Reducing Withdrawal Rates in Distance Learning Courses

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Abstract

Distance learning courses have been shown to be as effective as face-to-face classes for student learning. However, these courses suffer higher withdrawal rates than courses taught in a traditional classroom setting. The New Jersey Institute of Technology surveyed students that had withdrawn from one or more distance learning courses to identify factors that lead to withdrawal as a first step in formulating strategies to reduce overall withdrawal rates. Factors surveyed covered preparedness for the course, communication with the instructor, teaching, course materials, technology, course expectations, participation, and the learning environment. Primary factors have been identified, including the level of interaction between the instructor and the class, and the perceived difficulty of the distance learning class as compared to the face-to-face version of the same course. This paper presents the results of this study and recommends strategies to reduce the withdrawal rate of students in distance learning courses.

1. Introduction

There are several studies of the performance of students in traditional, face-to-face courses offered in distance learning mode, for example [1]. In general, these studies show no significant difference in student performance between the two modes of instruction. However, they are typically limited to the performance of students that complete the course, and do not account for students that withdraw before the end of the semester. Studies have shown that students in distance learning courses have significantly higher rates of withdrawal than students in equivalent face-to-face versions of the same course [2].

In this paper, we examine the reasons that students withdraw from distance learning courses and factors that significantly impact the withdrawal rate. This study is based on a survey of students that have withdrawn from various undergraduate and graduate courses in computer and information sciences (CIS) at the New Jersey Institute of Technology, and considers factors relating to the students preparedness for the distance learning course; level of communication with the instructor; teaching and course materials; technology issues; student course expectations; student participation in the class; and the learning environment.

The rest of this paper is organized as follows. The research questions and research design are presented next, followed by a description of the data collection and analysis procedures.

Results are then given and discussed, as are best practices to reduce withdrawal rates for distance learning courses discerned from this study. A summary and recommendations for future work conclude this paper.

2. Research Questions

There are six research questions for this study.

1. Is there a difference in preparation or demographics between students who enrolled in distance learning (DL) and face-to-face (FTF) modalities?
2. Is the difference in withdrawal rate between the DL courses and FTF courses based on cumulative GPA and SAT scores?
3. Is there a relationship between students' GPA and their performance in DL courses?
4. Are students who failed the CIS DL courses more likely to pass if they repeat those courses in DL or FTF format?
5. What would be the impact of policies establishing required cumulative GPA's for enrollment in CIS DL courses?
6. Can we determine any criteria for success from comments given by students for dropping DL courses?

3. Procedures and Data

The study consists of two parts: data analysis and survey analysis. Data were analyzed for all students, and the survey was administered only to the students who withdrew from CIS courses. College of Computer Sciences (CCS) student performance was compared for the two modes, DL and face-to-face, for CIS courses. Students were divided into two groups, undergraduate and graduate, and the groups' passing rates, withdrawals, and performance after withdrawals were analyzed. The sample included all CCS students who were enrolled in CIS courses during the fall 2001 and/or spring 2002 semesters.

All course records from fall 1995 to spring 2002 of the CCS students who were enrolled in CIS courses in fall 2001 and/or spring 2002 semesters were analyzed. The total sample of students (seats) for FTF courses = 15,468. The total sample of students (seats) for DL courses = 2,554.

Two data sets were created, one for the undergraduate students and another for graduate students. Datasets included student demographic information and major(s); SAT scores for undergraduate students and GRE scores for graduate students; mode of study (DL or FTF); grades for all CIS courses taken by the student; the instructor's name; and the time when the course was taken.

4. Limitations and Delimitations of the Study

The primary limitation of this study is its quasi-experimental design, because students could not be randomly assigned to DL and FTF courses.

There are three major delimitations of the study:

(a) Records prior to 1995F were not included.
(b) Undergraduate records of graduate students (and vice-versa) were not included.
(c) Records with no grades, and course grades coded as AU (audited), S (satisfactory), U (unsatisfactory), and P (passed) were not included.

5. Results

This section details the analysis and results obtained for each of the research questions in this study.

5.1 Is there a difference in preparation or demographics between DL and FTF students?

The compatibility of the FTF and DL undergraduate students was analyzed based on SAT scores and on demographic variables for those who completed the course and those who withdrew from it. Table 1 shows statistical results based on SAT scores.

Table 1: SAT scores for the students who enrolled in DL and FTF Classes

	Mean, all students	Mean, Students who Withdrew	Mean, Students who Completed
DL (N= 2,915)	1089	1106	1085
FTF (N=18,378)	1094	1078	1096

Tests of statistical significance found that the difference in SAT scores between students who completed and withdrew from the courses is near that due to the factors other than sampling (94% with the standard probability of 95%, see Box 1).

Box 1: Test of statistical significance of difference in SAT scores between those students who completed and withdrew from the DL courses.

DL Withdrawal and DL Completed
DL Withdrawal mean score : 1106 (N =253)
DL Completed mean score : 1085 (N = 1154)
p = 0.0583 , t = 1.8950

Similar test found that there is statistically significant and meaningful difference between SAT scores of two groups of students: those who withdrew from the DL and those who withdrew from the FTF courses, as shown in Box 2.

Box 2: Test of statistical significance of difference between SAT scores of students who withdrew from FTF and DL courses

DL Withdrawal and FTF Withdrawal
DL Withdrawal mean score : 1106 (N = 253)
FTF With mean score : 1078 (N = 1142)
p = 0.0109 , t = 2.5506

Data in Table 1 and Boxes 1 and 2 can be interpreted keeping in mind that insufficient communication between the instructor and a student in the DL courses often causes good students to become concerned about the possibility of receiving a bad grade and consequently reducing their overall GPA. These students sometimes preferred to withdraw from the class to protect their grade point averages. This was confirmed by the survey conducted among the DL students who withdrew from the course.

The compatibility of the FTF and DL undergraduate students was also analyzed based on demographic variables. This data is shown in Table 2. Note that this table presents data for course enrollments; one student might be enrolled in more than one CIS course.

Table 2: Distribution of the CIS course enrollment by seat by gender and by ethnicity

Ethnicity	Gender	DL seats % row	FTF seats % row	Total seats % row
Asian	F	343 (15.9%)	1820 (84.1%)	2163 (100.0%)
	M	733 (11.9%)	5428 (88.1%)	6161 (100.0%)
African American	F	109 (24.4%)	338 (75.6%)	447 (100.0%)
	M	168 (14.7%)	971 (85.3%)	1139 (100.0%)
Hispanic	F	54 (12.9%)	365 (87.1%)	419 (100.0%)
	M	149 (13.0%)	996 (87.0%)	1145 (100.0%)
American Indian	F	5 (26.3%)	14 (73.7%)	19 (100.0%)
	M	1 (5.9%)	16 (94.1%)	17 (100.0%)
White	F	84 (16.7%)	419 (83.3%)	503 (100.0%)
	M	751 (14.6%)	4383 (85.4%)	5134 (100.0%)
Unknown	F	65 (11.1%)	519 (88.9%)	584 (100.0%)
	M	291 (14.9%)	1658 (85.1%)	1949 (100.0%)
Non US	F	26 (7.3%)	329 (92.7%)	355 (100.0%)
	M	136 (10.8%)	1122 (89.2%)	1258 (100.0%)
Total		2915 (13.7%)	18378 (86.3%)	21293 (100.0%)

Overall, statistical analysis indicates that there is no difference in SAT scores for the students who enrolled in DL and FTF courses. However, there is a significant difference in SAT scores for students who withdrew from these courses. Students withdrawing from DL courses had higher SAT scores than students withdrawing from FTF courses. Also, the SAT scores for students completing FTF courses appears to be slightly higher than for students that completed DL courses.

In terms of demographics, a few trends are noted. The proportion of Asian and African American female students taking DL courses is higher than that for male students from the same racial groups. This is not true for Hispanic and Caucasians; the proportion of female students from these ethnic groups is similar to that of male students. Finally, for all foreign students, the proportion of male students enrolled in DL courses is nearly twice as high as that for female students.

5.2 Is the difference in withdrawal rate between the DL courses and FTF courses based on cumulative GPA and SAT scores?

The distribution of students' withdrawals from CIS courses from 1995 to 2002 was analyzed by GPA. Results are presented in Table 3.

Table 3: Enrollment and withdrawals from CIS courses by current GPA range by mode of study

CIS Courses	G P A							
	Total Seats	< 1.0	1.0- < 1.5	1.5 - < 2.0	2.0 - < 2.5	2.5 - <3.0	3.0 - <3.5	3.5 - 4.0
Total enrollment	21293	104	105	963	4344	7014	5902	2861
Number withdrew	2272	29	26	169	696	807	432	113
Percent withdrew	10.7%	27.9%	24.8%	17.5%	16.0%	11.5%	7.3%	3.9%
DL enrollment	2915	13	11	131	570	957	761	472
Number withdrew	502	8	7	35	147	173	97	35
Percent withdrew	17.2%	61.5%	63.6%	26.7%	25.8%	18.1%	12.7%	7.4%
FTF enrollment	18378	91	94	832	3774	6057	5141	2389
Number withdrew	1770	21	19	134	549	634	335	78
Percent withdrew	9.6%	23.1%	20.2%	16.1%	14.5%	10.5%	6.5%	3.3%

As noted at the outset of the study, the overall withdrawal rates for DL courses are higher than for FTF courses. The analysis indicates that this effect is magnified for students with lower GPAs. The withdrawal of students with GPA of 2.5 and below is markedly higher for DL courses than for FTF courses, and markedly higher than for the DL students with GPA above 2.5. It is important to note that the number of students with GPA's below 2.5 taking DL courses is about 25 percent of the total sample. The results suggest that it is important to monitor this indicator. In spite of this, the withdrawal rate cannot be linked directly to the student GPA. Students with higher GPAs also withdrew from DL courses at a higher rate than they withdrew from FTF courses. For these students, anecdotal evidence indicates that these students often believed that their grade in their DL courses would be lower, and these students withdrew from the DL courses to protect their overall GPAs.

5.3 Is there a relationship between students' GPA and their performance in the DL courses?

Students' grades, withdrawals and failure rates were analyzed by GPA range for all students and for the DL and FTF groups. Tables 4, 5, and 6 summarize these grade distributions for all, DL, and FTF students groups, respectively. Table 7 shows student enrollment, withdrawal, and failure rates in CIS courses for DL and FTF students grouped by student GPA.

Table 4: Grade distribution by GPA for all students

	G P A							Total
	< 1.0	1.0- < 1.5	1.5 - < 2.0	2.0 - < 2.5	2.5 - <3.0	3.0 - <3.5	3.5 - 4.0	
A	1 (0.0%)	6 (0.1%)	47 (0.9%)	337 (6.2%)	1170 (21.4%)	1982 (36.2%)	1932 (35.3%)	5475
B+	0 (0.0%)	4 (0.1%)	62 (1.9%)	373 (11.4%)	1119 (34.2%)	1234 (37.7%)	478 (14.6%)	3270
B	2 (0.1%)	5 (0.1%)	96 (2.6%)	719 (19.2%)	1465 (39.1%)	1222 (32.6%)	241 (6.4%)	3750
C+	2 (0.1%)	6 (0.3%)	96 (4.8%)	552 (27.4%)	831 (41.2%)	481 (23.8%)	49 (2.4%)	2017
C	3 (0.1%)	10 (0.4%)	144 (6.5%)	758 (34.1%)	913 (41.0%)	367 (16.5%)	31 (1.4%)	2226
D	6 (0.7%)	6 (0.7%)	94 (10.9%)	364 (42.2%)	315 (36.5%)	75 (8.7%)	2 (0.2%)	862
F	60 (4.6%)	41 (3.1%)	246 (18.7%)	514 (39.1%)	364 (27.7%)	83 (6.3%)	6 (0.5%)	1314
I	1 (0.9%)	1 (0.9%)	9 (8.4%)	31 (29.0%)	30 (28.0%)	26 (24.3%)	9 (8.4%)	107
W	29 (1.3%)	26 (1.1%)	169 (7.4%)	696 (30.6%)	807 (35.5%)	432 (19.0%)	113 (5.0%)	2272
Total	104 (0.5%)	105 (0.5%)	963 (4.5%)	4344 (20.4%)	7014 (32.9%)	5902 (27.7%)	2861 (13.4%)	21293

Table 5: Grade distribution by GPA for the DL students

	G P A							Total
	< 1.0	1.0- < 1.5	1.5 - < 2.0	2.0 - < 2.5	2.5 - <3.0	3.0 - <3.5	3.5 - 4.0	
A	0 (0.0%)	0 (0.0%)	10 (1.3%)	41 (5.5%)	146 (19.6%)	234 (31.5%)	313 (42.1%)	744
B+	0 (0.0%)	0 (0.0%)	4 (1.0%)	38 (9.0%)	142 (33.7%)	158 (37.5%)	79 (18.8%)	421
B	0 (0.0%)	0 (0.0%)	13 (2.9%)	71 (16.0%)	185 (41.8%)	140 (31.6%)	34 (7.7%)	443
C+	0 (0.0%)	0 (0.0%)	7 (3.2%)	63 (28.8%)	90 (41.1%)	54 (24.7%)	5 (2.3%)	219
C	1 (0.4%)	1 (0.4%)	11 (4.8%)	64 (28.2%)	106 (46.7%)	41 (18.1%)	3 (1.3%)	227
D	0 (0.0%)	0 (0.0%)	7 (7.1%)	47 (48.0%)	34 (34.7%)	10 (10.2%)	0 (0.0%)	98
F	4 (1.7%)	3 (1.3%)	42 (17.8%)	89 (37.7%)	76 (32.2%)	21 (8.9%)	1 (0.4%)	236
I	0 (0.0%)	0 (0.0%)	2 (8.0%)	10 (40.0%)	5 (20.0%)	6 (24.0%)	2 (8.0%)	25
W	8 (1.6%)	7 (1.4%)	35 (7.0%)	147 (29.3%)	173 (34.5%)	97 (19.3%)	35 (7.0%)	502
Total	13 (0.4%)	11 (0.4%)	131 (4.5%)	570 (19.6%)	957 (32.8%)	761 (26.1%)	472 (16.2%)	2915

Table 6: Grade distribution by GPA for the FTF students

	G P A							Total
	< 1.0	1.0- < 1.5	1.5 - < 2.0	2.0 - < 2.5	2.5 - <3.0	3.0 - <3.5	3.5 - 4.0	
A	1 (0.0%)	6 (0.1%)	37 (0.8%)	296 (6.3%)	1024 (21.6%)	1748 (36.9%)	1619 (34.2%)	4731
B+	0 (0.0%)	4 (0.1%)	58 (2.0%)	335 (11.8%)	977 (34.3%)	1076 (37.8%)	399 (14.0%)	2849
B	2 (0.1%)	5 (0.2%)	83 (2.5%)	648 (19.6%)	1280 (38.7%)	1082 (32.7%)	207 (6.3%)	3307
C+	2 (0.1%)	6 (0.3%)	89 (4.9%)	489 (27.2%)	741 (41.2%)	427 (23.7%)	44 (2.4%)	1798
C	2 (0.1%)	9 (0.5%)	133 (6.7%)	694 (34.7%)	807 (40.4%)	326 (16.3%)	28 (1.4%)	1999
D	6 (0.8%)	6 (0.8%)	87 (11.4%)	317 (41.5%)	281 (36.8%)	65 (8.5%)	2 (0.3%)	764
F	56 (5.2%)	38 (3.5%)	204 (18.9%)	425 (39.4%)	288 (26.7%)	62 (5.8%)	5 (0.5%)	1078
I	1 (1.2%)	1 (1.2%)	7 (8.5%)	21 (25.6%)	25 (30.5%)	20 (24.4%)	7 (8.5%)	82
W	21 (1.2%)	19 (1.1%)	134 (7.6%)	549 (31.0%)	634 (35.8%)	335 (18.9%)	78 (4.4%)	1770
Total	91 (0.5%)	94 (0.5%)	832 (4.5%)	3774 (20.5%)	6057 (33.0%)	5141 (28.0%)	2389 (13.0%)	18378

Table 7: Student enrollment, withdrawals and failures in CIS DL and FTF courses by GPA

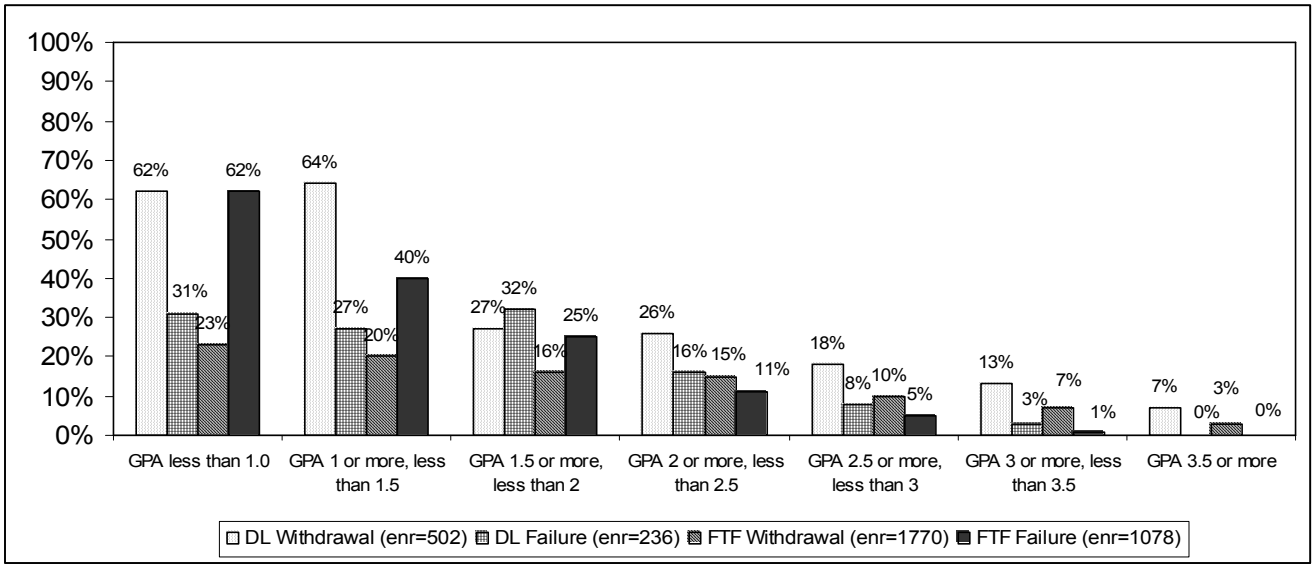
GPA	DL			FTF		
	Enrollment	Withdrawal	Failures	Enrollment	Withdrawal	Failures
< 1.0	13	8 (1.6%)	4 (1.7%)	91	21 (1.2%)	56 (5.2%)
1.0- < 1.5	11	7 (1.4%)	3 (1.3%)	94	19 (1.1%)	38 (3.5%)
1.5 - < 2.0	131	35 (7.0%)	42 (17.8%)	832	134 (7.6%)	204 (18.9%)
2.0 - < 2.5	570	147 (29.3%)	89 (37.7%)	3774	549 (31.0%)	425 (39.4%)
2.5 - <3.0	957	173 (34.5%)	76 (32.2%)	6057	634 (35.8%)	288 (26.7%)
3.0 - <3.5	761	97 (19.3%)	21 (8.9%)	5141	335 (18.9%)	62 (5.8%)
3.5 - 4.0	472	35 (7.0%)	1 (0.4%)	2389	78 (4.4%)	5 (0.5%)
Total	2915	502 (17.2%)	236 (8.1%)	18378	1770 (9.6%)	1078 (5.9%)

From these tables, several conclusions can be drawn.

- There is a statistically significant moderate-to high correlation between student GPA and grades in both DL (.543, p<.0001) and FTF (.535, p<.0001) CIS courses. This is to be expected, since it implies that the best students receive higher grades than average students.
- For the students at all GPA ranges who successfully completed DL and FTF courses, the grade distribution was similar.

The analysis shows that in every GPA category there were significantly more student withdrawals from DL courses than from FTF courses. At the same time, the outcomes were not that obvious with failed courses. Students who had low GPAs and took the course in the FTF mode were more likely to fail than the students who took the course in the DL mode. The numbers for the low GPA students are not very large; however one can notice a trend that DL students tend to fail the courses at a comparable rate with the FTF students, as shown in Figure 1.

Figure 1: Course withdrawals and failures for the DL and FTF students



5.4 Are students who withdrew from or failed the CIS courses more likely to pass if they repeat those courses in DL or FTF format?

To answer this question, we examined the performance of students who withdrew from or failed a course and then repeated that course in either DL or FTF mode. Tables 8-11 show the distribution of the outcomes for these students.

Table 8: Distribution of outcomes for the students who withdrew from the DL courses

Total withdrawals from DL courses	502
Of those, repeated the course	381 (76%)
Repeated the course in DL mode	113 (30%)
Of those, passed	63 (56%)
Repeated the course in FTF mode	268 (70%)
Of those, passed	154 (57%)

Table 9: Distribution of outcomes for the students who failed in DL courses

Total failures in DL courses	236
Of those, repeated the course	120 (51%)
Repeated the course in DL mode	37 (31%)
Of those, passed	26 (70%)
Repeated the course in FTF mode	83 (69%)
Of those, passed	77 (93%)

Table 10: Distribution of outcomes for the students who withdrew from FTF courses

Total, withdrawals from FTF	1,770
Of those, repeated the course	1,113 (55%)
Repeated the course in DL mode	184 (16%)
Of those, passed	104 (57%)
Repeated the course in FTF mode	929 (84%)
Of those, passed	680 (73%)

Table 11: Distribution of outcomes for the students who failed in FTF courses

Total, failures in FTF	1,078
Of those, repeated the course	616 (57%)
Repeated the course in DL mode	78 (13%)
Of those, passed	57 (73%)
Repeated the course in FTF mode	538 (87%)
Of those, passed	423 (79%)

These results present several conclusions that can be used to improve overall student performance. First, these results indicate that students who withdraw from DL courses have the same chance of passing the course if they repeat it in DL mode or in FTF mode. However, students who fail DL courses as much more likely to pass the course if they repeat it in FTF mode. This may be due to the DL students' tendency to withdraw from a course to protect their overall GPA.

These same results do not all hold true for students in FTF courses. Students who withdraw from FTF courses are more likely to pass the course if they repeat the course in FTF format. However, as with students in DL courses, students who fail a course in FTF mode are also more likely to pass the course if they repeat it in the FTF format.

5.5 What will be the impact of the cut-off cumulative GPA policy for the DL courses?

If student cumulative GPA is established as a criterion for student success in the DL course, then it will have a significant impact on course enrollment. Table 12 summarizes the effects on DL course enrollment for several potential cutoffs.

Table 12: Students in the sample who would have not been allowed to enroll in the DL courses in 1995-2002 if the cut-off GPA scores were established[1]

Cut-off GPA (Less than)	Would Not Have Been Allowed to Enroll	
	Number	Percentage
2.00	155	5.3%
2.25	389	13.3%
2.50	725	24.9%
2.75	1262	43.3%
3.00	1682	57.7%

Clearly, requiring a minimum GPA for students to enroll in DL courses will reduce overall DL course enrollment. As shown in this table, instituting a minimum GPA of 2.50 (on a 4.0 scale) would exclude almost ¼ of all students that enroll in DL courses at NJIT. However, from Table 7 we see that the performance of students in this GPA range is similar for the two groups. For DL students, 31.63% do not complete the course successfully (24.87% withdraw and 6.76% fail the course). For FTF students, 30.00% do not complete the course successfully; 26.07% of students withdraw while 3.93% fail the course. Although the performance of FTF students is slightly better than for DL students, it is not statistically significant, certainly not enough to institute a minimum GPA requirement for DL students.

5.6 Can we determine any criteria for success from comments given by students for dropping DL courses?

Students' performance in DL courses has not revealed any particular criteria for success. Based on survey results, it is possible that criteria are linked to non-academic areas. A copy of the survey questions and mean results are included in the appendix.

Interim survey results indicate that most students who withdraw from DL courses study at home, in the evening, and typically work more than 30 hours per week. The survey also highlights several factors that may lead to increased withdrawal rates, including the level of instructor communication (question 9), instructional techniques used (10), a sense of belonging in the class

[1] Percentage is based on DL enrollment of 2915 in 1995F-2003S and a maximum GPA of 4.0.

(13), and expectations and participation in DL classes (20, 25, and 26). For the last two questions, students found that the course took much more time than they thought it would when they first enrolled in the class. Complete survey results are shown in the appendix.

6. Summary

The study presented in this paper has identified several factors that can be targeted to reduce the overall withdrawal rate in distance learning courses. As at other universities, this study has confirmed that withdrawal rates are higher for distance learning courses than for face-to-face courses. Further, the rate of withdrawal for undergraduate students with grade point averages of below 2.5 is significantly higher than for students with GPAs above this level. However, it is not recommended to set specific GPA cutoffs for students, since a fair number of students with higher GPAs withdraw from DL courses to preserve their GPA values.

Students withdrawing from DL courses have the same chance of passing the course if they repeat it in either DL or FTF mode. However, students that fail DL courses have a much better chance of passing the course if they repeat it in FTF mode. This indicates that students who fail a DL course should be encouraged to repeat it in a traditional classroom setting to reduce withdrawal and failure rates, and to improve their chances of successfully completing the course.

The survey pinpoints several factors that may lead to increased withdrawal rates in DL courses. The level of instructor communication (question 9) indicates that students who withdrew from DL courses often felt that the instructor did not maintain regular communication with the students. Students may perceive this as a lack of interest on the instructor's part, which may lead to their own disinterest in the course. These students may have felt that they did not "belong" in the class (question 13). Increased instructor-student interaction and communication can help alleviate these perceived problems.

Some students find that distance learning just doesn't work for them. As noted in question 10, students that withdrew from DL courses did not feel that the instructional methods used in DL courses helped them learn the material better. These students might be best served in traditional face to face courses. Factors must be identified that will help students choose the optimal mode of course delivery for their personal learning styles.

Finally, some students have incorrect expectations when approaching a DL course. These students may have felt that DL courses would be easier and require less time than equivalent FTF courses, but found the opposite is true after entering the course; see questions 20, 25, and 26. It would be best to give students some idea of the reality of distance learning courses, such as what to expect from a DL course in terms of time requirements, prior to enrolling students in the course. Again, matching the students to their best mode of instruction will ultimately lead to reduced withdrawal rates and improved student success.

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APPENDIX: Distance Learning Withdrawals Evaluation Questionnaire

Note: All questions are scored on a 1 to 5 scale (strongly disagree; disagree; neutral; agree; strongly agree).

Distance Learning Withdrawals Evaluation Questionnaire (N=30/18%)

(A) Preparedness for the DL class	Avg
1. Registering for the class was smooth.	4.6
2. I received instructions about accessing class materials on time.	3.5
3. I received course CDs & information on videos/WebBoard/WebCT on time.	3.5
4. I am a good time manager.	3.9
5. I am familiar with the technology used for the DL courses.	4.1
6. I can work independently, even if others don't provide support/encouragement.	4.1

(B) Communication with instructor	Avg
7. Class goals, objectives, requirements & grading policy were clearly communicated.	3.4
8. Class assignments were clearly communicated.	3.2
9. The instructor communicated with me on a regular basis.	2.5

(C) Teaching	Avg
10. Instructional techniques used (online lectures, demonstrations, group discussions etc.) helped me gain a better understanding of class materials.	2.7
11. Assignments, papers & tests were graded and returned in a timely manner.	3.3
12. The instructor arranged for & encouraged online class participation.	3.1
13. The instructor made me feel that I was a part of the class & "belonged".	2.5

(D) Course materials	Avg
14. The course materials were of high quality.	3.1
15. The online materials helped me better understand the course.	3.0

(E) Technology Platform	Avg
16. The online connection was reliable.	3.7
17. If I ran into a problem, I could always get technical assistance.	3.2

(F) Your Course Expectations	Avg
18(a) I expected to spend as much time on DL course as on face-to-face course.	3.4
(b) I actually spent as much time on DL as I usually do on face-to-face course.	3.4
19(a) I expected to be able to work on course materials at any convenient time.	4.3
(b) I was able to work on course materials at any convenient time.	3.8
20. I believe that face-to-face classes are harder than DL classes.	1.9
21. I usually expect to get a good grade in the course that I take.	4.6
22. I think of myself as a good student.	4.7

(G) Participation	Avg
23. DL courses are more convenient to participate in than face-to-face courses.	3.7
24. I visited the course web site on a daily basis.	3.4
25. Compared to face-to-face courses, amount of work required was the same.	2.4
26. Compared to face-to-face courses, amount of time required was the same.	2.3

(H) Learning Environment	Avg
27. My learning environment was free of distractions.	3.9
28. I had easy access to computer all the time.	4.3
29. I had easy access to library and reference materials.	3.3