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AUTHOR	Fredda, Jeffrey V.
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ABSTRACT

In May 2000, the Office of Research and Planning at Nova Southeastern University, Florida, examined student outcomes for courses taught in Internet-based and campus-based formats and found statistically significant differences in student outcomes for courses offered in both modalities. One finding was that graduate students of the Fischler Graduate School of Education and Human Services in Internet-based sections outperformed those in campus-based sections. The study investigated whether specific courses caused this observed difference or if the findings were due to a more general trend for all courses. Four courses, with 231 students, were evaluated. Sixty-nine students were in the Internet-based courses and 162 were in campus-based courses. Overall, graduate students had high rates of success and course completion (88 and 90% respectively). Mean final grades of students in Internet-based sections were statistically significantly greater than those in the campus-based sections in two courses. Other research has established that students in Internet-based courses at Nova Southeastern University's Fischler Graduate School of Education and Human Services have equivalent or greater course completion rates for all courses studied. It is possible that the relatively low headcount of students in the Internet sections accounted for the differences. An appendix contains data for the different course sections. (Contains 4 figures, and 11 tables.) (SLD)

COMPARISON OF SELECTED STUDENT OUTCOMES FOR INTERNET- AND CAMPUS-BASED INSTRUCTION AT THE FISCHLER GRADUATE SCHOOL OF EDUCATION AND HUMAN SERVICES

Jeffrey V. Fredda

Research Associate

Nova Southeastern University
Research and Planning
Report 00-16

August 2000

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Jeffrey V. Fredda — **Research Associate**
Report 00-16 — **August 2000**

EXECUTIVE SUMMARY

In May of 2000, the Office of Research and Planning examined student outcomes for courses taught in both Internet-based and campus-based formats and found that there were statistically significant differences in student outcomes for courses offered in both modalities (Fredda, 2000). One finding was that graduate students of the Fischler Graduate School of Education and Human Services in Internet-based sections out-performed those in campus-based sections. The purpose of this report is to determine if specific courses caused this observed difference or if the findings were due to a more general trend for all courses.

Four courses were evaluated with 231 total students. Sixty-nine students were in Internet-based sections and 162 were in campus-based sections. Overall, graduate students had high rates of success and course completion (88 and 90 percent, respectively). While examination of final grades revealed that graduate students performed well in courses offered in both formats, mean final grades of students in Internet-based sections were statistically significantly greater than those in campus-based sections in two courses.

It is helpful to compare course completion rates for students in Internet-based courses in the Fischler Graduate School of Education and Human Services with other institutions. According to Carr (2000), course completion rates for distance education based courses has been a concern for many institutions. Whereas Carr reported 10 to 20 percent higher course completion rates for students in traditional sections, at Nova Southeastern University's Fischler Graduate School of Education and Human Services students in Internet-based sections had equivalent or greater course completion rates than those in campus-based sections for all of the courses studied.

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INTRODUCTION

In May of 2000, the Office of Research and Planning examined student outcomes for courses taught in both Internet-based and campus-based formats and found that there were statistically significant differences in student outcomes for courses offered in both modalities (Fredda, 2000). One finding was that graduate students of the Fischler Graduate School of Education and Human Services in Internet-based sections outperformed those in campus-based sections. The purpose of this report is to determine if specific courses caused this observed difference. The fundamental question was the following:

> *Are there substantial differences between graduate student outcomes in specific Internet-based and campus-based courses offered in the Fischler Graduate School of Education and Human Services?*

METHODOLOGY

Course Sections

Eleven graduate courses were offered in both Internet-based and campus-based formats at the Fischler Graduate School of Business and Entrepreneurship during the Fall Term of 1999. Four of the 11 courses had at least 50 students with 10 or more students in both Internet- and campus-based sections and were included in the study. Twelve sections of the four courses were offered; four sections were Internet-based and eight were campus-based.

Participants

Two hundred and thirty-one graduate students were enrolled in all of the sections studied. Sixty-nine students were enrolled in Internet-based sections, 162 were enrolled in campus-based sections. For a listing of student enrollments and section numbers by course refer to Appendix A, Table 1a.

Operational Definitions

- *Internet-based* – sections that were offered electronically via the Internet. Internet-based course content is similar to that in courses offered in the campus-based lecture format, only the modality through which information is shared is different. Students enrolled in Internet-based sections engaged in the following activities:

    1. Received lectures offered in PowerPoint, video, and/or audio format
    2. Accessed library information (including full text articles)
    3. Completed coursework
    4. Received professor feedback
    5. Discussed pertinent topics in real time with fellow students and faculty

- *Campus-based* – Traditional lecture-based sections that were offered at Nova Southeastern University's Davie and Ft. Lauderdale facilities.

Grades

While standard final grades (*A*, *B*, *C*, etc) were included in this study, less common grades were included as well. These were defined as:

- *No grade/blank* – Faculty failed to record a final grade in Nova Southeastern University's Banner Student Information System.
- *I* – Incomplete
- *WU* – Administrative withdrawal
- *W* – Student withdrawal

Dependent Variables

To understand potential differences between Internet-based and campus-based formats, graduate student outcomes were evaluated on two dimensions, successful grades and course completions.

1. *Successful grades* - successful grades included *A*, *B*, and *C*. All other grades were categorized as unsuccessful.

2. *Course completion* –final grades of no grade/blank, I, WU, and W were categorized as incomplete, all other grades were categorized as complete.

Procedure

In July of 2000, final grades were obtained through multiple queries to Nova Southeastern University's Banner Student Information System and used for analysis by the statistical program SPSS, version 10.0. Letter grades were recoded into the numeric equivalent used by Nova Southeastern University's Banner Student Information System (i.e. $A = 4.0$, $B = 3.0$, etc.) for analysis.

One-way Analysis of Variance (ANOVA) tests were used to analyze student outcomes. Analysis of variance tests are used to determine if group values are equal by evaluating group means and standard deviations. Student outcomes for those that completed a given course were analyzed by a one-way ANOVA to determine if there was a statistically significant difference between final grades for students in Internet-based versus campus-based sections.

Chi-square tests were also used to analyze student outcomes. Chi-square tests compare different levels of a categorical variable on the rate of values for a second variable to determine if the same proportion of the second variable's values occurred in each category of the original variable. For the present study, Chi-square tests were used to determine if there were equivalent rates of successful grades (i.e. *A*'s, *B*'s, etc.) and course completion for students in Internet-based and campus-based courses. For all statistical analyses an alpha level of 0.10 was used to determine significance.

RESULTS

Education Budgeting and Finance

The results of a one-way ANOVA revealed there was not a statistically significant difference ($p = 0.13$) between final grades of Internet-based and campus-based students in Education Budgeting and Finance that completed the course. Students in Internet-based and campus-based sections had similar final grades (means of 4.0 and 3.68, respectively). For a distribution of final grades for graduate students in Education Budgeting and Finance refer to Appendix A, Table 2a and Figure 1a.

Successful Grades

Graduate students in Internet-based and campus-based sections of Education Budgeting and Finance had comparable rates of success (Figure 1). Ninety-three percent of graduate students in Internet-based sections and 88 percent of students in campus-based sections were successful (Table 1). A Chi-square test revealed these differences were not statistically significant ($p = 0.55$).

Figure 1. Success and Course Completion Rates for Graduate Students in Internet-based versus Campus-based Sections of Education Budgeting and Finance.

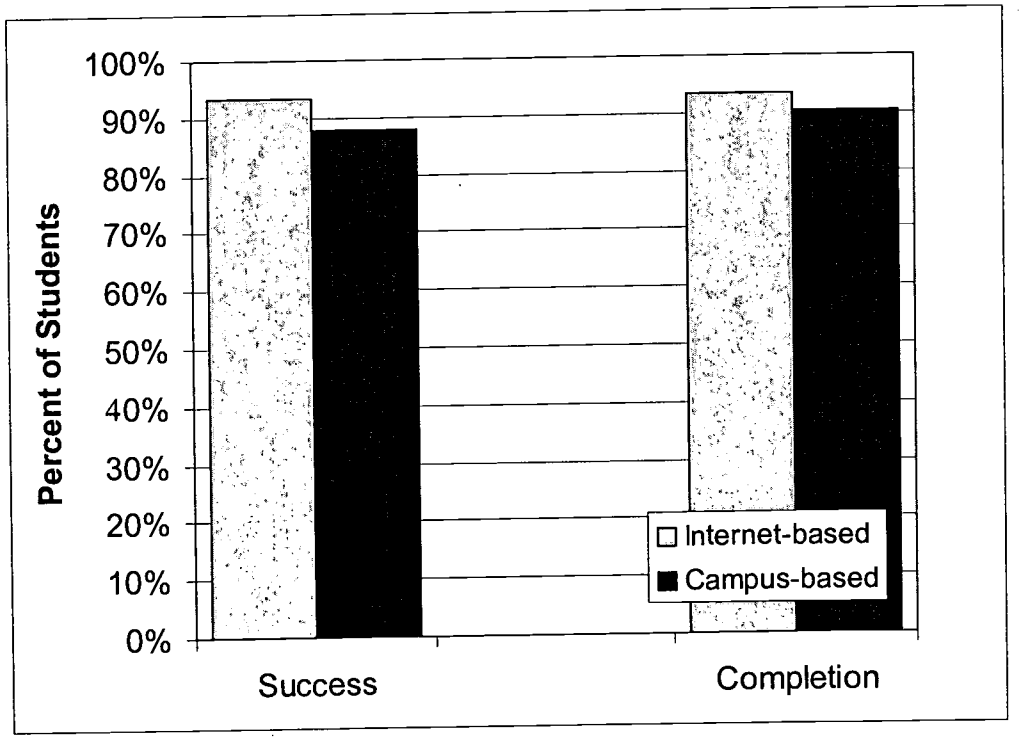


Table 1. Rate of Successful Grades for Graduate Students in Internet-based and Campus-based Sections of Education Budgeting and Finance.

		Format		
		Internet-based	Campus-based	Total
Successful				
	Number	14	36	50
	Percent	93 %	88 %	89 %
Unsuccessful				
	Number	1	5	6
	Percent	7 %	12 %	11 %
Total Students		15	41	56

Course Completion

Ninety-three percent of graduate students in Internet-based sections and 90 percent of students in campus-based sections completed the course (Figure 1 and Table 2). A Chi-square test revealed there was not a statistically significant difference in course completion rates ($p = 0.72$).

Table 2. Rate of Course Completion for Graduate Students in Internet-based and Campus-based Sections of Education Budgeting and Finance.

		Format		
		Internet-based	Campus-based	Total
Complete				
	Number	14	37	51
	Percent	93 %	90 %	91 %
Incomplete				
	Number	1	4	5
	Percent	7 %	10 %	9 %
Total Students		15	41	56

School Law for Administration

The results of a one-way ANOVA revealed there was a statistically significant difference ($p < 0.01$) between final grades of Internet-based and campus-based students in School Law for Administration that completed the course. Students in Internet-based sections had higher final grades than those in campus-based sections (means of 4.0 and 3.56, respectively). For a distribution of final grades for graduate students in Internet-based and campus-based sections of School Law for Administration refer to Appendix A, Table 3a and Figure 2a.

Successful Grades and Course Completion

Graduate students in Internet-based and campus-based sections of School Law for Administration had comparable rates of success and course completion (Figure 2). Eighty-nine percent of graduate students in Internet-based and campus-based sections were successful and completed the course (Table 3). A Chi-square test revealed there were not statistically significant differences in success or course completion rates ($p = 0.95$).

Figure 2. Success and Course Completion Rates for Graduate Students in Internet-based versus Campus-based Sections of School Law for Administration.

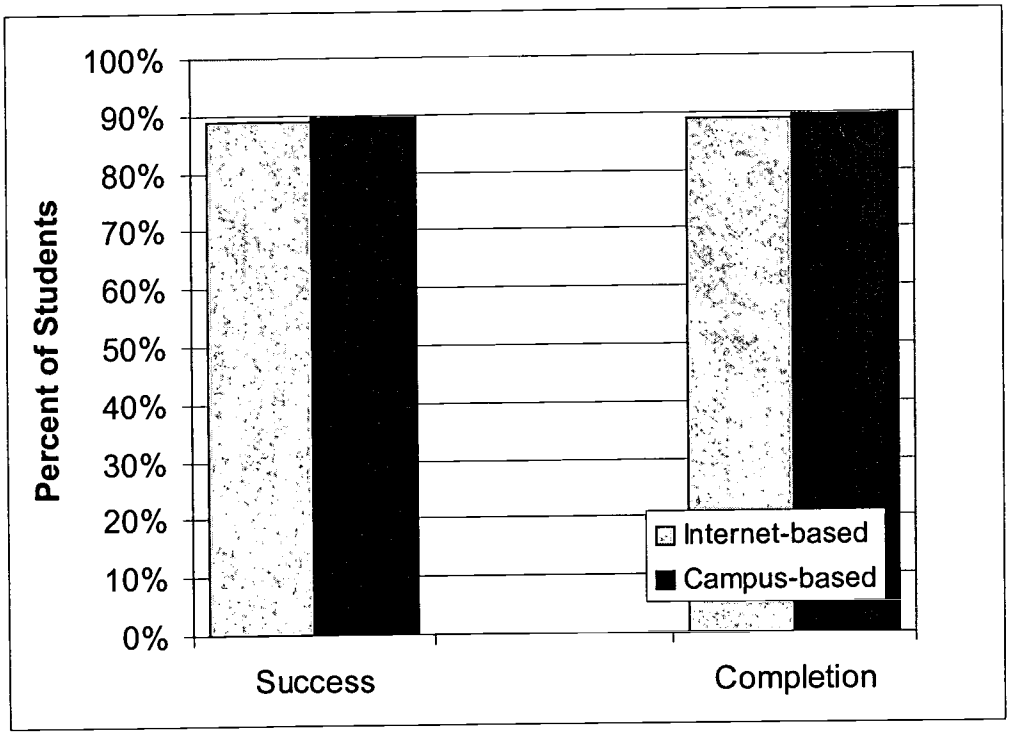


Table 3. Rates of Successful Grades and Course Completion for Graduate Students in Internet-based and Campus-based Sections of School Law for Administration.

	Format		
	Internet-based	Campus-based	Total
Successful / Complete			
Number	16	34	50
Percent	89 %	89 %	89 %
Unsuccessful / Incomplete			
Number	2	4	6
Percent	11 %	11 %	11%
Total Students	18	38	56

Personnel Selection and Development

The results of a one-way ANOVA revealed there was a statistically significant difference ($p = 0.07$) between final grades of Internet-based and campus-based students in Personnel Selection and Development that completed the course. Students in Internet-based sections had higher final grades than those in campus-based in sections (means of 4.0 and 3.78, respectively). For a distribution of final grades for graduate students in Internet-based and campus-based sections of Personnel Selection and Development refer to Appendix A, Table 4a and Figure 3a.

Successful Grades and Course Completion

Graduate students in Internet-based and campus-based sections of Personnel Selection and Development had comparable rates of success and course completion (Figure 3). One hundred percent of graduate students in Internet-based sections and 87 percent of students in campus-based sections were successful and completed the course (Table 4). A Chi-square test revealed there were not statistically significant differences in successful grade or course completion rates ($p = 0.19$).

Figure 3. Success and Course Completion Rates for Graduate Students in Internet-based versus Campus-based Sections of Personnel Selection and Development.

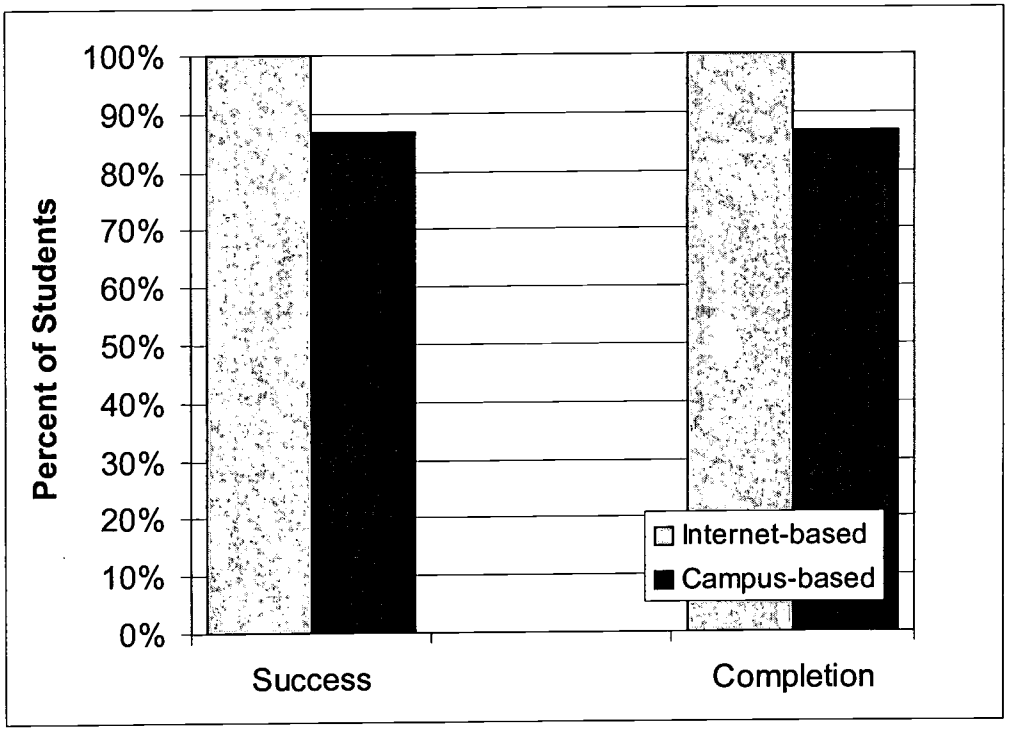


Table 4. Rates of Successful Grades and Course Completion for Graduate Students in Internet-based and Campus-based Sections of Personnel Selection and Development.

	Format		
	Internet-based	**Campus-based**	**Total**
Successful / Complete			
Number	12	40	52
Percent	100 %	87 %	90 %
Unsuccessful / Incomplete			
Number	0	6	6
Percent	0 %	13 %	10 %
Total Students	12	46	58

Classroom and Instruction Management

The results of a one-way ANOVA revealed there was not a statistically significant difference ($p = 0.13$) between final grades of Internet-based and campus-based students in Classroom and Instruction Management that completed the course. Students in Internet-based and campus-based sections had comparable final grades (means of 3.96 and 3.63, respectively). For a distribution of final grades for graduate students in Internet-based and campus-based sections of Classroom and Instruction Management refer to Appendix A, Table 5a and Figure 4a.

Successful Grades

Graduate students in Internet-based and campus-based sections of Classroom and Instruction Management had comparable rates of success and course completion (Figure 4). Ninety-two percent of graduate students in Internet-based sections and 81 percent of students in campus-based sections were successful (Table 5). A Chi-square test revealed there was not a statistically significant difference in successful grade rates ($p = 0.26$).

Figure 4. Success and Course Completion Rates for Graduate Students in Internet-based versus Campus-based Sections of Classroom and Instruction Management.

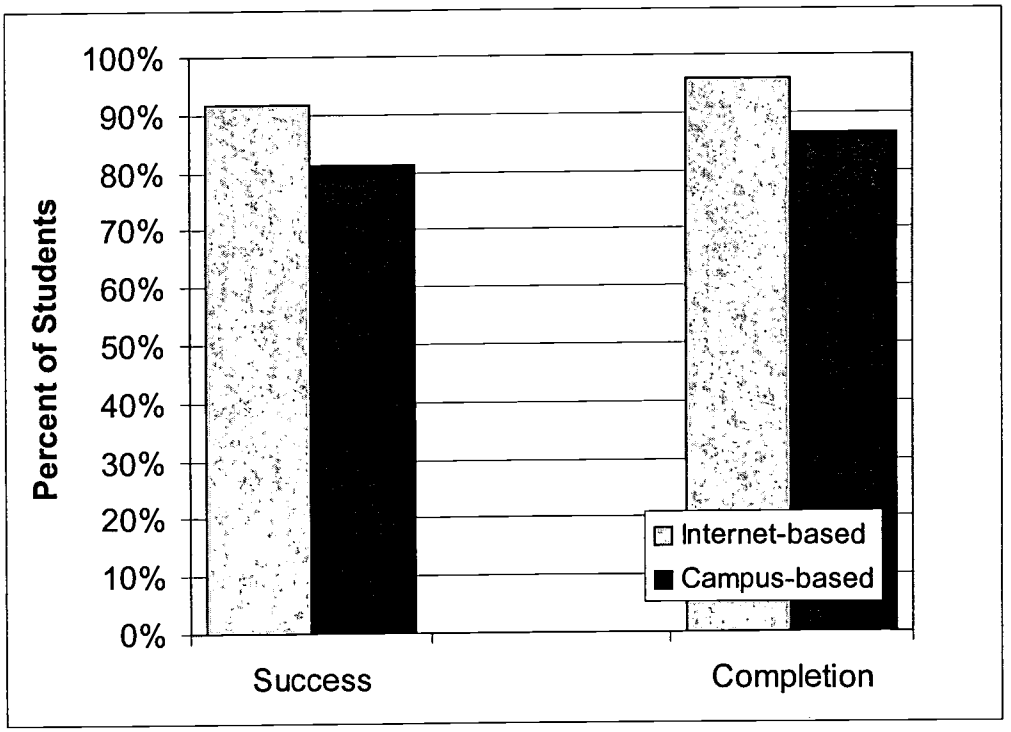


Table 5. Rate of Successful Grades for Graduate Students in Internet-based and Campus-based Sections of Classroom and Instruction Management.

		Format		
		Internet-based	Campus-based	Total
Successful				
	Number	22	30	52
	Percent	92 %	81 %	85 %
Unsuccessful				
	Number	2	7	9
	Percent	8 %	19 %	15 %
Total Students		24	37	61

Course Completion

Ninety-six percent of graduate students in Internet-based sections and 86 percent of students in campus-based sections completed the course (Table 6). A Chi-square test revealed there was not a statistically significant difference in course completion rates ($p = 0.23$).

Table 6. Rate of Course Completion for Graduate Students in Internet-based and Campus-based Sections of Classroom and Instruction Management.

		Format		
		Internet-based	Campus-based	Total
Complete				
	Number	23	32	55
	Percent	96 %	86 %	90 %
Incomplete				
	Number	1	5	6
	Percent	4 %	14 %	10 %
Total Students		24	37	61

DISCUSSION

This study was undertaken to evaluate selected student outcomes of Internet-based distance education at Nova Southeastern University's Fischler Graduate School of Education and Human Services. Statistical analyses were computed comparing both Internet-based and campus-based sections of the same course offered in the Fall Term of 1999. The fundamental question was the following:

> *Are there substantial differences between graduate student outcomes in specific Internet-based and campus-based courses offered in the Fischler Graduate School of Education and Human Services?*

Though there were not statistical differences in success or course completion rates for students in Internet- and campus-based sections of the four courses, there were practical differences in student outcomes for Personnel Selection and Development and Classroom and Instruction Management. In these two courses, 12 to 15 percent more students in Internet-based sections were successful or completed the course. It should be noted the differences in success and course completion rates for those in Personnel Selection and Development are likely exaggerated by the low headcount (12) of students in the Internet-based section, all of whom were successful and completed the course. With an increased headcount it is doubtful all Internet-based students would be successful and complete the course.

Previous research revealed students of internet-based sections in the Fischler Graduate School of Education and Human Services had statistically significantly higher final grades than those in campus-based sections (Fredda 2000). For the present study, a pattern of higher grades for those in Internet-based sections was observed at a statistically significant level in two courses and approached statistical significance for the others. Therefore, the previous finding of significantly higher final grades for those in Internet-based sections is likely due to a general trend for all student outcomes of courses taught in both modalities in the Fischler Graduate School of Education and Human Services.

To further evaluate the effectiveness of Internet-based courses in the Fischler Graduate School of Education and Human Services it is helpful to compare course completion rates for students in Internet-based courses with other institutions. According to Carr (2000), course completion rates for distance education based courses has been a concern for many institutions. Whereas Carr reported 10 to 20 percent higher course completion rates for students in traditional sections, at Nova Southeastern University's Fischler Graduate School of Education and Human Services students in Internet-based sections had equivalent or greater course completion rates than those in campus-based sections for all of the courses studied.

REFERENCES

Carr, S. (2000). As Distance Education Comes of Age, the Challenge is Keeping the Students. The Chronicle of Higher Education [On-line serial], February, 11. Hostname: http://chronicle.com

Fredda, J. V. (2000). Comparison of Selected Student Outcomes for Internet- versus Campus-based Instruction (Report 00-08). Fort Lauderdale, Florida: Nova Southeastern University, Research and Planning.

Appendix A

Data for Internet-based versus Campus-based Sections

Table 1a. Enrollments and Section Numbers for Internet-based and Campus-based Courses in the Fischler Graduate School of Education and Human Services.

		Students			Sections		
Course	Title	Internet-based	Campus-based	Total	Internet-based	Campus-based	Total
EDL 0505	Education Budgeting and Finance	15	41	56	1	2	3
EDL 0520	School Law for Administration	18	38	56	1	2	3
EDL 0525	Personnel Selection and Development	12	46	58	1	2	3
EDUC 0610	Classroom and Instruction Management	24	37	61	1	2	3
	Total	**69**	**162**	**231**	**4**	**8**	**12**

Table 2a. Grade Distribution for Internet-based and Campus-based Sections of Education Budgeting and Finance.

Format	A	B	C	F	Blank	I	WU	W	Total
Internet-based									
Number	14	0	0	0	1	0	0	0	**15**
Percentage	93 %	0 %	0 %	0 %	7 %	0 %	0 %	0 %	**100 %**
Campus-based									
Number	29	6	1	1	4	0	0	0	**41**
Percentage	71 %	15 %	2 %	2 %	10 %	0 %	0 %	0 %	**100 %**

Figure 1a. Percentage of Grade Distribution for Internet-based and Campus-based Sections of Education Budgeting and Finance.

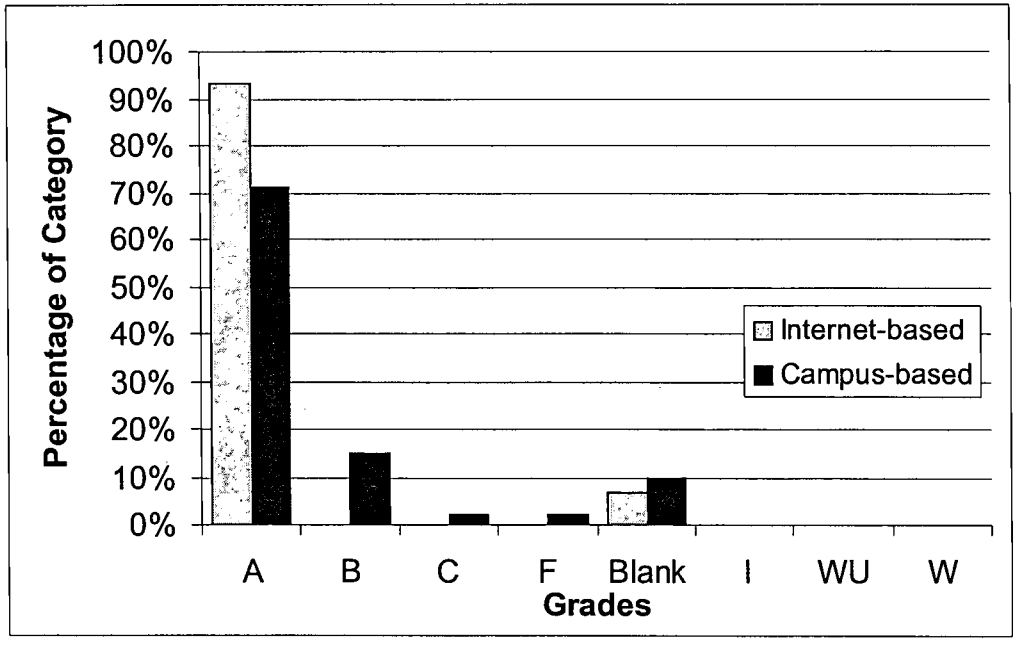


Table 3a. Grade Distribution for Internet-based and Campus-based Sections of School Law for Administration.

Format	A	B	C	F	Blank	I	WU	W	Total
Internet-based									
Number	16	0	0	0	0	2	0	0	**18**
Percentage	89 %	0 %	0 %	0 %	0 %	11 %	0 %	0 %	**100 %**
Campus-based									
Number	20	13	1	0	0	3	0	1	**38**
Percentage	53 %	34 %	3 %	0 %	0 %	8 %	0 %	3 %	**100 %**

Figure 2a. Percentage of Grade Distribution for Internet-based and Campus-based Sections of School Law for Administration.

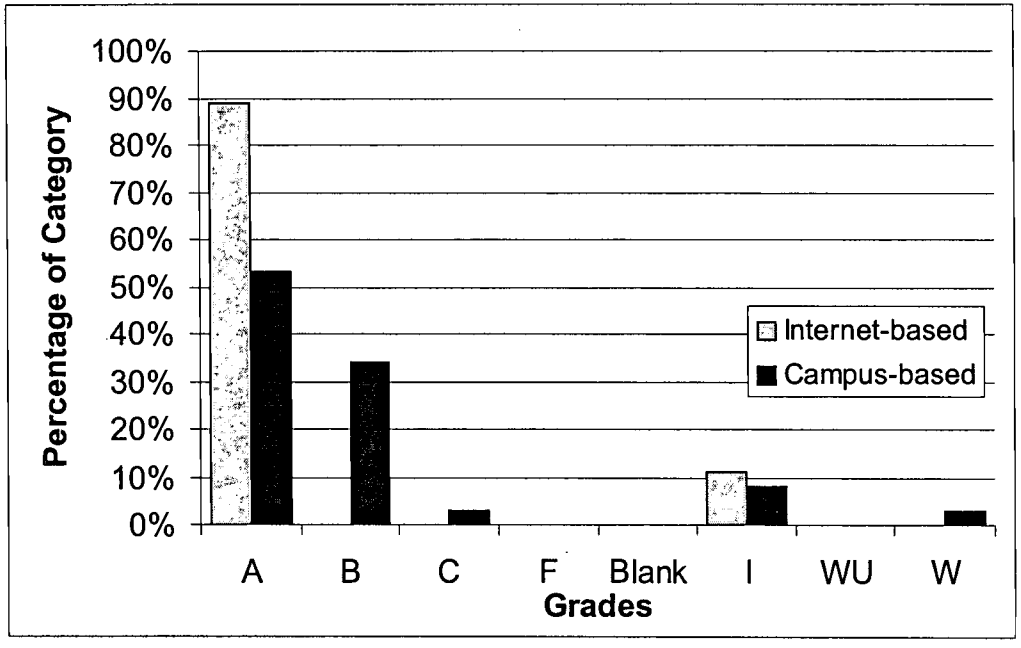


Table 4a. Grade Distribution for Internet-based and Campus-based Sections of Personnel Selection and Development.

Format	A	B	C	F	Blank	I	WU	W	Total
Internet-based									
Number	12	0	0	0	0	0	0	0	**12**
Percentage	100 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	**100 %**
Campus-based									
Number	31	9	0	0	4	2	0	0	**46**
Percentage	67 %	20 %	0 %	0 %	9 %	4 %	0 %	0 %	**100 %**

Figure 3a. Percentage of Grade Distribution for Internet-based and Campus-based Sections of Personnel Selection and Development.

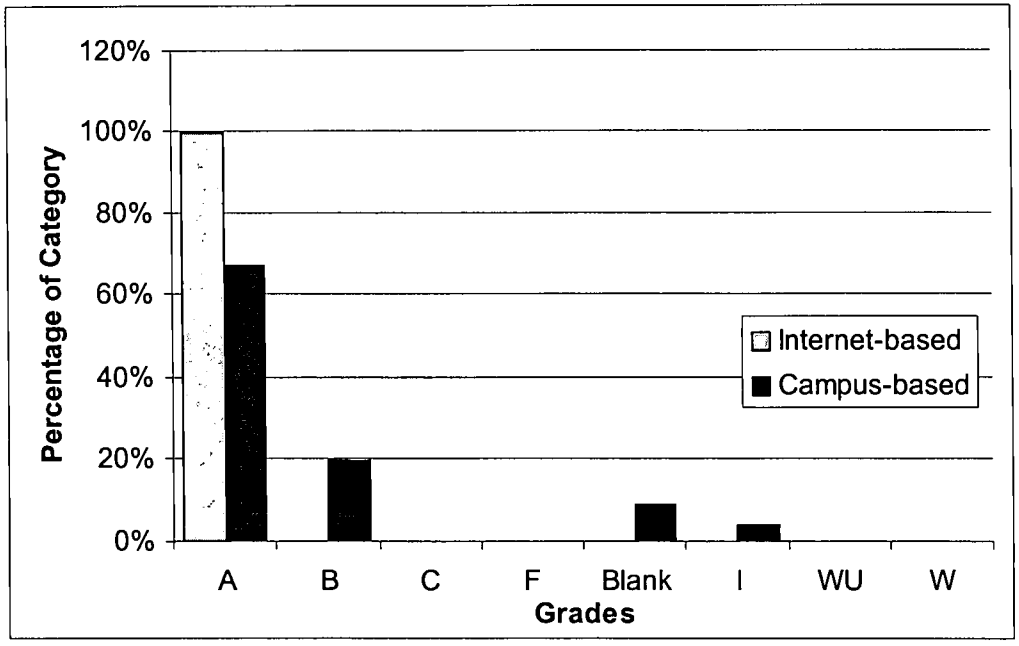
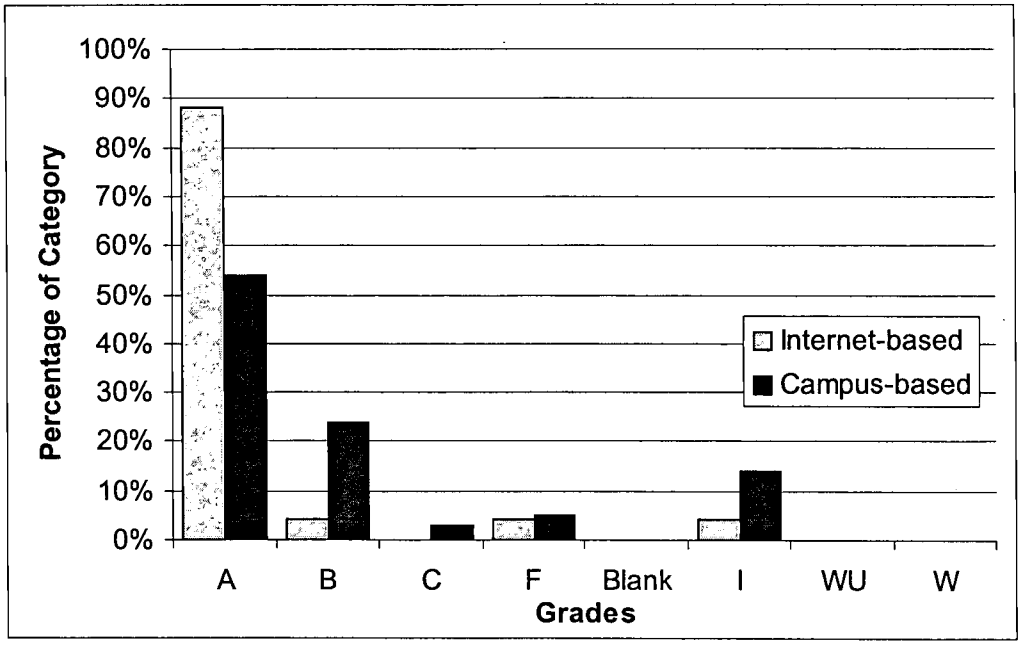


Table 5a. Grade Distribution for Internet-based and Campus-based Sections of Classroom and Instruction Management.

Format	A	B	C	F	Blank	I	WU	W	Total
Internet-based									
Number	21	1	0	1	0	1	0	0	**24**
Percentage	88 %	4 %	0 %	4 %	0 %	4 %	0 %	0 %	**100 %**
Campus-based									
Number	20	9	1	2	0	5	0	0	**37**
Percentage	54 %	24 %	3 %	5 %	0 %	14 %	0 %	0 %	**100 %**

Figure 4a. Percentage of Grade Distribution for Internet-based and Campus-based Sections of Classroom and Instruction Management.



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Organization/Address: Nova Southeastern University Research and Planning 3301 College Avenue Fort Lauderdale, FL 33314	Telephone: (954) 262-5390	Fax: (954) 262-3970
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