPA (R^2 change = 0.00, $p = 0.95$) was improved. After adjusting for students' age, SMGPA, maximum PCAT composite, and highest academic degree earned, the average adjusted GPA for the Gainesville and distance campuses was 2.86 versus 2.92 for the fall semester ($F_{(5,264)} = 0.61$, $p = 0.44$), and 3.08 versus 3.08 for the cumulative GPA ($F_{(5,257)} = 0.00$, $p = 0.96$), respectively.

Table 4. Regression of pre-pharmacy SMGPA, PCAT Composite, and Campus Attended Prediction of Fall Semester and First Academic Year Cumulative College of Pharmacy Grade Point Average

Predictor	Fall Semester				Cumulative GPA			
	Standard Coefficient	*p* value	Standard Coefficient	*p* value	Standard Coefficient	*p* value	Standard Coefficient	*p* value
Age	-0.12	0.03	-0.13	0.02	-0.06	0.25	-0.07	0.26
Pre-pharmacy SMGPA	0.42	< 0.001	0.43	< 0.001	0.41	<0.001	0.41	< 0.001
Degree at entry	0.22	< 0.001	0.21	< 0.001	0.19	0.001	0.19	0.001
PCAT Composite	0.17	0.002	0.18	0.001	0.12	0.04	0.12	0.04
Distance Campus	NA	NA	-0.05	0.44	NA	NA	-0.01	0.94
Total adjusted R^2		0.27		0.27		0.22		0.22
F-ratio		21.12		26.29		15.63		19.62
p value		*p* < 0.001		*p* <0.001		*p* < 0.001		*p* < 0.001
R^2 Change		NA		0.01		NA		.00
F value of change		NA		0.60		NA		0.01
p value of change				0.44				0.95

DISCUSSION

The specific objectives of this report were to (1) compare the academic performance, as measured by individual course performance and first-year grade point average, of students registered at the Gainesville and distance campuses and (2) investigate whether campus assignment, either to the Gainesville campus or to one of the distance campuses, was associated with academic performance during the first professional year. First, there were statistically significant differences in individual course performance and fall semester and cumulative GPA measures between the Gainesville campus students and distance campus students. Students assigned to the Gainesville campus scored higher in 4 of the 5 fall semester didactic classes. Even so, the "practical" significance of the statistical difference is an issue that warrants further attention. For example, the difference in average score between the Gainesville and distance campus students was statistically significant for the *Pharmacy Systems and Resources* course; however, the difference was only 2% (average grades of 93% and 91%, respectively). A similar situation was found in the *Fundamentals of Medicinal Chemistry* course, for which the average grade was 84.5% for the Gainesville campus students and 81.5% for the distance campus students. An important question for future investigation and assessment is whether these differences (ie, 2% or 3%) in foundational didactic courses are later associated with similar differences in experiential and performance-based courses, or whether the differences are too small to translate into measurable differences in practice-related courses.

The second objective of this report was to investigate whether the campus attended by the student was a significant factor in their first academic year performance. The association between first year GPA and campus assignment was confounded with students' prior academic performance and preadmission qualifications. Students' prepharmacy preparation, as measured by the proxy variables of SMGPA, PCAT, and prior academic degree, was the best predictor of first academic year performance, not the campus attended. After controlling for their prepharmacy preparation, the variable representing whether the student attended the Gainesville campus or one of the distance campuses did not improve prediction of their first academic year performance. From the College's perspective, the most desirable explanation for this lack of significant difference was that the hybrid distance education strategy and its implementation was successful and, students with similar academic talents at a distance campus performed equally to students assigned to the Gainesville campus. The College's distance program was conceived and implemented in less than a year. Consequently, the lower SMGPA and PCAT scores for students attending the distance campuses were due to a smaller number of applicants to those campuses the first year compared with the size of the Gainesville applicant pool. In addition, more students admitted to one of the distance campuses declined their admission invitations during the summer (ie, Gainesville had been their only choice). Also, students assigned to one of the distance campuses as a second preference moved to Gainesville when a position

Table 5. Science and Math Grade Point Average (SMGPA) and Maximum Composite Pharmacy College Admission Test (PCAT) Score for Students Entering Fall 2003

Campus Assignment	SMGPA	PCAT	Students
Gainesville	3.46	89	147
Jacksonville	3.50	84	48
Orlando	3.47	87	52
St. Petersburg	3.54	87	59
Overall	3.48	87	306

became available before classes started in August. Consequently, most of the students added to the distance campuses were from the alternate or waiting list. As a result, beginning with the entering pharmacy class in 2003, procedures were implemented to maintain academic parity among students admitted to the 4 campuses.

The findings from this report also confirm the findings regarding the association between prepharmacy preparation and prediction of first-academic-year performance.[19-22] Students' prepharmacy preparation, as measured by SMGPA, PCAT, and prior academic degrees, accounted for nearly all of the prediction of first-year performance. This finding has significant implications for the assessment and implementation of this College's distance education pedagogy and future strategies for campus assignment. Based on these findings, some might argue that it would be desirable to distribute students with these important preadmission qualifications equally among all of the campuses to provide an optimal academic experience. However, whether equal distribution of students according to their prepharmacy admission criteria is needed to provide a quality educational experience for distance students is still an open question to colleges and schools of pharmacy with multiple campuses. Before accrediting agencies make recommendations regarding this issue, measures of a quality educational experience other than GPA need to be developed, agreed upon, measured, and evaluated. Appropriate complementary indicators of a quality education might include such things as professionalism, scores on national licensure examinations, and retention rates. Even then, the costs and benefits associated with such a policy need to be investigated. These issues needs to be investigated more in depth in the long term because of natural year-to-year variation in the applicant pool.

We also believe that the lower prepharmacy SMGPA and PCAT scores of students at the distance campuses that occurred during the first year may be of lesser concern in upcoming years. As the College has time to recruit, demonstrate workability and feasibility of the program, and interest more students in the metropolitan areas where the distance campuses are located to apply to our program, we are confident that the qualified applicant pool will enlarge and the disparity in preadmission criteria between campuses found in the first year of the program will become less pronounced. Supporting this notion, students assigned to the distance campuses for the 2003 academic year have higher SMGPA and PCAT scores compared with students in the first class and their SMGPA and PCAT scores are comparable to students admitted to the Gainesville campus (Table 5).

Somewhat to our surprise, there was a negative association between age and fall semester GPA. One plausible explanation is that the older students have more responsibilities, such as families, children, and employment. Consequently, they may have more activities competing for their limited time and it took them longer to adapt to the rigors of the college's program. Another plausible explanation is that a larger percentage of younger students entered the College directly after completing their prepharmacy education. Conversely, a longer time may have elapsed for older students between completion of the prepharmacy requirements and entry into pharmacy school, so these older students may have needed a longer period of time to develop effective study habits and to adjust to the substantial life changes needed to be successful in the College. Consequently, the younger students adapted more quickly than the older students during the fall semester. This explanation is plausible given the general increase in GPAs among students in the distance campus group in the spring semester and the lack of association between age and cumulative first year GPA.

Certain limitations of this report should be considered when interpreting these findings. This report is an important first step in an ongoing program of assessment and evaluation, and it reports findings regarding one aspect of academic performance, namely first-year GPA. This report represents a systematic evaluation of neither the College's performance-based curricular activities nor its experiential program activities. The College has one performance-based class in the curriculum in the first academic year. This practicum course requires students to participate in health screenings and shadowing of senior pharmacy students in the local community. This class is graded as "pass/fail" and was not included in the reported GPAs. However, in recognition of the importance of skills-based assessment in the development of a professional pharmacist, the College's assessment team will actively monitor the outcomes of the students' practice-based training in their advanced practicum and advanced pharmacy practice experiences, in addition to other indicators of a quality pharmacy education, including professionalism, graduation rates, and scores on national licensure examinations.

Second, this report does not confirm nor refute the effectiveness of the College's hybrid, asynchronous distance program. This report is an observation of the first year of an innovative educational program. Students were not randomized to campus, hence, limitations of nonexperimental studies, such as preexisting differences, measured and unmeasured, might have contributed to the findings.

CONCLUSIONS

As part of a continuous quality assurance and assessment program, the University of Florida College of Pharmacy has monitored and compared the academic progress of students in Gainesville and on the distance campuses since the entry of the first class of students in the College's entry-level doctor of pharmacy distance education program. After the first academic year, the College's hybrid, asynchronous program for delivering the curriculum to students at a distance appears to be successful. Students on the Gainesville campus and those on the distance campuses performed equally well after taking into consideration their academic preparation before entering the college of pharmacy.

ACKNOWLEDGEMENTS

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