

**Diablo Valley College
Pleasant Hill, California**

**Predictors of Success in
Distance Education Courses
2000-01 to 2004-05**

**Office of Planning, Research
and Student Outcomes
March, 2006**

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1. Introduction

The past twenty-five years witnessed a significant paradigm shift in the world of higher education. While the education system has its roots in the industrial age of brick and mortar, it has gradually changed its methods of delivery in response to societal needs. Offering courses in flexible formats, where learning can take place anytime and anywhere, is one of the hallmarks of the present information age. This transformation was necessary to meet the growing needs of people with jobs and family responsibilities.

In response to the needs of the community, Diablo Valley College invested wisely in expanding its distance education program. In the past five years, course offerings through this medium witnessed a phenomenal expansion that far exceeds the overall enrollment growth during this period. It is anticipated that such growth will continue unabated for several years to come.¹

1.A. Purposes of the Study

This study has several purposes including the following:

- To examine the enrollment trends of online courses at the local, state and national levels. Benchmarking data for DVC's peer institutions will also be analyzed.
- To develop a better understanding of the demographic profile of online students
- To evaluate the productivity of distance education
- To evaluate the academic performance of distance education students
- To present specific predictors of success in online courses
- To offer an overall assessment of distance education and make recommendations for improvement

2. Enrollment Trends

Enrollment in online courses is measured in several ways including:

- Enrollment by full-time equivalent students (FTES)
- Enrollment by seat count
- Enrollment by disciplines and courses
- Enrollment by course duration
- Enrollment by head count

¹According to state guidelines, an online course is a course that has more than 50% of its instruction online. Therefore, beginning fall 2006, all DVC courses that meet this criteria will be defined as online. As a result, some of the courses that were traditionally labeled "hybrid" will now be designated as "online courses".

2.A. Enrollment by Full-Time Equivalent Student

DVC's enrollment in distance education courses increased significantly over the past five years, with every term setting a record that surpassed that of the previous one. In 2004-05, online courses generated 774 FTES, accounting for 4.4% of the total FTES for the year. In effect, online courses are gradually becoming a significant source of the revenue generated by the college.

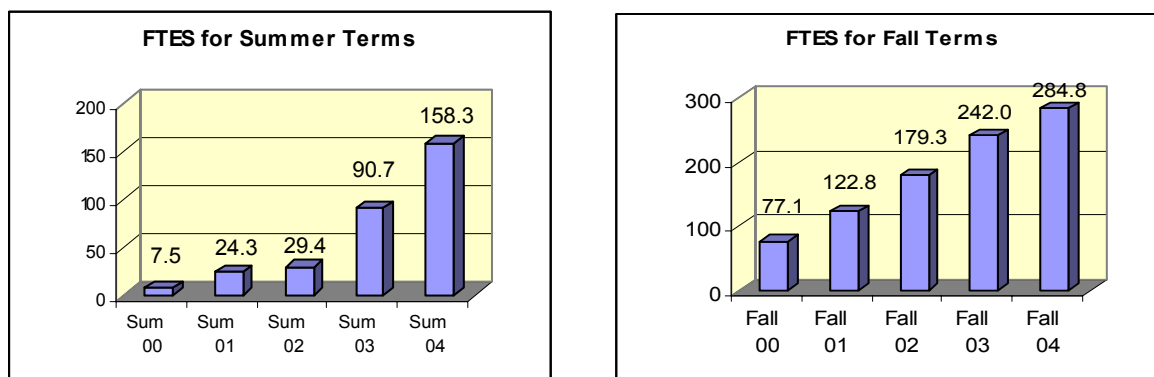
On a term-by-term basis, Summer terms had a twenty fold increase, fall terms a 270% increase, and spring terms a 231% increase over five years. The annual FTES (774) in 2004-05 was more than four times as much as that (184) of 2000-01. With the convenience of online courses and increasing technological sophistication of students, this mode of course delivery will continue to expand in future years.

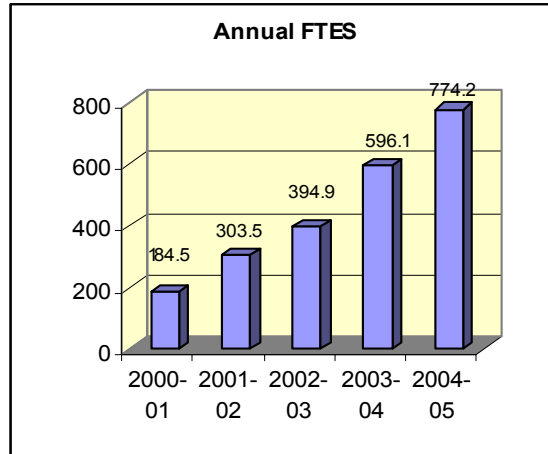
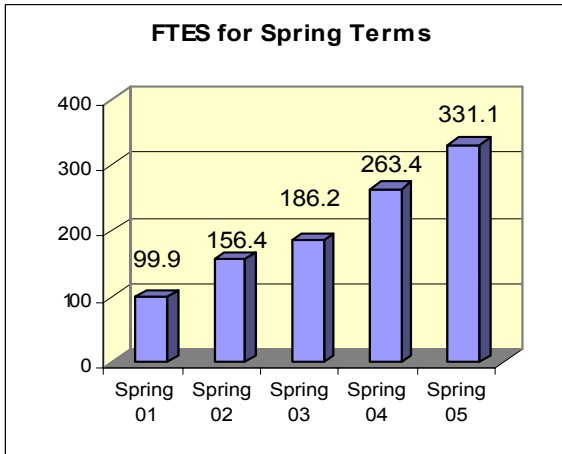
Table 2.A.1 FTES Enrollment of Students in Online Courses Over Five Years

Year	Term	FTES	Annual FTES	% Change From Base Year
2000-01	SU00	7.5	184.5	0.0%
	FA00	77.1		
	SP01	99.9		
2001-02	SU01	24.3	303.5	64.5%
	FA01	122.8		
	SP02	156.4		
2002-03	SU02	29.4	394.9	114.0%
	FA02	179.3		
	SP03	186.2		
2003-04	SU03	90.7	596.1	223.1%
	FA03	242.0		
	SP04	263.4		
2004-05	SU04	158.3	774.2	319.6%
	FA04	284.8		
	SP05	331.1		

Sources: Datatel, COGNOS

Figure 2.A.1 FTES Enrollments of Students in Online Courses for Five Years





Sources: Datatel, COGNOS

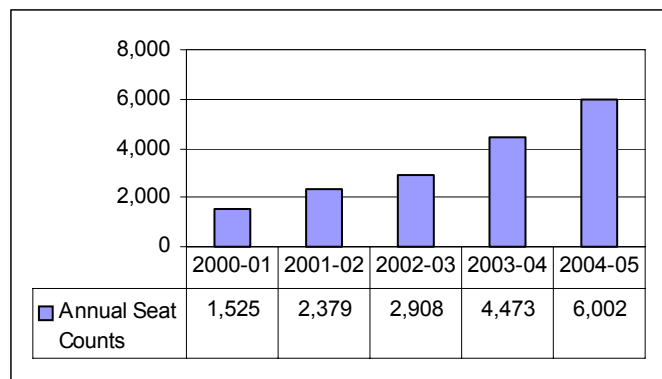
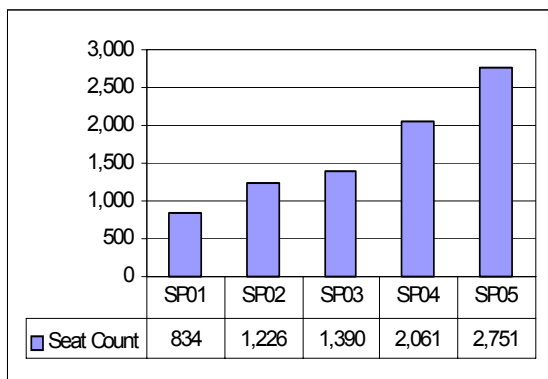
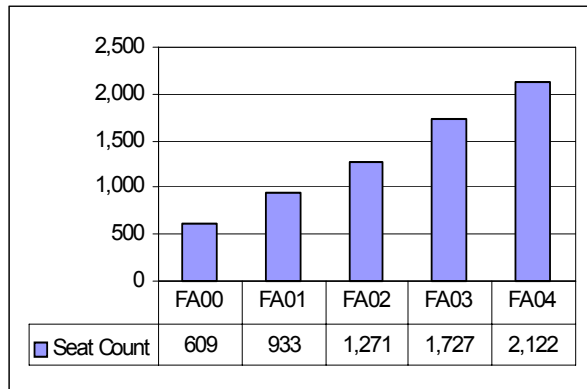
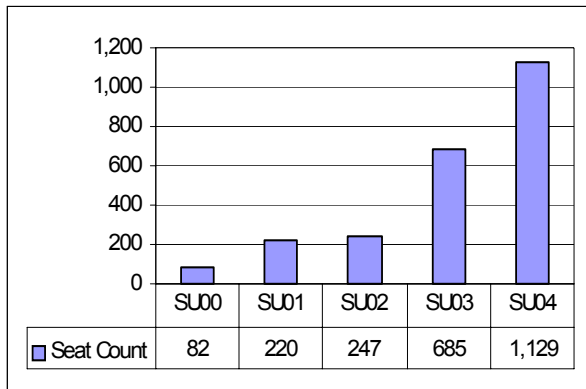
2.B. Enrollment by Seat Count

Table 2.B.1 Seat Counts of Students in Online Courses Over Five Years

Year	Term	TOTAL	Annual	% Change From Base Year
2000-01	SU00	82	1,525	0.0%
	FA00	609		
	SP01	834		
2001-02	SU01	220	2,379	56.0%
	FA01	933		
	SP02	1,226		
2002-03	SU02	247	2,908	90.7%
	FA02	1,271		
	SP03	1,390		
2003-04	SU03	685	4,473	193.3%
	FA03	1,727		
	SP04	2,061		
2004-05	SU04	1,129	6,002	293.6%
	FA04	2,122		
	SP05	2,751		
	Total	17,287		

Source: Datatel

Figure 2.B.1 Seat Counts of Students in Online Courses Over Five Years

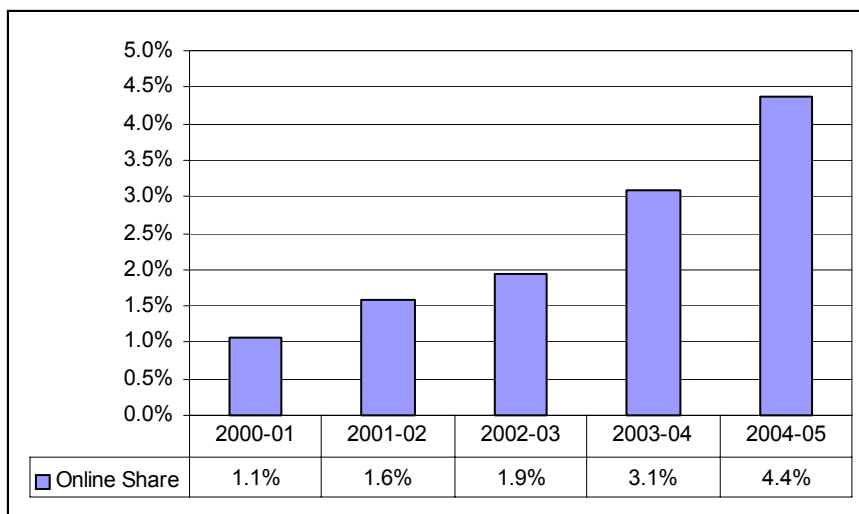


Source: Datatel

Table 2.B.2 Annual Seat Counts and Online Share of Courses Over Five Years

Year	DVC Annual Seat Count	Online Annual Seat Count	Online Share
2000-01	141,705	1,525	1.1%
2001-02	148,931	2,379	1.6%
2002-03	149,897	2,908	1.9%
2003-04	144,384	4,473	3.1%
2004-05	137,693	6,002	4.4%

Figure 2.B.2 Online Share of Courses Over Five Years



Source: Datatel

Enrollment in online courses has exhibited a healthy upward trend since summer 2000. Summer enrollments increased twelve-fold in five years, fall enrollments by 250%, and spring enrollments by 230%. Furthermore, there have been no dips or setbacks in enrollment, only steady increases. The spring 2005 seat count enrollment in online courses was 4.7% of DVC’s total seat count enrollment (2,751 out of 58,968), compared to only 1.4% in Spring 2001 (834 out of 61,211). The annual online share rose from 1.1% to 4.4%, as shown in the table and figure above. Although distance education represents a relatively smaller portion of the overall course offerings at the college, it is increasingly becoming more significant; and planning for the college needs to take its steady growth into account.

2.C. Enrollment by Discipline and Course

Course offerings and disciplines are organized on the basis of California Community Colleges Taxonomy of Programs (TOP), Sixth Edition, Corrected Version, November 2004². TOP is a system of numerical codes used to collect and report information on programs and courses that have similar outcomes. TOP is based on the federal government's Classification of Instructional Programs (CIP)³. The CIP is the system of program nomenclature generally used in higher education data reporting, except in the California Community College system.

The TOP is a classification of disciplines, sub-disciplines, and fields using a six-digit code. However, except in the 4930 (General Studies) series, the last (sixth) digit is always a zero. The 4930 series are intended to describe stand-alone courses, rather than programs. TOP includes three tiers of program/discipline categories. The three-level structure parallels the federal CIP system. Thus, the most general level of taxonomy for describing programs is the two-digit level, followed by the four-digit, then the six-digit codes.

Discipline. At the broadest level, TOP includes 24 disciplines indicated by the first two digits of the six-digit code. Of these 24 disciplines, Diablo Valley College offered courses in 21 disciplines in the past five years. DVC has no programs in law, military studies, or commercial services. Examination of the course offerings in distance education at DVC indicates that the college has offered courses in 14 of 21 disciplines, resulting in a total course enrollment of 17, 287 online students during this period. Course enrollment count by these broad disciplines appears in the table that follows.

²[www.cccco.edu/divisions/esed/aa_ir/CREDIT/credit_attachments/TOP Tax.doc](http://www.cccco.edu/divisions/esed/aa_ir/CREDIT/credit_attachments/TOP_Tax.doc)

³<http://nces.ed.gov/pubs2002/cip2000>

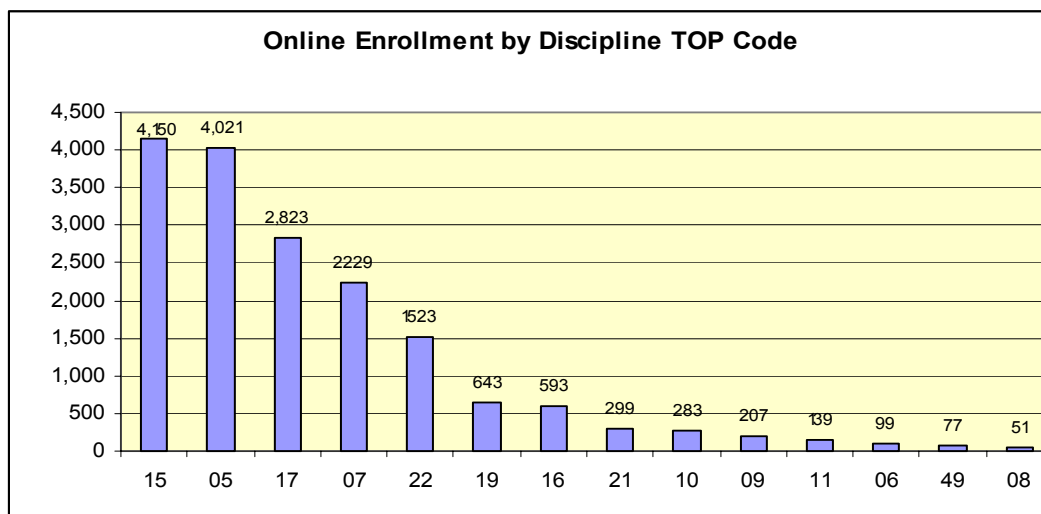
Table 2.C.1 Distance Education Enrollment by Discipline, 2000-01 to 2004-05

TOP Code	Discipline	2000-01	2001-02	2002-03	2003-04	2004-05	Total
05	Business Management	234	318	464	1,203	1,802	4,021
06	Media and Communication	0	0	0	53	46	99
07	Information Technology	192	404	536	465	632	2,229
08	Education	0	0	0	18	33	51
09	Engineering and Industrial Tech.	36	39	37	48	47	207
10	Fine and Applied Arts	0	0	0	72	211	283
11	Foreign Language	0	24	56	48	11	139
15	Humanities (Letters)	645	842	793	936	934	4,150
16	Library Science	90	57	43	122	281	593
17	Mathematics	173	407	646	824	773	2,823
19	Physical Sciences	88	164	116	139	136	643
21	Public and Protective Services	0	0	0	0	299	299
22	Social Sciences	67	88	217	484	667	1,523
49	Interdisciplinary Studies	0	36	0	0	41	77
DVC Total		1,525	2,379	2,908	4,412	5,913	17,137

The top five disciplines in terms of online course enrollment in the past five years include the following:

- TOP Code 15—English
- TOP Code 05—Business
- TOP Code 17—Mathematics
- TOP Code 07—Information Technology
- TOP Code 22—Social Sciences

Figure 2.C.1 Ranking of Online Enrollment by Discipline, 2000-01 to 2004-05



Analysis of DVC course enrollment by discipline over the past five years, indicates that the college did not offer courses in 7 of its 21 disciplines, including the following:

- 01 Agriculture and Natural Resources
- 02 Architecture and Environmental Design
- 03 Environmental Sciences and Technologies
- 04 Biological Sciences
- 12 Health
- 13 Family and Consumer Sciences
- 20 Psychology

Sub-Discipline. The next level of taxonomy is indicated by third and fourth digits of the six-digit TOP code. These numbers indicate logical subsets of the 24 disciplines. Sub-disciplines are used to categorize occupations that are either broad in scope, or do not have specialization, or whose specializations are narrower than can be usefully distinguished and tracked. The TOP code includes over 200 sub-disciplines. Of that number, DVC offers courses in almost 100 sub-disciplines. However, in the past five years, online course offerings at DVC were limited to only 24 sub-disciplines. The top three areas include English, math and accounting. In effect, on-line course offerings are still in their infancy. Offerings are currently very limited to less than 25% of the total possible academic areas at the college. Undoubtedly, there is a great opportunity for expansion in the future.

Figure 2.C.2 Enrollment in the Top Ten Online Sub-Disciplines, 2000-01 to 2004-05

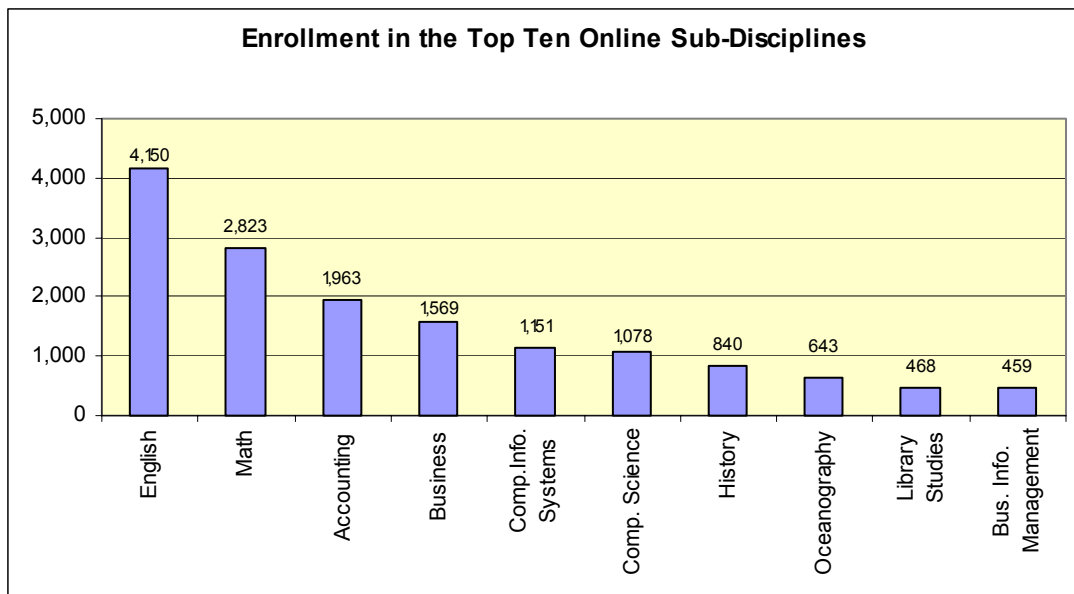
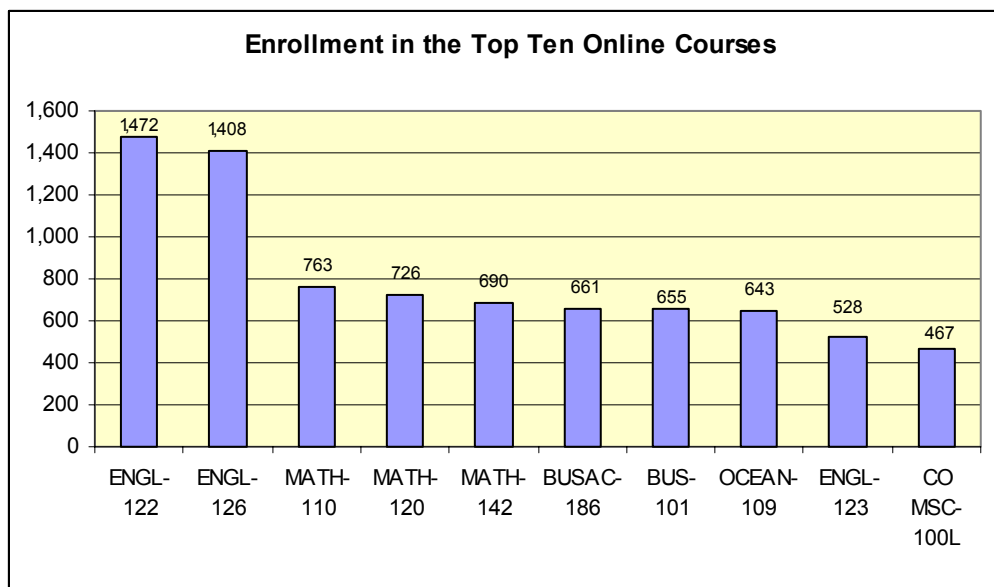


Table 2.C.2 Enrollment in Online Sub-Disciplines, 2000-01 to 2004-05

TOP Code	Discipline	2000-01	2001-02	2002-03	2003-04	2004-05	Total
05	Business Management						
050100	Business/Commerce	79	125	111	451	803	1,569
050200	Accounting	85	133	285	614	846	1,963
050600	Business Management	0	0	0	0	30	30
051400	Secretarial	70	60	68	138	123	459
06	Media and Communication						
060200	Journalism	0	0	0	53	46	99
07	Information Technology						
070100	Information Technology, General	192	194	251	170	271	1,078
070700	Computer Programming	0	210	285	295	361	1,151
08	Education						
083700	Health Education	0	0	0	18	33	51
09	Engineering and Industrial Tech.						
090100	Engineering, General	36	39	37	48	47	207
10	Fine and Applied Arts						
100200	Art	0	0	0	0	105	105
100400	Music	0	0	0	72	106	178
11	Foreign Language						
110500	Spanish	0	24	56	48	11	139
15	Humanities (Letters)						
150100	English	645	842	793	936	934	4,150
16	Library Science						
160100	Library Science, General	0	22	43	122	281	468
160200	Library Technician (aide)	90	35	0	0	0	125
17	Mathematics						
170100	Mathematics	173	407	646	824	773	2,823
19	Physical Sciences						
191100	Astronomy	0	0	0	61	89	150
191900	Oceanography	88	164	116	139	136	643
21	Public and Protective Services						
210500	Administration of Justice	0	0	0	0	299	299
22	Social Sciences						
220100	Social Sciences, General	0	0	20	0	0	20
220200	Anthropology	0	0	97	108	138	343
220500	History	0	0	38	324	478	840
220600	Geography	67	88	62	52	51	320
49	Interdisciplinary Studies						
493013	Academic Guidance	0	36	0	0	41	77
	DVC Total	1,525	2,379	2,908	4,473	6,002	17,287

Course. The third level is indicated by the fifth of the six-digit code, and is a subset for the second level. It is used to define specialties and courses that are sufficiently distinguishable. DVC has more than 800 courses listed in its course schedule. Of these courses, only 79 have been offered through distance education.

Figure 2.C.3 Enrollment in the Top Ten Online Courses, 2000-01 to 2004-05



- ENGL-122, Freshman English
- ENGL-126, Critical Thinking
- MATH-110, Elementary Algebra
- MATH-120, Intermediate Algebra
- MATH-142, Elementary Statistics
- BUSAC-186, Principles of Accounting I
- BUS-101, Business English
- OCEAN-109, Fundamentals of Oceanography
- ENGL-123, Freshman English, Poetry, Fiction, and Drama
- COMSC-100L, Introduction to Computer Software

2.D. Enrollment by Course Duration

Table 2.D.1 Online Course Duration Over Five Years

Course Duration	Category	2000-01	2001-02	2002-03	2003-04	2004-05	Total	Average	Proportionate Share	Change from 1st Year Offered	
										Number	%
4 Weeks	Sections	1	0	0	2	8	11	2.2	1.8%	7	700.0%
	Enrollment	15	0	0	53	309	377	75	2.2%	294	1960.0%
6 Weeks	Sections	3	6	7	11	15	42	8.4	6.9%	12	400.0%
	Enrollment	77	204	205	335	404	1,225	245	7.1%	327	424.7%
8 Weeks	Sections		1	2	11	13	27	5.4	4.5%	13	1300.0%
	Enrollment		35	42	336	335	748	150	4.3%	335	957.1%
9 Weeks	Sections		3	9	11	21	44	8.8	7.3%	21	700.0%
	Enrollment		80	222	251	634	1,187	237	6.9%	634	792.5%
10 Weeks	Sections				3	5	8	1.6	1.3%	5	166.7%
	Enrollment				82	149	231	46	1.3%	149	181.7%
18 Weeks	Sections	46	66	83	121	129	445	89.0	73.6%	83	180.4%
	Enrollment	1,315	1,989	2,439	3,361	3,746	12,850	2,570	74.3%	2,431	184.9%
Other Durations	Sections	5	3	0	2	18	28	5.6	4.6%	13	260.0%
	Enrollment	118	71	0	55	425	669	134	3.9%	307	260.2%
Total		55	79	101	161	209	605	121.0	100.0%	154	280.0%
		1,525	2,379	2,908	4,473	6,002	17,287	3,457	100.0%	4,477	293.6%

Source: Datatel

An average of 73.6% of online sections are 18 weeks in duration. No other type of duration comes close in section numbers or enrollment to 18 weeks, which had a total of 445 sections and 12,850 student enrollments over five years. The next largest totals were 6 weeks classes with 42 sections and 1,225 enrollments; and 9 weeks, with 44 sections and 1,187 enrollments over five years. Online sections of 4, 8 and 9 weeks have grown most rapidly since the first year they were offered, but their numbers are still relatively small in comparison to 18 weeks. Change in number of enrollments from the first year offered were 2,431 for 18 weeks, 634 for 9 weeks, 335 for 8 weeks, and 327 for 6 weeks.

2.E. Enrollment by Head Count

Table 2.E.1 Head Count Enrollment of Students in Online Courses Over Five Years

Term	Head Count
SU00	82
FA00	539
SP01	716
SU01	211
FA01	807
SP02	997
SU02	240
FA02	1,033
SP03	1,134
SU03	615
FA03	1,362
SP04	1,621
SU04	941
FA04	1,661
SP05	2,038
Total	13,997

Source: Datatel

Head count enrollment of students in online courses is the basis for the demographic percentages in the following pages. In spring 2005, for example, the head count of online students was 2,038, and the spring 2005 percentages breakdown for gender, ethnicity and age is based upon that number. 13,997 students have taken online courses since summer 2000, and they have enrolled for an average of 1.24 classes each (17,287/13,997). Online students are part-time students.

2.F. National Distance Education Enrollments

The rapid growth in online enrollments experienced by Diablo Valley College over the past five years is not an unusual or isolated phenomenon. Distance education has grown internationally in recent years.

Table 2.F.1 Number of U.S. 2-year Public College Distance Education Enrollments in 1994-95, 1997-98 and 2000-01

Year	Enrollments
1994-95	414,160
1997-98	712,170
2000-01	1,472,000

Sources: "Distance Education at Postsecondary Education Institutions: 1997-98". National Center for Education Statistics, 1999. "Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001". NCES, 2003.

Assuming these statistics have some level of consistency, there was 255% growth in distance education course enrollments in public U.S. 2-year colleges over a six-year period.

Table 2.F.2 Title IV Institutions Offering Distance Education in 2000-2001

INSTITUTIONS		
All Title IV Institutions	No.	%
Total number of institutions	4,130	100%
Number of institutions that offered distance education courses	2,320	56.2%
All Public 2- and 4-Year		
All Public 2- and 4-Year	No.	%
Total number of institutions	1,690	100%
Number of institutions that offered distance education courses	1,510	89.3%
All Public 2-Year		
All Public 2-Year	No.	%
Total number of institutions	1,070	100%
Number of institutions that offered distance education courses	960	89.7%

Source: E.D. Tabs, Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001, NCES, 2003

- In 2000-2001, of all Title IV 2-year and 4-year degree-granting institutions (4,130), 2,320 or 56% offered distance education.
- Of all public 2- and 4-year institutions (1,690), 1,510 or 89% offered distance education.
- Of all public 2-year institutions (1,070), 960 or 90% offered distance education.

Table 2.F.3 Distance Education Enrollments in 2000-2001

DISTANCE EDUCATION ENROLLMENTS		
All Title IV Institutions	No.	%
Total number of enrollments	3,077,000	100%
College-level, credit-granting, undergraduate courses enrollments	2,350,000	76.4%
All Public 2- and 4-Year		
Total number of enrollments	2,417,000	100%
College-level, credit-granting, undergraduate course enrollments	2,001,000	82.8%
All Public 2-Year		
Total number of enrollments	1,472,000	100%
College-level, credit-granting, undergraduate course enrollments	1,435,000	97.5%

Source: E.D. Tabs, Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001, NCES, 2003

- In 2000-2001, of total distance education enrollments (3,077,000), 2,350,000 or 76% were in college-level, credit-granting, undergraduate courses.
- Of total public 2- and 4-year distance education enrollments (2,417,000), 2,001,000 or 83% were in college-level, credit-granting, undergraduate courses.
- Of total public 2-year distance education enrollments (1,472,000), 1,435,000 or 98% were in college-level, credit-granting, undergraduate courses.

Table 2.F.4 Distance Education Courses in 2000-2001

DISTANCE EDUCATION COURSES		
All Title IV Institutions	No.	%
Total number of courses	127,400	100%
College-level, credit-granting, undergraduate courses	89,600	70.3%
All Public 2- and 4-Year		
Total number of courses	99,000	100%
College-level, credit-granting, undergraduate courses	72,900	73.6%
All Public 2-Year		
Total number of courses	55,900	100%
College-level, credit-granting, undergraduate courses	50,900	91.1%

Source: E.D. Tabs, Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001, NCES, 2003

- In 2000-2001, of total distance education courses (127,400), 89,600 or 70% were college-level, credit-granting, undergraduate courses.
- Of total public 2– and 4-year distance education courses (99,000), 72,900 or 74% were college-level, credit-granting, undergraduate courses.
- Of total public 2-year distance education courses (55,900), 50,900 or 91% were college-level, credit-granting, undergraduate courses.

In 2002, 60% or higher of 2– and 4-year colleges surveyed said the following distance education program goals were “very important”:

- Increasing institution enrollments
- Increasing student access by reducing time constraints for course taking
- Increasing student access by making courses available at convenient locations
- Increasing the institution’s access to new audiences⁴

⁴E.D. Tabs, Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001, NCES, 2003

2.G. Peer Colleges and California Community Colleges

Table 2.G.1 Online Courses FTES at Three Peer Colleges and for all California Community Colleges, 2001-02 to 2004-05

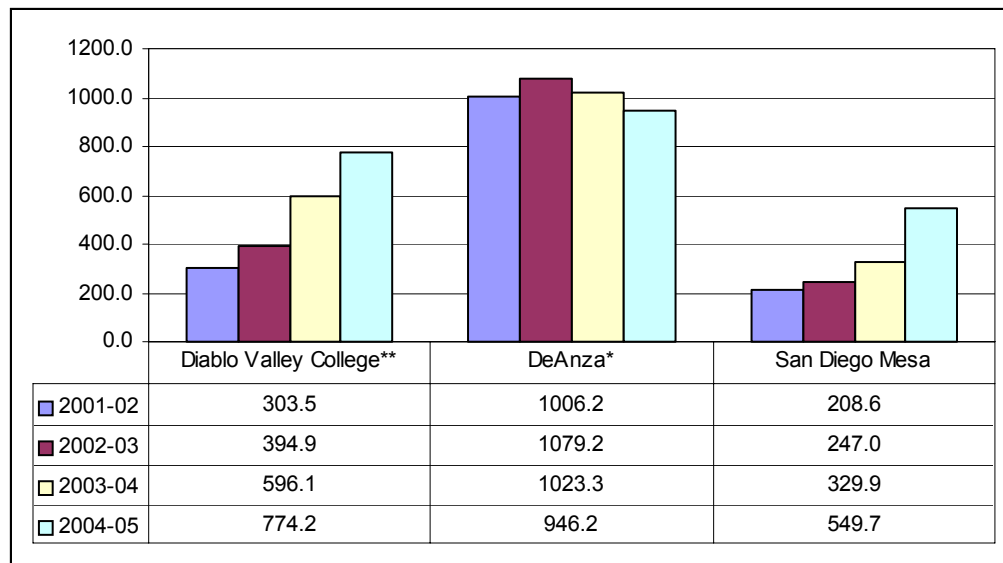
Institution	2001-02	2002-03	2003-04	2004-05
Diablo Valley College**	303.5	394.9	596.1	774.2
DeAnza*	1006.2	1079.2	1023.3	946.2
San Diego Mesa	208.6	247.0	329.9	549.7
California Community Colleges	19740.9	25031.7	29840.4	39343.2

Sources: Datatel; CCCCO MIS Data Mart, December 2005

*With corrections from Bob Barr, Executive Director, Institutional Research and Planning, Foothill-De Anza Community College District

**Not reported to the state as distance education due to coding problems

Figure 2.G.1 Online Courses FTES at Three Peer Colleges, 2001-02 to 2004-05



Online courses FTES at DVC grew by 155.1% from 2001-02 to 2004-05, while De Anza's, although more sizeable, declined by 6%. San Diego Mesa's online courses FTES showed the same steady growth as DVC's and improved by 163.5%. In size, De Anza has the largest program with 946.2, followed by DVC with 774.2, and then San Diego Mesa at 549.7. California Community Colleges as a whole increased by 99.3% over the same period.

3. Demographic Profile

3.A. Online Student Gender

Figure 3.A.1 Gender of Students in Online Courses Over Five Fall Terms

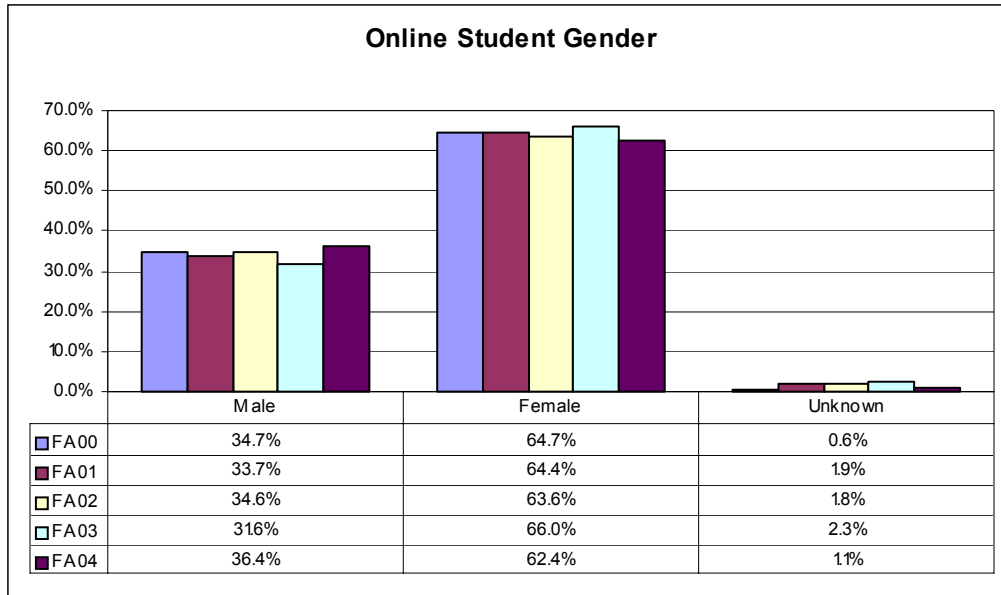
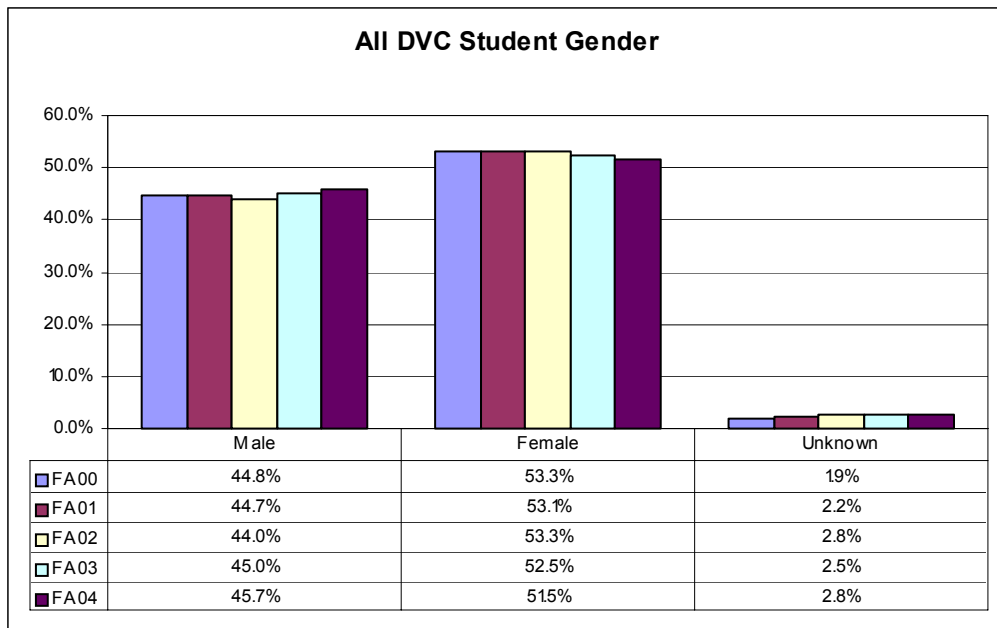


Figure 3.A.2 Gender of All DVC Students Over Five Fall Terms



Source: Datatel

From fall 2000 to fall 2004, the enrollment of men in online courses increased by 1.7%, while the enrollment of women dropped by 2.3%. However, women still accounted for 62.4% of online students in fall 2004, compared to 51.5% among all DVC students. Men accounted for only 36.4% of online students, compared to 45.7% among all DVC students. Considerably more women than men are online students.

3.B. Online Student Ethnicity

Figure 3.B.1 Ethnicity of Students in Online Courses Over Five Fall Terms

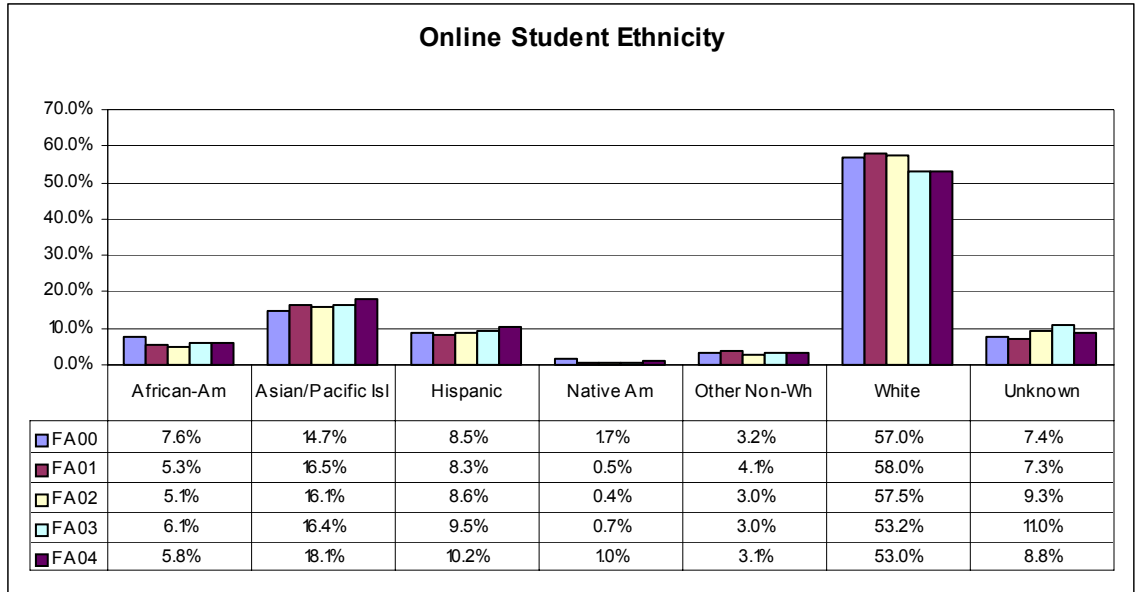
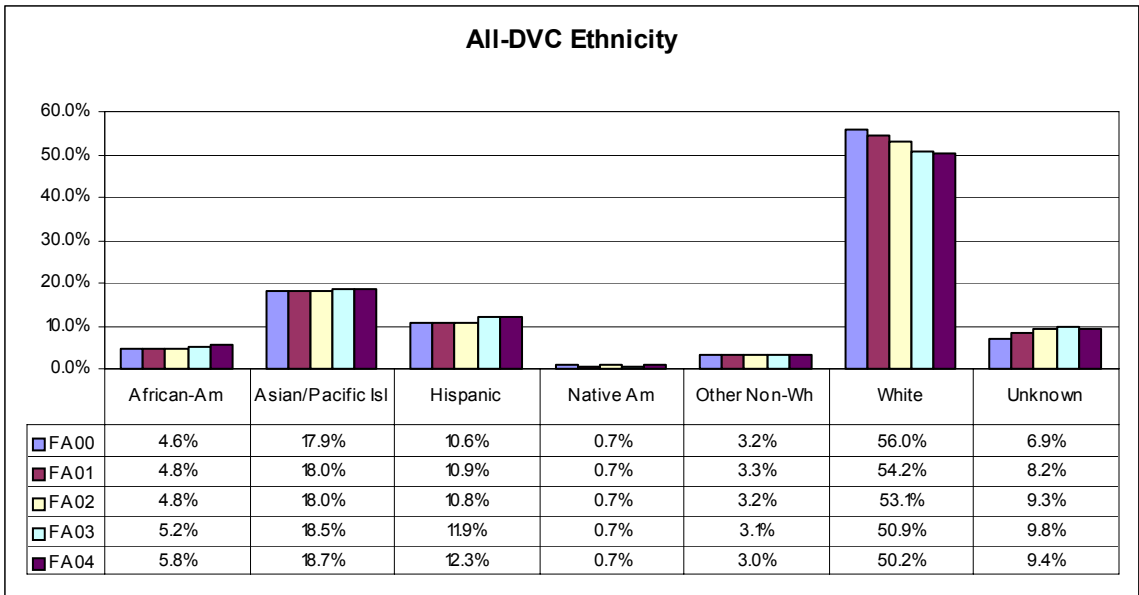


Figure 3.B.2 Ethnicity of All DVC Students Over Five Fall Terms



Fifty-three percent of online students are White, representing a decline of 4.0% over five fall terms. Asian/Pacific Islander online students have increased by 3.4%, from 14.7% to 18.1% over the same period. The next largest group is Hispanic online students, at 10.2% of the total. African-American students account for 5.8% of online students. Other Non-White online students have remained around 3.0%, and online students of Unknown ethnicity, which includes both blanks and those who declined to state, have increased from 7.4% to 8.8%. There are not marked ethnic differences between online and all-DVC students, except for the 2.1% smaller cohort of Hispanic students online.

3.C. Online Student Age

Figure 3.C.1 Age of Students in Online Courses Over Five Fall Terms

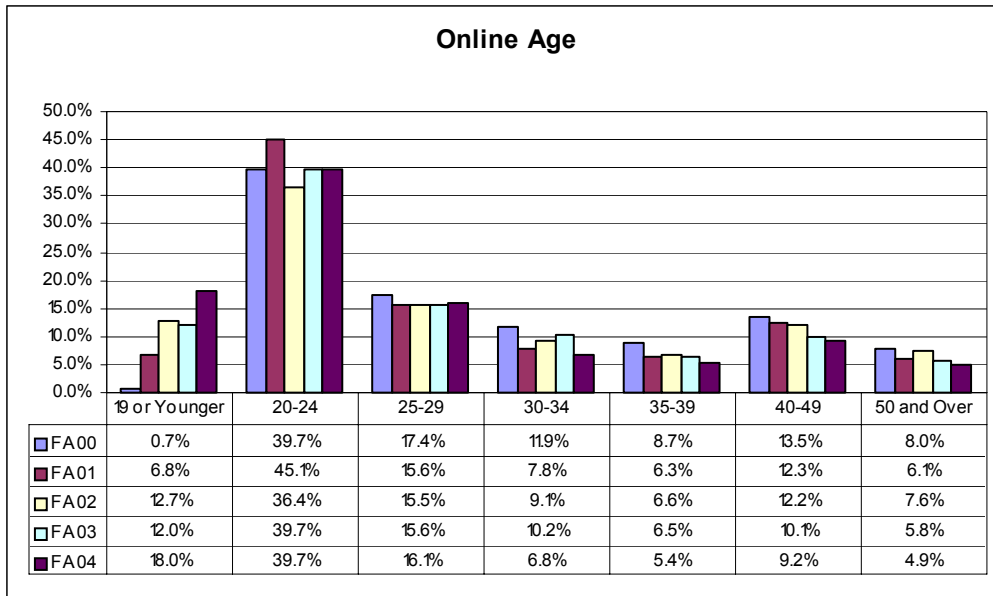
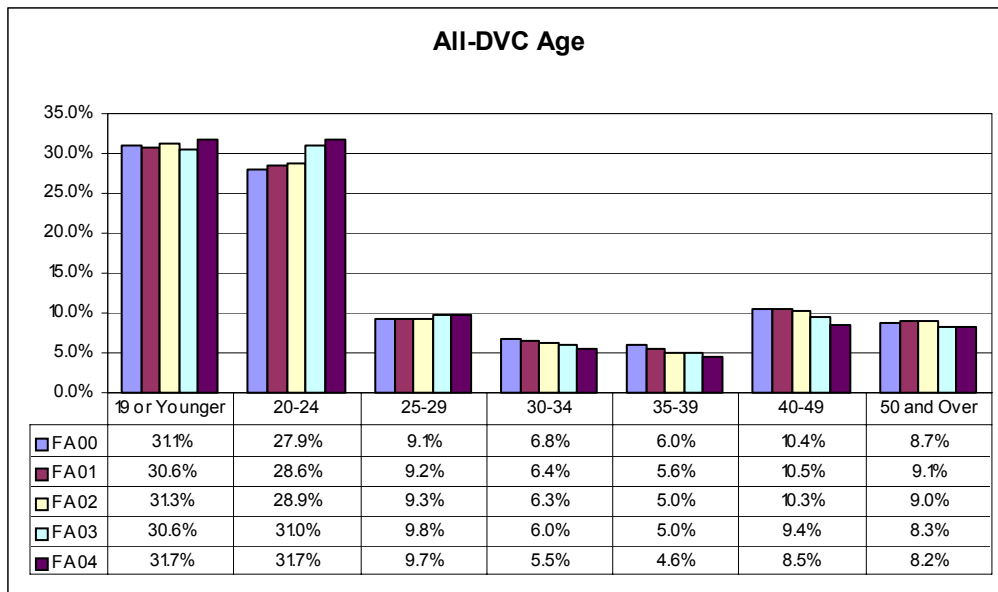


Figure 3.C.2 Age of All DVC Students Over Five Fall Terms



An average of 39.9% of online students in fall terms have been ages 20-24, compared with 29.6% of all DVC students. Another 15.9% of online students in fall terms have been in the 25-29 age group, compared with 9.4% of all DVC students. That is, 55.8% of online students are in their 20's. The next largest group of online students in fall terms was those aged 30-39: 15.2%, compared to 11.4% of all DVC students. An average of 12.1% of online students are ages 19 or younger, compared to 31.1% of all DVC students, a striking difference. 40-49 year olds have a 10.9% share. Finally, 6.1% of online students are 50 years and over, compared to 8.7% of all DVC students. The 19 or Younger group has grown the fastest, from a small percentage of students in the first year to 18.0% in fall 2004. The remaining groups were fairly stable, resembling all DVC students in this respect. In summary, the students to reach now are especially the students under 30.

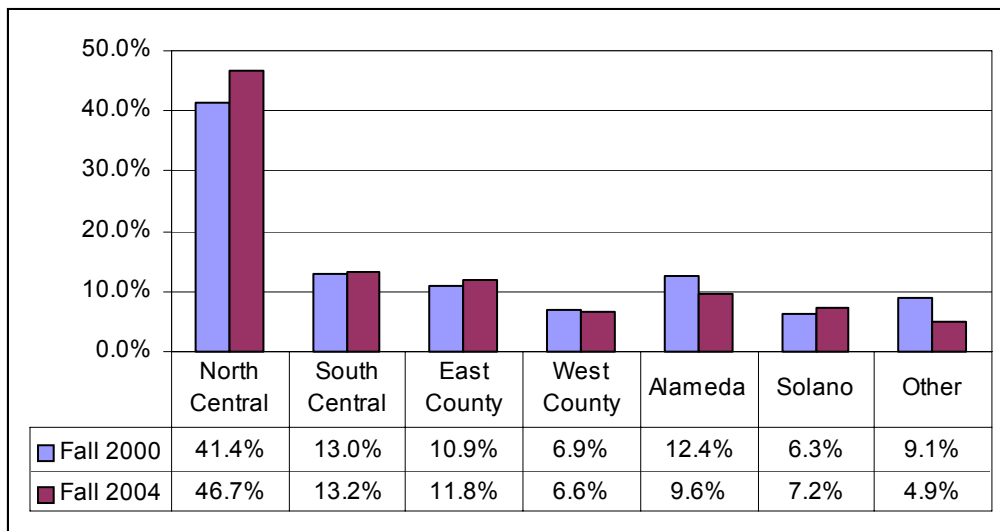
3.E. Geographic Distribution of Online Students

Table 3.E.1 Comparison of Geographic Distribution of Online Students in Fall 2000 and Fall 2004

County Area	Fall 2000		Fall 2004		Difference	Growth Rate
	Number	%	Number	%		
North Central	223	41.4%	775	46.7%	552	247.5%
South Central	70	13.0%	220	13.2%	150	214.3%
East County	59	10.9%	196	11.8%	137	232.2%
West County	37	6.9%	110	6.6%	73	197.3%
Alameda	67	12.4%	160	9.6%	93	138.8%
Solano	34	6.3%	119	7.2%	85	250.0%
Other	49	9.1%	81	4.9%	32	65.3%
Total	539	100.0%	1,661	100.0%	1,122	208.2%

Source: Datatel

Figure 3.E.1 Comparison of Geographic Distribution of Online Students in Fall 2000 and Fall 2004

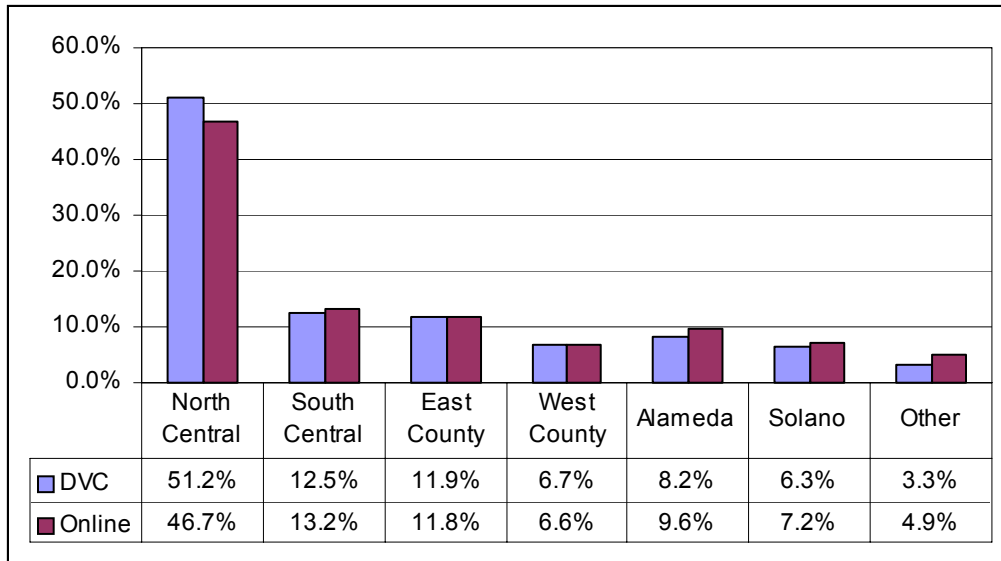


Source: Datatel

In Table 3.E.1 we see that the overall growth rate in online students from fall 2002 to fall 2004 was a very substantial 208.2%, but it was unevenly distributed. Solano County grew by 250.0%, North Central Contra Costa County grew by 247.5%, East County by 232.2%, South Central by 214.3%, West County by 197.3%, Alameda by 138.8%, and Other areas by 65.3%. It is noteworthy that Solano, which is distant from the DVC campus, had the highest rate of growth.

The actual differences in student numbers by county area are illustrated in Figure 3.E.1. The greatest growth in proportional representation was in North County (5.3%). East County, Solano and South Central share grew very slightly, and there were drops in Alameda (2.8%) and Other areas (4.2%), while West County dropped only slightly.

Figure 3.E.2 Comparison of Geographic Distribution of DVC and Online Students in Fall 2004

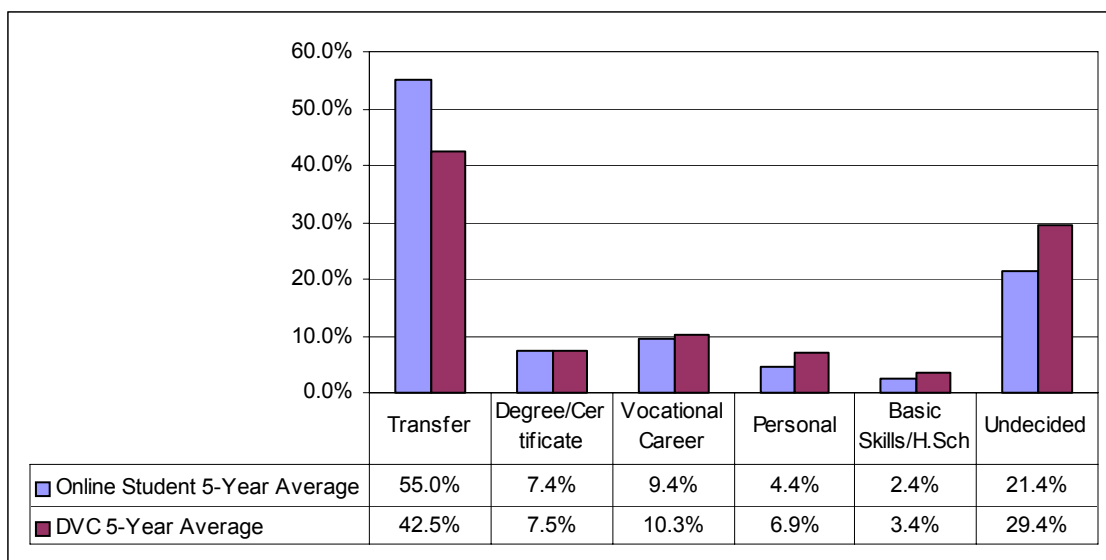


Source: Datatel

In Figure 3.E.2 we see that the greatest difference between DVC and online students' share by county area is in North County, where online share is 4.5% lower than DVC's. Alameda, Solano and Other are higher in shares than DVC by 1.4%, 0.9% and 1.6% respectively. The more distant the students, the more likely they will try online courses.

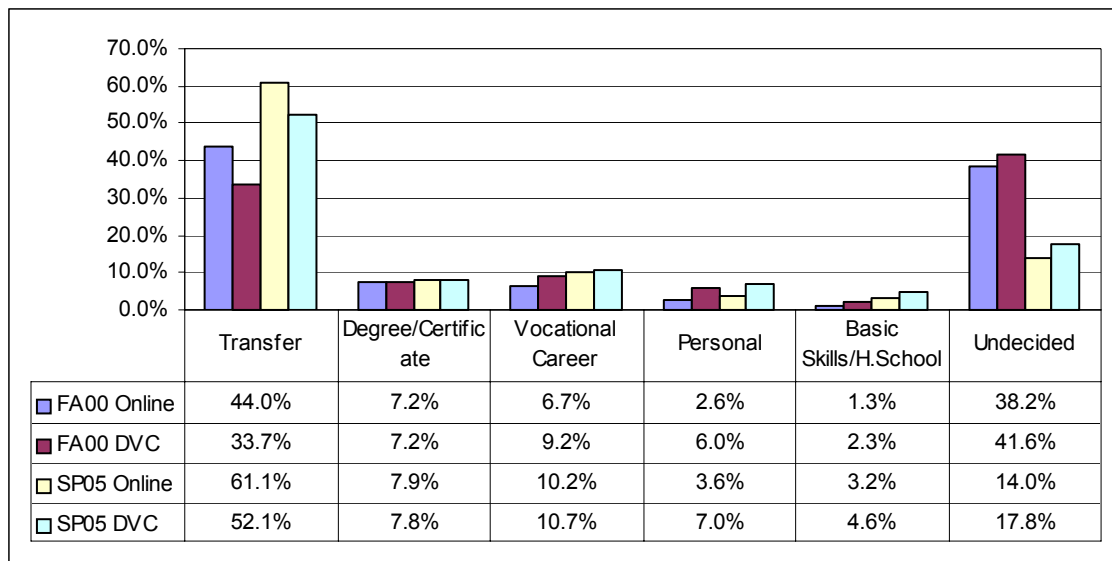
3.F. Educational Goals

Figure 3.F.1 Educational Goals of Online and All DVC Students: Five-Year Average



Source: Datatel

Figure 3.F.2 Educational Goals of Online and All DVC Students: Change from Fall 2000 to Spring 2005



Source: Datatel

In Figure 3.F.1 we see that DVC online students have an average percentage of Transfer as an educational goal that is 12.5% higher than among DVC students as a whole. 55.0% of online students stated that Transfer was their goal, versus 42.5% of DVC students.

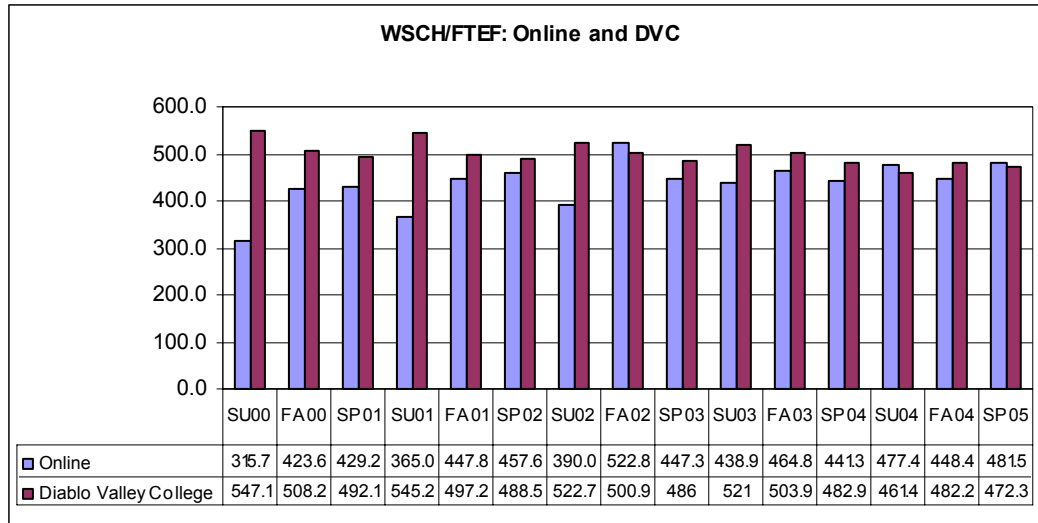
In Figure 3.F.2 we observe that Transfer as an educational goal has increased by 17.1% among online students and 18.4% among all DVC students. There was roughly the same percentage of online students choosing obtaining a degree or certificate as there was among all DVC students, just under 8%. The percentage of those choosing Vocational or Career increased by 3.5% among online students and 1.5% among DVC students. There is a lower interest in Personal Development among online students (around 3.0%), as compared with all DVC students (6.5%). The goal of improving basic skills or getting a high school degree was 3.2% among online students in spring 2005, and 4.6% among all DVC students.

The differences between online students and all DVC students regarding a goal of transfer are made clear in both Figure 3.F.1 and 3.F.2.

4. Productivity by Term

Academic Load (WSCH/FTEF)

Figure 4.A.1 Comparison of Online and DVC Academic Load (WSCH/FTEF) Over Five Years

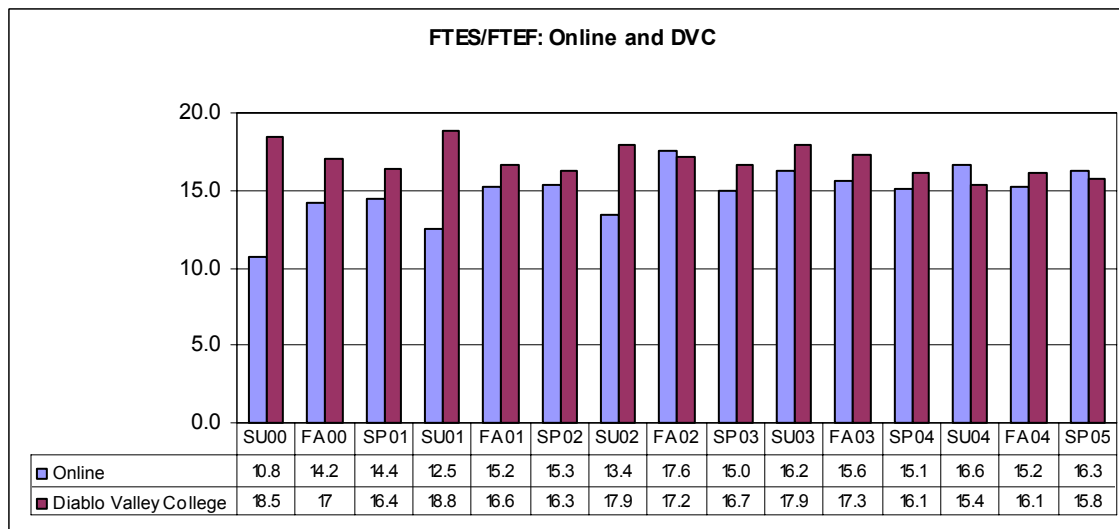


Source: Datatel

The overall five-year average productivity of online courses was 436.7 WSCH/FTEF, as compared with 500.8 for DVC as a whole. However, online productivity grew from 315.7 WSCH/FTEF in summer 2000 to 481.5 in spring 2005, while DVC's productivity dropped from 547.1 in summer 2000 to 472.3 in spring 2005. Online productivity was nearly the same as DVC's in Spring 2005. If it continues to rise, it is likely to surpass DVC's productivity in future terms.

Student/Faculty Ratio (FTES/FTEF)

Figure 4.B.1 Comparison of Online and DVC Student/Faculty Ratio (FTES/FTEF) Over Five Years



Source: Datatel

The overall five-year average FTES/FTEF of online courses was 14.9, as compared with 16.9 for DVC as a whole. However, online FTES/FTEF grew from 10.8 in summer 2000 to 16.3 in spring 2005, while DVC's dropped from 18.5 in summer 2000 to 15.8 in spring 2005. Online FTES/FTEF surpassed DVC's in Spring 2005.

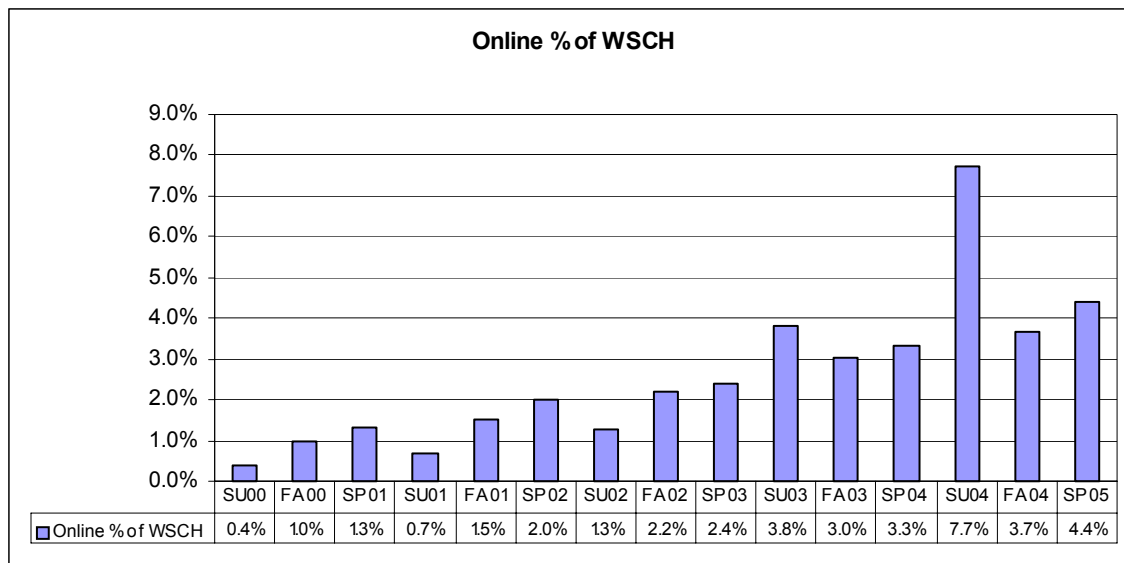
WSCH

Table 4.C.1 Comparison of Online Student and DVC WSCH Over Five Years

Population Segment	SU00	FA00	SP01	SU01	FA01	SP02	SU02	FA02	SP03	SU03	FA03	SP04	SU04	FA04	SP05
Online	221	2,294	2,978	438	3,624	4,664	858	5,336	5,549	2,458	7,187	7,709	4,550	8,415	9,774
Diablo Valley College	58,245	232,110	223,316	63,513	238,035	234,783	67,772	245,109	232,984	64,654	237,990	232,878	58,846	229,718	222,087
Online % of WSCH	0.4%	1.0%	1.3%	0.7%	1.5%	2.0%	1.3%	2.2%	2.4%	3.8%	3.0%	3.3%	7.7%	3.7%	4.4%

Source: Datatel

Figure 4.C.1 Comparison of Online Percentage of Total DVC WSCH Over Five Years



Source: Datatel

The Online WSCH percentage of total DVC WSCH grew from 0.4% in summer 2000 to 4.4% in spring 2005, a 1,060.0% increase. The average percentage of online WSCH each term was 2.5% over fifteen terms. Average Online WSCH per term was 4,404; and average DVC WSCH was 176,136. At nearly 5%, Online WSCH has become a significant share of total DVC WSCH.

FTES

Table 4.D.1 Comparison of Online Student and DVC FTES Over Five Years

Population Segment	SU00	FA00	SP01	SU01	FA01	SP02	SU02	FA02	SP03	SU03	FA03	SP04	SU04	FA04	SP05
Online	7.5	77.1	99.9	15.0	122.8	156.4	29.4	179.3	186.2	90.7	241.6	263.3	158.1	284.8	331.2
Diablo Valley College	1,973.5	7,761.0	7,426.0	2,191.6	7,941.7	7,843.2	2,323.4	8,404.7	7,989.9	2,216.9	8,159.9	7,773.4	1,961.1	7,674.4	7,418.6
Online % of DVC FTES	0.4%	1.0%	1.3%	0.7%	1.5%	2.0%	1.3%	2.1%	2.3%	4.1%	3.0%	3.4%	8.1%	3.7%	4.5%

Source: Datatel

The Online FTES percentage of total DVC FTES had a similar growth pattern. The average percentage of online FTES each term was 2.5% of DVC FTES over fifteen terms. Average Online FTES per term was 149.6; and average DVC FTES was 5,937.3. Online FTES has become an increasingly significant share of total DVC FTES.

FTEF

Table 4.E.1 Comparison of Online Student and DVC FTEF Over Five Years

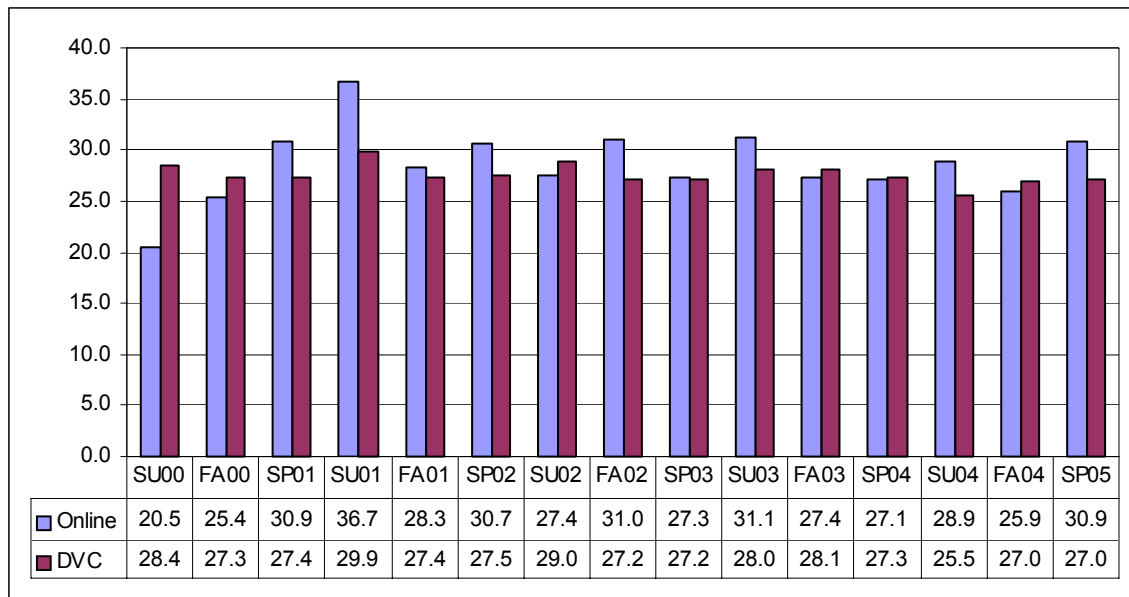
Population Segment	SU00	FA00	SP01	SU01	FA01	SP02	SU02	FA02	SP03	SU03	FA03	SP04	SU04	FA04	SP05
Online	0.700	5.416	6.939	1.200	8.093	10.192	2.200	10.207	12.407	5.601	15.464	17.469	9.531	18.766	20.301
Diablo Valley College	106.452	456.718	453.782	116.489	478.777	480.588	129.66	489.353	479.346	124.094	472.282	482.201	127.527	476.442	470.233
Online % of DVC FTES	0.7%	1.2%	1.5%	1.0%	1.7%	2.1%	1.7%	2.1%	2.6%	4.5%	3.3%	3.6%	7.5%	3.9%	4.3%

Source: Datatel

The growth pattern of Online FTEF percentage of total DVC FTEF was again similar. The average percentage of online FTEF each term was 2.7% of DVC FTES over fifteen terms. Average Online FTEF per term was 9.6; and average DVC FTEF was 356.3.

Average Class Size

Figure 4.F.1 Average Class Size, Online Students and DVC, Over Five Years



Source: Datatel

The average class size is another measure of productivity, though less powerful than the academic load and student-faculty ratio. Class size is calculated by dividing total student seat count by the number of sections. For online students, the average class size averaged 28.5 over five years, compared to 27.4 for DVC students as a whole. On the average, the class size for the online program was 103.9% of the average class size for DVC. The existence of a 3.9% gap indicates a higher level of productivity for online courses and confirms earlier observations regarding the academic load (WSCH/FTEF) and the student-faculty ratio (FTES/FTEF).

5. Academic Performance

Table 5.A.1 Grade Distribution of Online Students

Online Students	A	B	C	CR	Success	D	F	NC	I	RD	Retention	W	Total
Fall 2000	170	99	69	37	375	11	43	1	8	-	438	171	609
	27.9%	16.3%	11.3%	6.1%	61.6%	1.8%	7.1%	0.2%	1.3%	0.0%	71.9%	28.1%	100.0%
Spring 2001	193	121	72	42	428	29	42	15	-	-	514	320	834
	23.1%	14.5%	8.6%	5.0%	51.3%	3.5%	5.0%	1.8%	0.0%	0.0%	61.6%	38.4%	100.0%
Fall 2001	186	130	92	49	457	26	49	16	1	8	557	376	933
	19.9%	13.9%	9.9%	5.3%	49.0%	2.8%	5.3%	1.7%	0.1%	0.9%	59.7%	40.3%	100.0%
Spring 2002	328	163	120	54	665	23	74	54	-	-	816	410	1,226
	26.8%	13.3%	9.8%	4.4%	54.2%	1.9%	6.0%	4.4%	0.0%	0.0%	66.6%	33.4%	100.0%
Fall 2002	314	185	122	44	665	40	55	64	22	2	848	423	1,271
	24.7%	14.6%	9.6%	3.5%	52.3%	3.1%	4.3%	5.0%	1.7%	0.2%	66.7%	33.3%	100.0%
Spring 2003	384	231	123	78	816	55	81	78	10	-	1,040	350	1,390
	27.6%	16.6%	8.8%	5.6%	58.7%	4.0%	5.8%	5.6%	0.7%	0.0%	74.8%	25.2%	100.0%
Fall 2003	434	274	131	93	932	38	149	51	16	-	1,186	541	1,727
	25.1%	15.9%	7.6%	5.4%	54.0%	2.2%	8.6%	3.0%	0.9%	0.0%	68.7%	31.3%	100.0%
Spring 2004	561	273	188	121	1,143	59	139	60	15	-	1,416	645	2,061
	27.2%	13.2%	9.1%	5.9%	55.5%	2.9%	6.7%	2.9%	0.7%	0.0%	68.7%	31.3%	100.0%
Fall 2004	632	273	204	120	1,229	68	231	48	19	-	1,595	527	2,122
	29.8%	12.9%	9.6%	5.7%	57.9%	3.2%	10.9%	2.3%	0.9%	0.0%	75.2%	24.8%	100.0%
Spring 2005	767	422	231	152	1,572	105	340	57	23	8	2,105	646	2,751
	27.9%	15.3%	8.4%	5.5%	57.1%	3.8%	12.4%	2.1%	0.8%	0.3%	76.5%	23.5%	100.0%
Total Online	3,969	2,171	1,352	790	8,282	454	1,203	444	114	18	10,515	4,409	14,924
	26.6%	14.5%	9.1%	5.3%	55.5%	3.0%	8.1%	3.0%	0.8%	0.1%	70.5%	29.5%	100.0%

Table 5.A.2 Grade Distribution of DVC Students

DVC	A	B	C	CR	Success	D	F	NC	I	RD	Retention	W	Total
Fall 2000	17,750	11,664	7,584	5,534	42,532	2,086	3,065	793	318	103	48,897	13,965	62,862
	28.2%	18.6%	12.1%	8.8%	67.7%	3.3%	4.9%	1.3%	0.5%	0.2%	77.8%	22.2%	100.0%
Spring 2001	18,768	11,396	7,116	4,861	42,141	1,877	2,300	730	299	209	47,556	13,789	61,345
	30.6%	18.6%	11.6%	7.9%	68.7%	3.1%	3.7%	1.2%	0.5%	0.3%	77.5%	22.5%	100.0%
Fall 2001	19,567	12,283	7,880	5,539	45,269	2,066	2,493	679	339	553	51,399	15,121	66,520
	29.4%	18.5%	11.8%	8.3%	68.1%	3.1%	3.7%	1.0%	0.5%	0.8%	77.3%	22.7%	100.0%
Spring 2002	19,956	11,714	7,665	4,621	43,956	2,037	3,655	998	418	-	51,064	11,907	62,971
	31.7%	18.6%	12.2%	7.3%	69.8%	3.2%	5.8%	1.6%	0.7%	0.0%	81.1%	18.9%	100.0%
Fall 2002	20,188	12,524	7,867	5,851	46,430	2,304	3,394	896	354	283	53,661	12,331	65,992
	30.6%	19.0%	11.9%	8.9%	70.4%	3.5%	5.1%	1.4%	0.5%	0.4%	81.3%	18.7%	100.0%
Spring 2003	20,094	12,349	7,626	5,613	45,682	2,182	3,534	927	199	132	52,656	10,338	62,994
	31.9%	19.6%	12.1%	8.9%	72.5%	3.5%	5.6%	1.5%	0.3%	0.2%	83.6%	16.4%	100.0%
Fall 2003	19,626	12,683	8,010	3,964	44,283	2,334	3,724	879	454	148	51,822	10,567	62,389
	31.5%	20.3%	12.8%	6.4%	71.0%	3.7%	6.0%	1.4%	0.7%	0.2%	83.1%	16.9%	100.0%
Spring 2004	20,338	12,246	7,764	4,108	44,456	2,195	3,166	679	386	51	50,933	10,883	61,816
	32.9%	19.8%	12.6%	6.6%	71.9%	3.6%	5.1%	1.1%	0.6%	0.1%	82.4%	17.6%	100.0%
Fall 2004	18,827	12,230	8,128	3,000	42,185	2,437	3,941	605	421	97	49,686	10,244	59,930
	31.4%	20.4%	13.6%	5.0%	70.4%	4.1%	6.6%	1.0%	0.7%	0.2%	82.9%	17.1%	100.0%
Spring 2005	19,009	11,834	7,382	3,600	41,825	2,077	3,296	624	316	230	48,368	10,600	58,968
	32.2%	20.1%	12.5%	6.1%	70.9%	3.5%	5.6%	1.1%	0.5%	0.4%	82.0%	18.0%	100.0%
Total DVC	175,114	109,089	69,640	43,091	396,934	19,518	29,272	7,186	3,188	1,576	457,674	109,145	566,819
	30.9%	19.2%	12.3%	7.6%	70.0%	3.4%	5.2%	1.3%	0.6%	0.3%	80.7%	19.3%	100.0%

Source: Datatel

Online students had a much higher average drop rate (29.5%) than DVC students as a whole (19.3%). For each of the average letter grades denoting success, online students performed two to nearly five percentage points worse than DVC students. The combined effect is to produce online student success and retention rates which are at considerably lower levels than those for DVC as a whole. To pinpoint one main area that needs to be addressed, withdrawals for online students should be reduced. The college needs to discern the reasons for the high rate of withdrawals, and initiate strong efforts to reduce them.

Success and Retention

Figure 5.A.1 Success Rates of DVC and Online Students

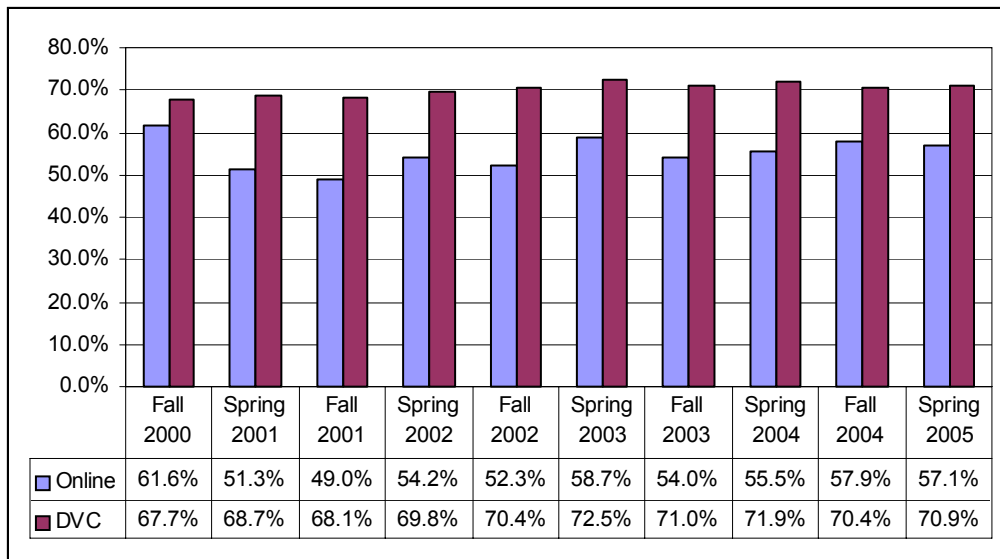
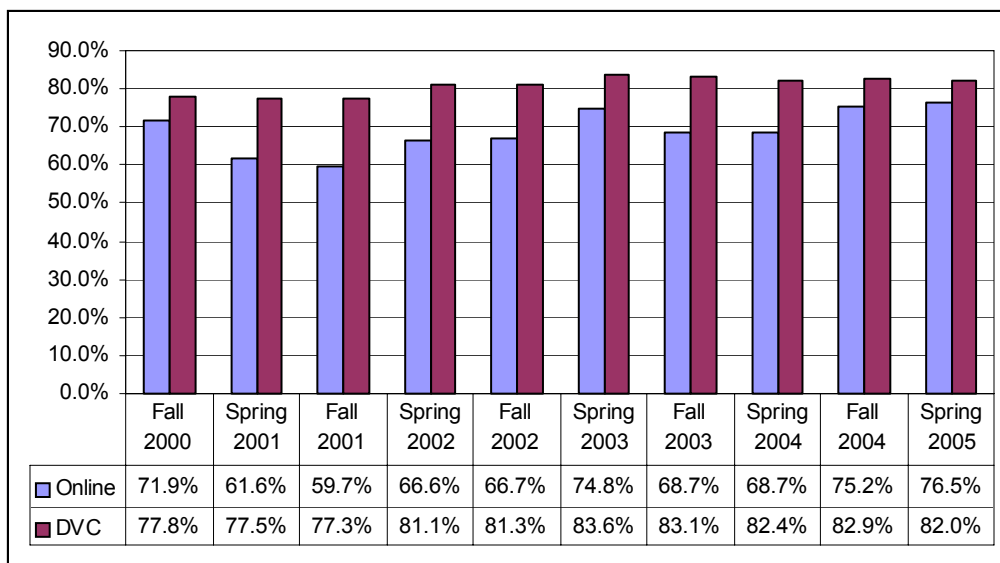


Figure 5.A.2 Retention Rates of DVC and Online Students



Source: Datatel

Both success and retention rates of online students fall consistently below those of DVC students as a whole. Online student success has been as low as 49.0% (fall 2001) and as high as 61.6% (fall 2000), while the lowest DVC student success rate was 67.7% (fall 2000) and the highest was 72.5% (spring 2003). The gap between online students' average success rate (55.5%) and DVC's (70.1%) was 14.6 percentage points.

Online student retention has been as low as 59.7% (fall 2001) and as high as 76.5% (spring 2005), while the lowest DVC retention rate was 77.3% (fall 2001) and the highest was 83.6% (spring 2003). The gap between online student's average retention rate (70.5%) and DVC's (80.9%) was 10.4 percentage points.

6. Predictors of Success: Difference Between Success and Retention Rates of Online and Non-Online Students

6.A. Disciplines

Table 6.A.1 Summary of Success Rate Differences by Discipline, Fall 2002—Spring 2005

Discipline	Fall 2002 -Spring 2005							No. of Terms Totals Are Based Upon
	Online			Non-Online			Difference	
	Total	Succ	Succ Rate	Total	Succ	Succ Rate		
ADJUS	265	178	67.2%	1,478	1,019	68.9%	-1.8%	2
ANTHR	343	197	57.4%	4,816	3,428	71.2%	-13.7%	6
ARTHS	105	63	60.0%	1,016	780	76.8%	-16.8%	2
ASTRO	150	49	32.7%	2,572	1,623	63.1%	-30.4%	4
BUS	1,076	633	58.8%	6,150	4,365	71.0%	-12.1%	6
BUSAC	1,321	791	59.9%	4,427	2,944	66.5%	-6.6%	6
BUSIM	529	308	58.2%	1,779	1,125	63.2%	-5.0%	6
BUSMG	30	12	40.0%	510	362	71.0%	-31.0%	1
CIS	915	432	47.2%	5,425	4,357	80.3%	-33.1%	6
COMSC	679	387	57.0%	6,721	4,503	67.0%	-10.0%	6
COUNS	18	11	61.1%	1,456	1,232	84.6%	-23.5%	2
ENGIN	132	69	52.3%	1,721	1,272	73.9%	-21.6%	6
ENGL	2,062	1,352	65.6%	33,996	23,498	69.1%	-3.6%	6
GEOG	165	110	66.7%	3,764	2,621	69.6%	-3.0%	6
HIST	665	367	55.2%	14,340	9,774	68.2%	-13.0%	5
HSCI	51	32	62.7%	2,249	1,640	72.9%	-10.2%	2
JRNAL	99	45	45.5%	383	267	69.7%	-24.3%	4
LS	408	246	60.3%	484	336	69.4%	-9.1%	6
MATH	1,893	880	46.5%	32,773	18,951	57.8%	-11.3%	6
MUSLT	178	107	60.1%	2,200	1,632	74.2%	-14.1%	4
OCEAN	391	193	49.4%	2,431	1,807	74.3%	-25.0%	6
SOCSC	20	6	30.0%	487	312	64.1%	-34.1%	1
SPAN	115	61	53.0%	3,351	2,270	67.7%	-14.7%	5
Total	11,610	6,529	56.2%	134,529	90,118	67.0%	-10.8%	4.52

Source: Datatel

Over six terms the five disciplines which were most suitable for DVC online students, based upon the lowest gaps between the average success rates of online and non-online students, were Administration of Justice (-1.8%), Geography, (-3.0%), English (-3.6%), Business Information Management (-5.0%) and Business Accounting (-6.6%). The five least suitable disciplines for online students were Social Sciences (-34.1%), Computer Information Systems (-33.1%), Business Management (-31.0%), Astronomy (-30.4%), and Oceanography (-25.0%).

The five highest success rates of online students were in Administration of Justice (67.2%), Geography (66.7%), English (65.6%), Health Sciences (65.6%), and Counseling (61.1%). The five lowest were in Social Sciences (30.0%), Astronomy (32.7%), Business Management (40.0%), Journalism (45.5%), and Mathematics (46.5%). However, it is the differences between success rates that tell the true story of potential for success among online students.

The overall average difference between online and non-online students over six terms, seen through performance within disciplines, was -10.8%. The reasons why online students' success rates are consistently lower than those of non-online students are still not understood completely. And more work still needs to be done to understand why online students do better in³³ some disciplines than in others.

Table 6.A.2 Summary of Retention Rate Differences by Discipline, Fall 2002—Spring 2005

Fall 2002 - Spring 2005								
Discipline	Online			Non-Online			Difference	No. of Terms of Average
	Total	Retention	Ret Rate	Total	Retention	Ret Rate		
ADJUS	265	221	83.4%	1478	1283	86.8%	-3.4%	2
ANTHR	343	227	66.2%	4816	3944	81.9%	-15.7%	6
ARTHS	105	80	76.2%	1016	853	84.0%	-7.8%	2
ASTRO	150	63	42.0%	2572	2001	77.8%	-35.8%	4
BUS	1076	848	78.8%	6150	5083	82.7%	-3.8%	6
BUSAC	1321	1006	76.2%	4428	3399	76.8%	-0.6%	6
BUSIM	237	186	78.5%	1367	1153	84.3%	-5.9%	6
BUSMG	30	21	70.0%	510	469	92.0%	-22.0%	1
CIS	915	753	82.3%	5425	4959	91.4%	-9.1%	6
COMSC	679	547	80.6%	6721	5238	77.9%	2.6%	6
COUNS	18	11	61.1%	1456	1361	93.5%	-32.4%	2
ENGIN	132	87	65.9%	1721	1412	82.0%	-16.1%	6
ENGL	2062	1522	73.8%	33996	26814	78.9%	-5.1%	6
GEOG	165	120	72.7%	3764	3190	84.8%	-12.0%	6
HIST	665	467	70.2%	14340	11563	80.6%	-10.4%	5
HSCI	51	41	80.4%	2249	1912	85.0%	-4.6%	2
JRNAL	99	60	60.6%	383	305	79.6%	-19.0%	4
LS	408	355	87.0%	484	426	88.0%	-1.0%	6
MATH	1893	1146	60.5%	32773	23788	72.6%	-12.0%	6
MUSLT	178	126	70.8%	2200	1967	89.4%	-18.6%	4
OCEAN	391	222	56.8%	2431	2089	85.9%	-29.2%	6
SOCS	20	7	35.0%	487	385	79.1%	-44.1%	1
SPAN	115	72	62.6%	3351	2684	80.1%	-17.5%	5
Total	11183	8109	72.5%	130280	103209	79.2%	-6.7%	

Source: Datatel

Over six terms the five disciplines which were most suitable for DVC online students, based upon the lowest gaps between the average retention rates of online and non-online students, were Computer Science (+2.6%), Business Accounting, (-0.6%), Library Studies (-1.0%), Administration of Justice (-3.4%) and Business (-3.8%). The five least suitable disciplines for online students were Social Sciences (-44.1%), Astronomy (-35.8%), Counseling (-32.4%), Oceanography (-29.2), and Business Management (-22.0%).

The five highest retention rates of online students were in Library Studies (87.0%), Administration of Justice (83.4%), Computer Information Systems (82.3%), Computer Science (80.6%), and Health Sciences (80.4%). The five lowest were in Social Sciences (35.0%), Astronomy (42.0%), Oceanography (56.8%), Mathematics (60.5%), and Journalism (60.6%). However, it is the differences between retention rates that tell the true story of potential for success among online students.

The overall average difference between online and non-online students over six terms, seen through performance within disciplines, was -6.7%. The reasons why online students' retention rates are consistently lower than those of non-online students are still not understood completely. And more work still needs to be done to understand why online students are retained in some disciplines better than in others.

6.B. Course Load

Table 6.B.1 Summary of Success Rate Differences by Course Load, Fall 2002—Spring 2005

Term	Course Load	Online			Non-Online			Difference
		Total	Succ	Succ Rate	Total	Succ	Succ Rate	
Fall 2002	< 6 Units	362	205	56.6%	12,517	8,734	69.8%	-13.1%
	6-<12	454	217	47.8%	17,776	11,176	62.9%	-15.1%
	12+	455	243	53.4%	34,398	25,828	75.1%	-21.7%
Spring 2003	< 6 Units	349	200	57.3%	13,320	9,840	73.9%	-16.6%
	6-<12	478	263	55.0%	17,507	11,258	64.3%	-9.3%
	12+	563	353	62.7%	30,777	23,768	77.2%	-14.5%
Fall 2003	< 6 Units	496	295	59.5%	10,744	7,729	71.9%	-12.5%
	6-<12	586	262	44.7%	16,518	10,560	63.9%	-19.2%
	12+	645	375	58.1%	33,385	25,048	75.0%	-16.9%
Spring 2004	< 6 Units	483	278	57.6%	11,634	8,636	74.2%	-16.7%
	6-<12	682	342	50.1%	16,726	10,863	64.9%	-14.8%
	12+	896	523	58.4%	31,547	23,945	75.9%	-17.5%
Fall 2004	< 6 Units	512	288	56.3%	9,418	6,740	71.6%	-15.3%
	6-<12	759	431	56.8%	16,414	10,442	63.6%	-6.8%
	12+	848	510	60.1%	31,948	23,769	74.4%	-14.3%
Spring 2005	< 6 Units	594	341	57.4%	10,293	7,632	74.1%	-16.7%
	6-<12	902	467	51.8%	15,656	10,051	64.2%	-12.4%
	12+	1,254	769	61.3%	30,241	22,649	74.9%	-13.6%
	Total	11,318	6,362	56.2%	360,819	258,668	71.7%	-15.5%

Group Totals and Average Success Rates							
Course Load	Online			Non-Online			Difference
	Total	Succ	Succ Rate	Total	Succ	Succ Rate	
< 6 Units	2,796	1,607	57.5%	67,926	49,311	72.6%	-15.1%
6-<12	3,861	1,982	51.3%	100,597	64,350	64.0%	-12.6%
12+	4,661	2,773	59.5%	192,296	145,007	75.4%	-15.9%
Total	11,318	6,362	56.2%	360,819	258,668	71.7%	-15.5%

Source: Datatel

The success rates of both online and non-online students are highest (59.5% and 75.4% respectively) when they are carrying a full-time course load. These are the students who are likely to earn a degree or certificate or transfer to a four-year institution. Next highest are the success rates of students carrying under 6 units each term (57.5% and 72.6% respectively). These are probably older students who are improving their job skills or studying due to personal interests. Lowest are students who are carrying 6 to less than 12 units (51.3% and 64% respectively). Working from overviews of unit load and age on the Chancellor's MIS Data Mart, we conclude that these are most probably continuing students who are 20-24 years of age and are not studying for a degree or transfer. The difference between the success rate of online students carrying 6- <12 units and the average success rate for online students was statistically significant at the 0.05 level ($p = 0.039$). See Appendix B.

However, differences between success rates of online and non-online students are profound, and the difference among students with a full course load is the greatest (-15.9%). The overall average difference for all three groups was -15.5%. In brief, the 59.5% success rate of online students with a full course load needs to be improved, as do the success rates of students in the other two groups.

Table 6.B.2 Summary of Retention Rate Differences by Course Load, Fall 2002—Spring 2005

Term	Course Load	Online			Non-Online			Difference
		Total	Ret	Ret Rate	Total	Ret	Ret Rate	
Fall 2002	< 6 Units	362	263	72.7%	12,517	10,169	81.2%	-8.6%
	6-<12	454	290	63.9%	17,776	13,392	75.3%	-11.5%
	12+	455	295	64.8%	34,398	29,223	85.0%	-20.1%
Spring 2003	< 6 Units	349	255	73.1%	13,320	11,192	84.0%	-11.0%
	6-<12	478	346	72.4%	17,507	13,657	78.0%	-5.6%
	12+	563	439	78.0%	30,777	26,767	87.0%	-9.0%
Fall 2003	< 6 Units	496	364	73.4%	10,744	8,953	83.3%	-9.9%
	6-<12	586	370	63.1%	16,518	12,970	78.5%	-15.4%
	12+	645	452	70.1%	33,385	28,699	86.0%	-15.9%
Spring 2004	< 6 Units	483	341	70.6%	11,634	9,741	83.7%	-13.1%
	6-<12	682	431	63.2%	16,726	12,981	77.6%	-14.4%
	12+	896	644	71.9%	31,547	26,944	85.4%	-13.5%
Fall 2004	< 6 Units	512	389	76.0%	9,418	7,785	82.7%	-6.7%
	6-<12	759	561	73.9%	16,414	12,870	78.4%	-4.5%
	12+	848	642	75.7%	31,948	27,421	85.8%	-10.1%
Spring 2005	< 6 Units	594	470	79.1%	10,293	8,620	83.7%	-4.6%
	6-<12	902	657	72.8%	15,656	12,079	77.2%	-4.3%
	12+	1,254	979	78.1%	30,241	25,554	84.5%	-6.4%
	Total	11,318	8,188	72.3%	360,819	299,017	82.9%	-10.5%

Term	Course Load	Online			Non-Online			Difference
		Total	Ret	Ret Rate	Total	Ret	Ret Rate	
Fall 2002 to Spring 2005	< 6 Units	2,796	2,082	74.5%	67,926	56,460	83.1%	-8.7%
	6-<12	3,861	2,655	68.8%	100,597	77,949	77.5%	-8.7%
	12+	4,661	3,451	74.0%	192,296	164,608	85.6%	-11.6%
	Total	11,318	8,188	72.3%	360,819	299,017	82.9%	-10.5%

Source: Datatel

The retention rates of both online and non-online students are highest when they are carrying a full-time course load or under 6 units. Lowest are students who are carrying 6 to less than 12 units (68.8% and 77.5% respectively).

However, differences between retention rates of online and non-online students are great, and the difference among students with a full course load is the greatest (-11.6%). The overall average difference for all three groups was -10.5%. In brief, the 74.0% retention rate of online students with a full course load needs to be improved, as do the retention rates of students in the other two groups.

6.C. Gender

Table 6.C.1 Summary of Success Rate Differences by Gender, Fall 2002—Spring 2005

Term	Gender	Online			Non-Online			Difference
		Total	Succ	Succ Rate	Total	Succ	Succ Rate	
Fall 2002	Men	419	208	49.6%	29,739	20,080	67.5%	-17.9%
	Women	828	445	53.7%	33,236	24,453	73.6%	-19.8%
	Unknown	24	12	50.0%	1,716	1,205	70.2%	-20.2%
Spring 2003	Men	457	249	54.5%	28,549	20,064	70.3%	-15.8%
	Women	912	556	61.0%	31,638	23,765	75.1%	-14.2%
	Unknown	21	11	52.4%	1,417	1,037	73.2%	-20.8%
Fall 2003	Men	534	271	50.7%	28,796	20,029	69.6%	-18.8%
	Women	1,151	629	54.6%	30,366	22,283	73.4%	-18.7%
	Unknown	42	32	76.2%	1,485	1,025	69.0%	7.2%
Spring 2004	Men	700	361	51.6%	28,737	20,233	70.4%	-18.8%
	Women	1,319	762	57.8%	29,813	22,261	74.7%	-16.9%
	Unknown	42	20	47.6%	1,357	950	70.0%	-22.4%
Fall 2004	Men	774	420	54.3%	27,806	19,107	68.7%	-14.5%
	Women	1,318	792	60.1%	28,653	20,895	72.9%	-12.8%
	Unknown	27	17	63.0%	1,321	949	71.8%	-8.9%
Spring 2005	Men	1,042	589	56.5%	27,130	19,002	70.0%	-13.5%
	Women	1,650	948	57.5%	27,761	20,391	73.5%	-16.0%
	Unknown	58	40	69.0%	1,299	939	72.3%	-3.3%
	Total	11,318	6,362	56.2%	360,819	258,668	71.7%	-15.5%

Group Totals and Average Success Rates							
Gender	Online			Non-Online			Difference
	Total	Succ	Succ Rate	Total	Succ	Succ Rate	
Men	3,926	2,098	53.4%	170,757	118,515	69.4%	-16.0%
Women	7,178	4,132	57.6%	181,467	134,048	73.9%	-16.3%
Unknown	214	132	61.7%	8,595	6,105	71.0%	-9.3%
Total	11,318	6,362	56.2%	360,819	258,668	71.7%	-15.5%

Source: Datatel

Women outperform men among both online (4.2% difference in success rates) and non-online students (4.5% difference). However, Women's average six-term success rate among online students is 57.6% compared to that among non-online students (73.9%), a -16.3% difference. The difference between the average six-term success rates of online and non-online men students is similar (-16.0%). You are more likely to enjoy a higher success rate as an online student if you are female, but it is a success rate that leaves much to be desired.

Table 6.C.2 Summary of Retention Rate Differences by Gender, Fall 2002—Spring 2005

Term	Gender	Online			Non-Online			Difference
		Total	Retention	Ret Rate	Total	Retention	Ret Rate	
Fall 2002	Men	419	270	64.4%	29,739	23,917	80.4%	-16.0%
	Women	828	558	67.4%	33,236	27,458	82.6%	-15.2%
	Unknown	24	20	83.3%	1,716	1,409	82.1%	1.2%
Spring 2003	Men	457	327	71.6%	28,549	23,615	82.7%	-11.2%
	Women	912	699	76.6%	31,638	26,808	84.7%	-8.1%
	Unknown	21	14	66.7%	1,417	1,193	84.2%	-17.5%
Fall 2003	Men	534	335	62.7%	28,796	23,825	82.7%	-20.0%
	Women	1,151	815	70.8%	30,366	25,546	84.1%	-13.3%
	Unknown	42	36	85.7%	1,485	1,251	84.2%	1.5%
Spring 2004	Men	700	472	67.4%	28,737	23,597	82.1%	-14.7%
	Women	1,319	921	69.8%	29,813	24,935	83.6%	-13.8%
	Unknown	42	23	54.8%	1,357	1,134	83.6%	-28.8%
Fall 2004	Men	774	562	72.6%	27,806	22,929	82.5%	-9.9%
	Women	1,318	1,012	76.8%	28,653	24,027	83.9%	-7.1%
	Unknown	27	18	66.7%	1,321	1,120	84.8%	-18.1%
Spring 2005	Men	1,042	807	77.4%	27,130	22,156	81.7%	-4.2%
	Women	1,650	1,252	75.9%	27,761	22,999	82.8%	-7.0%
	Unknown	58	47	81.0%	1,299	1,098	84.5%	-3.5%
	Total	11,318	8,188	72.3%	360,819	299,017	82.9%	-10.5%

Term	Gender	Online			Non-Online			Difference
		Total	Retention	Ret Rate	Total	Retention	Ret Rate	
Fall 2002 to Spring 2005	Men	3,926	2,773	70.6%	170,757	140,039	82.0%	-11.4%
	Women	7,178	5,257	73.2%	181,467	151,773	83.6%	-10.4%
	Unknown	214	158	73.8%	8,595	7,205	83.8%	-10.0%
	Total	11,318	8,188	72.3%	360,819	299,017	82.9%	-10.5%

Source: Datatel

Women outperform men among both online (2.6% difference in retention rates) and non-online students (1.6% difference). However, Women’s average six-term retention rate among online students is 73.2% compared to that among non-online students (83.6%), a -10.4% difference. The difference between the average six-term success rates of online and non-online men students is similar (-11.4%). You are more likely to enjoy a higher retention rate as an online student if you are female, but it is a retention rate that leaves much to be desired.

6.D. Age

Table 6.D.1 Summary of Success Rate Differences by Age, Fall 2002—Spring 2005

Term	Age	Online			Non-Online			Difference
		Total	Succ	Succ Rate	Total	Succ	Succ Rate	
Fall 2002	< 25	621	308	49.6%	46,129	32,025	69.4%	-19.8%
	25-49	551	303	55.0%	15,031	10,866	72.3%	-17.3%
	50+	99	54	54.5%	3,531	2,847	80.6%	-26.1%
Spring 2003	< 25	594	345	58.1%	40,633	28,998	71.4%	-13.3%
	25-49	706	411	58.2%	16,837	12,469	74.1%	-15.8%
	50+	90	60	66.7%	4,131	3,399	82.3%	-15.6%
Fall 2003	< 25	875	448	51.2%	43,987	30,706	69.8%	-18.6%
	25-49	762	427	56.0%	13,619	10,109	74.2%	-18.2%
	50+	90	57	63.3%	3,041	2,522	82.9%	-19.6%
Spring 2004	< 25	1,030	550	53.4%	39,878	28,343	71.1%	-17.7%
	25-49	906	514	56.7%	16,316	12,006	73.6%	-16.9%
	50+	125	79	63.2%	3,713	3,095	83.4%	-20.2%
Fall 2004	< 25	1,179	635	53.9%	41,814	29,009	69.4%	-15.5%
	25-49	830	520	62.7%	13,026	9,510	73.0%	-10.4%
	50+	110	74	67.3%	2,940	2,432	82.7%	-15.4%
Spring 2005	< 25	1,621	911	56.2%	40,668	28,530	70.2%	-14.0%
	25-49	985	577	58.6%	12,476	9,272	74.3%	-15.7%
	50+	144	89	61.8%	3,049	2,530	83.0%	-21.2%
	Total	11,318	6,362	56.2%	360,819	258,668	71.7%	-15.5%

Group Totals and Average Success Rates							
Age	Online			Non-Online			Difference
	Total	Succ	Succ Rate	Total	Succ	Succ Rate	
< 25	5,920	3,197	54.0%	253,109	177,611	70.2%	-16.2%
25-49	4,740	2,752	58.1%	87,305	64,232	73.6%	-15.5%
50+	658	413	62.8%	20,405	16,825	82.5%	-19.7%
Total	11,318	6,362	56.2%	360,819	258,668	71.7%	-15.5%

Source: Datatel

Students who are 50 and over have the highest six-term average success rate among online students, but this is in comparison to the 82.5% success rate which this group enjoys among non-online students, a -19.7% difference. The next highest six-term average success rates among both online and non-online students were those of students in the 25-49 group (58.1% compared to 73.6%, a -15.5% difference). The lowest success rate among both online and non-online students was among the under-25 group, but the success rates differ markedly here as well (54.0% compared to 70.2%, a -16.2% difference). The difference of -0.02 of the under-25 online group success rate (0.56) from the average online success rate ((0.56) is statistically significant at the 0.10 level ($p=0.068$). (See Appendix B.) The range of success rates among online students is narrower (62.8% - 54.0%, or 8.8%) than the range among non-online students (82.5% - 70.2%, or 12.3%).

You are more likely to succeed as an online student if you are 50 years of age or above; however, your success rate is likely to be considerably lower than if you attended similar classes in person.

Table 6.D.2 Summary of Retention Rate Differences by Age, Fall 2002—Spring 2005

Term	Age	Online			Non-Online			Difference
		Total	Retention	Ret Rate	Total	Retention	Ret Rate	
Fall 2002	< 25	621	379	61.0%	46,129	37,552	81.4%	-20.4%
	25-49	551	391	71.0%	15,031	12,178	81.0%	-10.1%
	50+	99	78	78.8%	3,531	3,054	86.5%	-7.7%
Spring 2003	< 25	594	438	73.7%	40,633	33,883	83.4%	-9.7%
	25-49	706	527	74.6%	16,837	14,083	83.6%	-9.0%
	50+	90	75	83.3%	4,131	3,650	88.4%	-5.0%
Fall 2003	< 25	875	577	65.9%	43,987	36,512	83.0%	-17.1%
	25-49	762	539	70.7%	13,619	11,405	83.7%	-13.0%
	50+	90	70	77.8%	3,041	2,705	89.0%	-11.2%
Spring 2004	< 25	1,030	719	69.8%	39,878	32,917	82.5%	-12.7%
	25-49	906	601	66.3%	16,316	13,441	82.4%	-16.0%
	50+	125	96	76.8%	3,713	3,308	89.1%	-12.3%
Fall 2004	< 25	1,179	860	72.9%	41,814	34,624	82.8%	-9.9%
	25-49	830	645	77.7%	13,026	10,828	83.1%	-5.4%
	50+	110	87	79.1%	2,940	2,624	89.3%	-10.2%
Spring 2005	< 25	1,621	1,213	74.8%	40,668	33,163	81.5%	-6.7%
	25-49	985	779	79.1%	12,476	10,370	83.1%	-4.0%
	50+	144	114	79.2%	3,049	2,720	89.2%	-10.0%
	Total	11,318	8,188	72.3%	360,819	299,017	82.9%	-10.5%

Term	Age	Online			Non-Online			Difference
		Total	Retention	Ret Rate	Total	Retention	Ret Rate	
Fall 2002 to Spring 2005	< 25	5,920	4,186	70.7%	253,109	208,651	82.4%	-11.7%
	25-49	4,740	3,482	73.5%	87,305	72,305	82.8%	-9.4%
	50+	658	520	79.0%	20,405	18,061	88.5%	-9.5%
	Total	11,318	8,188	72.3%	360,819	299,017	82.9%	-10.5%

Source: Datatel

Students who are 50 and over have the highest six-term average retention rate among online students (79.0%), but this is in comparison to the 88.5% success rate which this group enjoys among non-online students, a -9.5% difference. The next highest six-term average retention rates among both online and non-online students were those of students in the 25-49 group (73.5% compared to 82.8%, a -9.4% difference). The lowest retention rate among both online and non-online students was among the under-25 group, but the retention rates differ markedly here as well (70.7% compared to 82.4%, an -11.7% difference).

You are more likely to last through the semester as an online student if you are 50 years of age or above; however, your retention rate is likely to be considerably lower than if you attended similar classes in person.

6.E. Ethnicity

Table 6.E.1 Summary of Success Rate Differences by Ethnicity, Fall 2002—Spring 2005

Term	Ethnicity*	Online			Non-Online			Difference
		Total	Succ	Succ Rate	Total	Succ	Succ Rate	
Fall 2002	Afr-Amer	75	31	41.3%	3,115	1,762	56.6%	-15.2%
	Asian	215	112	52.1%	11,733	8,338	71.1%	-19.0%
	Hispanic	105	34	32.4%	6,991	4,546	65.0%	-32.6%
	White	722	395	54.7%	29,516	21,688	73.5%	-18.8%
Spring 2003	Afr-Amer	90	28	31.1%	3,075	1,692	55.0%	-23.9%
	Asian	231	144	62.3%	11,728	8,516	72.6%	-10.3%
	Hispanic	108	50	46.3%	6,642	4,454	67.1%	-20.8%
	White	768	468	60.9%	30,710	22,905	74.6%	-13.6%
Fall 2003	Afr-Amer	120	46	38.3%	3,115	1,762	56.6%	-18.2%
	Asian	275	156	56.7%	11,733	8,338	71.1%	-14.3%
	Hispanic	159	75	47.2%	6,991	4,546	65.0%	-17.9%
	White	923	495	53.6%	29,516	21,688	73.5%	-19.8%
Spring 2004	Afr-Amer	94	33	35.1%	3,105	1,799	57.9%	-22.8%
	Asian	399	249	62.4%	11,722	8,440	72.0%	-9.6%
	Hispanic	195	85	43.6%	6,899	4,566	66.2%	-22.6%
	White	1,109	614	55.4%	28,822	21,458	74.5%	-19.1%
Fall 2004	Afr-Amer	123	34	27.6%	3,450	1,883	54.6%	-26.9%
	Asian	386	253	65.5%	10,918	7,750	71.0%	-5.4%
	Hispanic	214	103	48.1%	7,086	4,544	64.1%	-16.0%
	White	1,132	665	58.7%	27,543	20,149	73.2%	-14.4%
Spring 2005	Afr-Amer	172	50	29.1%	3,162	1,756	55.5%	-26.5%
	Asian	544	337	61.9%	10,487	7,436	70.9%	-9.0%
	Hispanic	287	141	49.1%	6,912	4,566	66.1%	-16.9%
	White	1,362	796	58.4%	26,807	19,852	74.1%	-15.6%
	Total	9,808	5,394	55.0%	301,778	214,434	71.1%	-16.1%

*The Ethnic categories Native American, Other Non-White, and Unknown were not included. "Asian" includes Asian, Filipino and Pacific Islander

Group Totals and Average Success Rates							
Ethnicity*	Online			Non-Online			Difference
	Total	Succ	Succ Rate	Total	Succ	Succ Rate	
Afr-Amer	674	222	32.9%	19,022	10,654	56.0%	-23.1%
Asian	2,050	1,251	61.0%	68,321	48,818	71.5%	-10.4%
Hispanic	1,068	488	45.7%	41,521	27,222	65.6%	-19.9%
White	6,016	3,433	57.1%	172,914	127,740	73.9%	-16.8%
Total	9,808	5,394	55.0%	301,778	214,434	71.1%	-16.1%

Source: Datatel

The top-performing ethnic group among online students was Asians/Pacific-Islanders, with a 61.0% six-term average success rate; however, there is a difference of -10.4% when that is compared with the success rate of non-online students (71.5%). Next-highest among online students were the White students (57.1%), whose success rate compared to that of non-online students (73.9%) was different by -16.8%. Third-ranked were Hispanic students, with a 45.7% rate among online students compared with a 65.6% rate among non-online students, for a difference of -19.9%. And fourth-ranked were African-American students, with a 32.9% success rate among online students and a 56.0% success rate among non-online students, for a difference of -23.1%, the largest difference of all. The difference of the African-American online group success rate (0.33) from the average online success rate is statistically significant at the 0.05 level ($p=0.045$). It is imperative that the success rates for Hispanic and African-American students be improved, and especially among online students. Asian online students perform the best, but there is still a -10.4% difference between them and their non-online counterparts.

Table 6.E.2 Summary of Retention Rate Differences by Ethnicity, Fall 2002—Spring 2005

Term	Ethnicity*	Online			Non-Online			Difference
		Total	Retention	Ret Rate	Total	Retention	Ret Rate	
Fall 2002	Afr-Amer	75	45	60.0%	3,115	2,338	75.1%	-15.1%
	Asian	215	149	69.3%	11,733	9,970	85.0%	-15.7%
	Hispanic	105	52	49.5%	6,991	5,458	78.1%	-28.5%
	White	722	490	67.9%	29,516	26,354	89.3%	-21.4%
Spring 2003	Afr-Amer	90	52	57.8%	3,075	2,277	74.0%	-16.3%
	Asian	231	172	74.5%	11,728	9,802	83.6%	-9.1%
	Hispanic	108	76	70.4%	6,642	5,397	81.3%	-10.9%
	White	768	587	76.4%	30,710	26,032	84.8%	-8.3%
Fall 2003	Afr-Amer	120	81	67.5%	3,115	2,371	76.1%	-8.6%
	Asian	275	188	68.4%	11,733	9,804	83.6%	-15.2%
	Hispanic	159	102	64.2%	6,991	5,611	80.3%	-16.1%
	White	923	619	67.1%	29,516	24,835	84.1%	-17.1%
Spring 2004	Afr-Amer	94	53	56.4%	3,105	2,331	75.1%	-18.7%
	Asian	399	304	76.2%	11,722	9,700	82.8%	-6.6%
	Hispanic	195	108	55.4%	6,899	5,489	79.6%	-24.2%
	White	1,109	756	68.2%	28,822	24,103	83.6%	-15.5%
Fall 2004	Afr-Amer	123	71	57.7%	3,450	2,596	75.2%	-17.5%
	Asian	386	307	79.5%	10,918	9,080	83.2%	-3.6%
	Hispanic	214	143	66.8%	7,086	5,678	80.1%	-13.3%
	White	1,132	854	75.4%	27,543	23,182	84.2%	-8.7%
Spring 2005	Afr-Amer	172	108	62.8%	3,162	2,348	74.3%	-11.5%
	Asian	544	442	81.3%	10,487	8,518	81.2%	0.0%
	Hispanic	287	208	72.5%	6,912	5,467	79.1%	-6.6%
	White	1,362	1,039	76.3%	26,807	22,392	83.5%	-7.2%
	Total	9,808	7,006	71.4%	301,778	251,133	83.2%	-11.8%

*The Ethnic categories Native American, Other Non-White, and Unknown were not included.
 "Asian" includes Asian, Filipino and Pacific Islander

Term	Ethnicity*	Online			Non-Online			Difference
		Total	Retention	Ret Rate	Total	Retention	Ret Rate	
Fall 2002 To Spring 2005	Afr-Amer	674	410	60.8%	19,022	14,261	75.0%	-14.1%
	Asian	2,050	1,562	76.2%	68,321	56,874	83.2%	-7.1%
	Hispanic	1,068	689	64.5%	41,521	33,100	79.7%	-15.2%
	White	6,016	4,345	72.2%	172,914	146,898	85.0%	-12.7%
	Total	9,808	7,006	71.4%	301,778	251,133	83.2%	-11.8%

Source: Datatel

The top-performing ethnic group among online students were the Asians and Pacific-Islanders, with a 76.2% six-term average retention rate; however, there is a difference of -7.1% when that is compared with the retention rate of non-online students (83.2%). Next-highest among online students were the White students (72.2%), whose retention rate compared to that of non-online students (85.0%) was different by -12.7%. Third-ranked were Hispanic students, with a 64.5% rate among online students compared with a 79.7% rate among non-online students, for a difference of -15.2% (the largest difference). And fourth-ranked were African-American students, with a 60.8% retention rate among online students and a 75.0% retention rate among non-online students, for a difference of -14.1% (the second-largest difference). It is imperative that the retention rates for Hispanic and African-American students be improved, and especially among online students.

7. Overall Assessment and Recommendations

Distance education courses have become an increasingly popular mode of instruction and learning at community colleges over the past five years, and there may be even greater increases in the number of distance education courses and in online enrollment in the next few years. There was 255% growth in distance education course enrollments in public U.S. 2-year colleges over the past six years. Distance education courses could be an important factor in the rescue and reversal of declining enrollment rates at some California community colleges.

At Diablo Valley College over the past five years, online course offerings expanded phenomenally, exceeding by far the overall enrollment growth during this period. Summer terms had a twenty-fold increase, fall terms a 270% increase, and spring terms a 231% increase over five years. Online courses accounted for 4.4% of the total FTES at DVC in 2004-05. DVC's online FTES in 2004-05 was 774.2, compared with 946.2 at DeAnza and 549.7 at San Diego Mesa, two peer institutions.

The top five distance education disciplines in terms of online course enrollment in the past five years were English, Business, Mathematics, Information Technology and Social Sciences. The top five sub-disciplines were English, Math, Accounting, Business and Computer Information Systems. The top five courses were Freshman English, Critical Thinking, Elementary Algebra, Intermediate Algebra, and Elementary Statistics.

Seventy-four percent of online sections are 18 weeks in duration.

Women accounted for 62.4% of DVC's online course enrollments in fall 2004, compared with 51.5% among overall students. Ethnicity proportions were similar to the student body as a whole over five fall terms. There were 12% less online students in the 19 or younger age group, and 6% more in the 25-29 age group. Four out of the seven geographic areas from which DVC online students come experienced growth rates higher than 200%. Solano County, the furthest distant from DVC, had the greatest growth rate for online students (250%), but the greatest growth in student numbers (552) over five fall terms was in North Contra Costa County, the area closest to DVC. 55% of online students have a goal of transfer to a 4-year institution, compared to 43% of DVC students as a whole.

The sobering elements among all this good news were online students' drop-out rate and success rate, by comparison with the college as a whole. Online students had a much higher average drop rate (29.5%) than DVC students as a whole (19.3%) over five years. For each of the letter grades denoting success (A, B, C, and CR), online students performed two to nearly five percentage points worse than DVC students. Online students' success and retention rates are at considerably lower levels than those for DVC as a whole. Online student success has been as low as 49% (fall 2001) and as high as 62% (fall 2000), while the lowest DVC student success rate was 68% (fall 2000) and the highest was 84% (spring 2003). The gap between online student's average retention rate (71%) and DVC's (81%) was 10 percentage points. To understand how to raise the success and retention rates of online students and reduce the drop rate, we have to understand which students are more likely to succeed in distance education courses.

In order to understand why online students' success and retention rates are consistently lower than those of non-online students, the success and retention rates of these two completely distinct groups were compared by discipline, course load, gender, age and ethnicity in order to discover ways to ameliorate problems and create an environment of higher performance possibilities for online students.

Predictors of success among online students need to be taken into account as online course curricula are planned. Disciplines such as Administration of Justice, Geography and English have seen comparatively high success rates among Diablo Valley College online students, whereas Social Sciences, Computer Information Systems, and Business Management have seen low success rates among online students. Online courses which seem to result in performance problems may need to be discontinued, and online courses likely to lead to student success, for whatever reason, could be added. Hybrid courses, which introduce some face-to-face class time each week, could be substituted for purely online courses where success rates are low.

Full-time students who are on a transfer track are likely to achieve online success rates which are around 59.5% at Diablo Valley College, even though they might achieve 15.9% higher success rates if they were in non-online courses. Students with a course load of 6 to less than 12 units should be advised that their success rate would likely be 12.6% higher if they were taking non-online courses. Students taking fewer than 6 units need to know that they have a likelihood of success rates which are 15.1% higher if they enroll in non-online rather than online courses.

Counselors could inform male students that they could have success rates which are 16.0% higher if they enroll in non-online courses as compared with online, and women could be informed that their difference is 16.3%.

The age group that most needs to receive information about the differing success rates in online and non-online courses is students who are less than 25 years old. They have an online success rate of 54.0% and could possibly be enjoying a success rate of 70.2% if they enrolled in non-online courses instead.

Hispanic and African-American students should be advised that enrolling in online courses may not be in their best interests. With online success rates of 45.7% and 32.9% respectively, they are far more likely to succeed in non-online courses. African-American students could have success rates which are 23.1% higher, and Hispanic students rates which are 19.9% higher.

As we improve access for students who are at a distance from Diablo Valley College or enrolling in online courses for other reasons, we need to protect their chances of success as well. Counselors and advisers need to inform students of the performance risks in online instruction, and guide students who would be most at risk in the direction of hybrid or conventional classroom instruction.

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APPENDIX

A. Seat Counts by Course

Table 9.A.1 Seat Counts by Courses, Fall Terms 2000 to 2004

Course	FA00 Seat Count	FA01 Seat Count	FA02 Seat Count	FA03 Seat Count	FA04 Seat Count
ADJUS-120					57
ADJUS-122					28
ANTHR-130			37	36	69
ARTHS-197					32
ASTRO-128				19	47
BUS-101		37	29	72	49
BUS-103				59	29
BUS-109					72
BUS-161					31
BUS-240					31
BUS-261	22			37	27
BUSAC-150A				18	
BUSAC-150D			35		43
BUSAC-181				50	68
BUSAC-185				46	48
BUSAC-186	32	38	36	78	73
BUSAC-187		15	20	25	42
BUSAC-188					16
BUSIM-110	38	31	22	29	26
CIS-099A		25	30	34	38
CIS-099B		34	48	44	41
CIS-099C			45	32	23
CIS-099D			19	27	18
CIS-099E			19	16	
CIS-099G					16
COMSC-095			46	26	20
COMSC-096			29	18	27
COMSC-100L	48	54	51	29	48
COMSC-150T	12				
COUNS-105		36			7
ENGIN-110	16	24	21	26	22
ENGL-122	114	143	116	108	109
ENGL-123	17	38	55	54	47
ENGL-126	65	58	103	132	81
ENGL-222	84	62	9	32	44
ENGL-223				21	20
ENGL-224				20	21
GEOG-140	36	60	37	29	28
HIST-120				30	92
HIST-126				65	58
JRNAL-150				27	20
L-114	32	35			
LS-121				26	111
LS-150E			24		
MATH-110			100	112	116
MATH-115			38	37	13
MATH-120		62	61	71	98
MATH-124	24	40	32	28	18
MATH-142	27	57	62	69	57
MATH-192			24	21	
MATH-195			15		
MUSLT-110				34	70
OCEAN-109	42	84	63	73	60
SOCS-123			20		
SPAN-110			25		
SPAN-111				17	11
Total	609	933	1,271	1,727	2,122

B. Statistical Significance of Differences in Success Rates, Fall 2002 to Spring 2005

Table 9.B.1 Statistical Significance of Differences Between Success Rates of Ethnic Groups, Fall 2002 to Spring 2005

Statistics	Afr-Am	Asian	Hispanic	White	Total and Statistics
Valid Course Count	674	2,050	1,068	6,016	9,808
FA02-SP05 ONLINE Success Rate	0.33	0.61	0.46	0.57	0.55
St. Deviation	0.05	0.05	0.06	0.03	0.12
Difference from Average	-0.22	0.06	-0.09	0.02	
Group	2-Tailed P-Value of a Z-Test	1-Tailed P-Value of a Z-Test		Significant at the .10 Level	Significant at the .05 Level
Overall	0.834184	0.417092	Average	0.55	0.55
Afr-Am	0.003339	0.001669	Break	0.41	0.39
Asian	0.975629	0.487814	Difference	-0.14	-0.16
Hispanic	0.281238	0.140619	p-value	0.0865201	0.044958724
White	0.906722	0.453361			

(z-test with 2-tailed p-value)

Notes:
 African-American success rate has a -0.22 difference from average success rate; it therefore is statistically significant at the 0.10 level and at the 0.05 level.
 No other success rate differences between ethnic groups are significant.

To discover which online ethnic group success rates, if any, were significantly different from the average online success rate, inference for a single proportion is carried out for each ethnic group. The null hypothesis is “There is no difference between the success rate of each online ethnic group and the average success rate for all online students.”

This is a large-sample z significance test. The average online success rate (55%) is the test statistic. If any of the online ethnic group success rates are of sufficient distance from the test statistic to cause the p-value to sink beneath 0.1 or 0.05, the difference is statistically significant at the 0.10 level or the 0.05 level respectively.

The African-American online group success rate (0.33) is different by -0.22 from the average success rate (0.55). It is therefore statistically significant at the 0.10 level (p = 0.087) and also at the 0.05 level (p = 0.045). No other success rate differences between ethnic groups are significant.

B. Statistical Significance of Differences in Success Rates, Fall 2002 to Spring 2005 (cont.)

Table 9.B.2 Statistical Significance of Differences Between Success Rates of Age Groups, Fall 2002 to Spring 2005

Statistics	< 25	25-49	50+	Total and Statistics	
Valid Course Count	5,920	4,740	658	11,318	
FA02-SP05 ONLINE Success Rate	0.54	0.58	0.63	0.56	
St. Deviation	0.03	0.03	0.05	0.05	
Difference from Average	-0.02	0.02	0.07		
Group	2-Tailed P-Value of a Z-Test	1-Tailed P-Value of a Z-Test		Significant at the .10 Level	Significant at the .05 Level
Overall	0.233472	0.116736	Average	0.56	0.56
< 25	0.068169	0.034085	Break	0.54	0.53
25-49	0.472383	0.236191	Difference	-0.02	-0.03
50+	0.940484	0.470242	p-value	0.0681695	0.033180762

(z-test with 2-tailed p-value)

Notes:
 The success rate of students under 25 has a -0.02 difference from the average success rate; it therefore is statistically significant at the 0.10 level but not at the 0.05 level.
 No other success rate differences between age groups are significant.

To discover which online age group success rates, if any, were significantly different from the average online success rate, inference for a single proportion is carried out for each ethnic group. The null hypothesis is “There is no difference between the success rate of each online age group and the average success rate for all online students.”

This is a large-sample *z* significance test. The average online success rate (56%) is the test statistic. If any of the online ethnic group success rates are of sufficient distance from the test statistic to cause the p-value to sink beneath 0.1 or 0.05, the difference is statistically significant at the 0.10 level or the 0.05 level respectively.

The under-25 online group success rate (0.54) is different by -0.02 from the average success rate (0.56). It is therefore statistically significant at the 0.10 level ($p = 0.068$), but not at the 0.05 level. No other success rate differences between age groups are significant.

B. Statistical Significance of Differences in Success Rates, Fall 2002 to Spring 2005 (cont.)

Table 9.B.3 Statistical Significance of Differences Between Success Rates of Unit Load Groups, Fall 2002 to Spring 2005

Statistics	< 6	6 - < 12	>= 12	Total and Statistics	
Valid Course Count	2,796	3,861	4,661	11,318	
FA02-SP05 ONLINE Success Rate	0.58	0.51	0.60	0.56	
St. Deviation	0.01	0.04	0.03	0.05	
Difference from Average	0.01	-0.05	0.03		
Group	2-Tailed P-Value of a Z-Test	1-Tailed P-Value of a Z-Test		Significant at the .10 Level	Significant at the .05 Level
Overall	0.513817	0.256909	Average	0.56	0.56
< 6	0.686153	0.343076	Break	0.52	0.53
6 - < 12	0.048179	0.024090	Difference	-0.04	-0.03
>= 12	0.880561	0.440280	p-value	0.0777628	0.038639927

(z-test with 2-tailed p-value)

Notes:
 The success rate of students with 6 - < 12 course units has a -0.05 difference from the average success rate; it therefore is statistically significant at both the 0.10 level and the 0.05 level. No other success rate differences between unit load groups are significant.

To discover which online course unit load group success rates, if any, were significantly different from the average online success rate, inference for a single proportion is carried out for each unit load group. The null hypothesis is “There is no difference between the success rate of each online unit load group and the average success rate for all online students.”

This is a large-sample *z* significance test. The average online success rate (56%) is the test statistic. If any of the online ethnic group success rates are of sufficient distance from the test statistic to cause the *p*-value to sink beneath 0.1 or 0.05, the difference is statistically significant at the 0.10 level or the 0.05 level respectively.

The 6-<12 units online group success rate (0.51) is different by -0.04 from the average success rate (0.56). It is therefore statistically significant at both the 0.10 level (*p* = 0.077) and at the 0.05 level (*p* = 0.039). No other success rate differences between unit load groups are significant.

C. DVC Focus Group

DVC Focus Group Distance Education March 22, 2006

A focus group met on March 8, 2006 at Diablo Valley College to discuss problems and benefits of distance education. Students, faculty and online administrators participated. The following observations matched many of the points found in published literature on distance education.

Some advantages:

1. Online education adapts to student schedules and fits their needs more flexibly.
2. Online education reaches some people that would not otherwise be reached.
3. Classes are more open, and more reticent students are not disadvantaged. Every student participates.
4. The geographical influence of DVC is being expanded greatly by online courses.
5. Students who are at DVC and then move away either temporarily or permanently can continue and finish what they have begun at DVC.
6. One teacher said she gets to know her online students better than she does her campus students.
7. Students who are overseas can begin online and then finish with campus classes after they return.

Some disadvantages:

1. Teachers miss seeing students face to face.
2. There are media problems such as freezing of web pages and difficulties in signing up for labs.
3. There is an inability to sit down and draw a diagram to illustrate something. The immediacy of personal interaction is missing.
4. There are no personal meetings with students, and drops result.
5. Students need a better system of being reminded to drop by the drop date.
6. Proctored facilities for exams are difficult to find at a distance.
7. Orientations and exams get scheduled in such a way that some students cannot make it at that time.

Services:

1. Now registration for online courses is available by phone or online.
2. There is a need for adding courses to be available online.
3. DVC consultants have demonstrated their helpfulness.
4. Although training of faculty in online teaching is good, much more training is needed.
5. Every online class should have a Web-CT meeting place.
6. Informational pages are needed.
7. There are web links that don't go anywhere.

8. E-mail reminders about drop dates and exam dates, etc., have been shown to improve success and retention.
9. There is a way to reach all online students now. They are downloaded into WebAdvisor.
10. Teachers can e-mail whichever students they need to reach.
11. Teachers need to be savvy with the technologies.

Ways to improve success and retention:

1. E-mail students often and stay in touch. Provide good explanations of what is required of the students.
2. Interact as much as possible with online students.
3. Encourage students who are mature and able to teach themselves to sign up for online courses, but counsel students who are young and inexperienced and need structure, that campus classes might suit them better.
4. Discussion boards and chat rooms can be lively and help students interact.
5. A weekly discussion question is a good tool.
6. Let master teachers train other teachers.
7. Require online faculty to be trained.
8. Remind students of class times, test times, drop times, all other essential information.
9. Increase communications when assignments are due.
10. Online courses can be more work for students, not less, and they have to understand this.
11. We need a profile of the kinds of students who will benefit the most from online instruction.

D. Literature Review

Literature Review Distance Education March 22, 2006

David Diaz, in “Online Drop Rates Revisited” (2002), says that independent learners and older students learn better online. Teachers should give more attention to students’ readiness prior to a distance class. Teachers need to be better trained for online teaching. He says high drop rates are not necessarily indicative of academic non-success.

“Reevaluating Course Completion in Distance Education: Avoiding the Comparison Between Apples and Oranges” (2004) by Scott Howell, Dwight Laws, and Nathan Lindsay claims that online courses are better compared with each other than with traditional campus courses. The authors argue that completion rates are calculated differently at different institutions, and therefore there are no consistent comparisons between institutions. “The widespread belief that completion is lower in distance education does not seem well-founded.” (Certainly many other studies refute this claim.) They quote a study by King (2001) that concluded that “successful completion of other distance education courses is a good predictor of students who are likely to complete subsequent courses.” (However, we want to prevent failure for the students who have never taken an online course.) The “best practices” for improvement of completion and retention which they present at the end of this article are very good. They include:

1. The need for an orientation program before an online course begins.
2. Providing students with full technological information about modes of delivery.
3. Teachers will be attentive to students’ relative readiness and measure it by skill surveys; they will provide online orientation courses and help desks to reduce drops related to technical difficulties; they will seek training in online teaching techniques.
4. Teachers will give special attention to students with low levels of self-directedness; they will establish personal contact with students; they will encourage mentoring or study-buddies; and they will reach out to students having difficulties.
5. Smaller classes make it easier to build community and connection.
6. Teachers will be available to their students.
7. Offer financial assistance or financial counseling.
8. Provide academic and basic skill development opportunities.
9. Use information technology to build community.
10. Provide assistance in finding special-needs services, such as housing and transportation.

Sarah Carr, in “As Distance Education Comes of Age, the Challenge Is Keeping the Students” (2000), says we need to pay attention to retention. This means teachers must be well trained in online teaching techniques. Students may need instructor flexibility as they juggle busy schedules. Students need instructors to establish some form of personal contact. “Course-completion rates are often 10 to 20 percentage points higher in traditional courses than in distance offerings.” One community college found that an 11 to 15 percentage-point difference between success rates in regular versus online courses had stayed fairly consistent for 18 years. At the author’s community college, the course-completion rate for 35 Internet courses

offered in fall 1999 was 58%, versus 71 percent for traditional courses. Similar differences are reported elsewhere. But when one instructor switched to a more interactive Internet program that allowed him to hold regular chats and organize e-mail messages more efficiently, his course-completion rates jumped from 62 percent to 90 percent.

Kathleen Moore, Jeffrey Bartkovich, Marie Fetzner, and Sherrill Ison, in "Success in Cyberspace: Student Retention in Online Courses" (2002), studied 71 valid survey responses from a sample of 500 online students. They found that factors which had a negative impact on a student's chance for completing an online course included: large course load; lack of experience in higher education; lack of experience with online courses; busy lives outside of school; young age; and lack of easy access to computers. Additional support for online students is now being offered at the authors' Monroe Community College: enhanced awareness of the rigors and writing-intensive nature of online courses; face-to-face pre-course student orientations; an Assessment of Readiness checklist and a video help students identify their own level of readiness for the online environment; assignment of a technical tutor to students in some online courses; and provision of an introductory CD explaining how to get started online.

Jeffrey Young, in "Distance and Classroom Education Seen as Equally Effective" (2000), discusses the work of Thomas L. Russell, who tracks studies of distance-education methods. Most studies that Russell had seen showed no difference in the effectiveness of distance education and traditional classroom instruction.