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100% Online vs Lecture Course Success

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Executive Summary

To measure the success of online coursework, a comparison was performed between two types of course offerings: 100% online and lecture. This led to an analysis of term-to-term enrollment shifts and an examination of student achievement for the same course types. The courses covered were from the 17/FA and 18/WI terms at Henry Ford College. In order to be included in the research, a course must have had at least one section that ran as 100% online and one that ran as lecture in a term.

According to this study, courses offered as lecture have a larger average successful completion rate (79%) than those offered as 100% online (71%) with a smaller standard deviation (8, 13). These results, combining data from the 17/FA and 18/WI terms, are statistically significant (p=0.006). Steps to improve successful completion rates (e.g., course offerings, course development, instructor and/or student training, etc.) could be pursued based on a combination of what success rate is deemed acceptable, and an evaluation of why the disparity between 100% online and lecture courses exists.

An examination of enrollment shifts from 17/FA to 18/WI for specific courses indicated great success for POLS-131. POLS-131 increased enrollments from term to term in both 100% online courses (122, a 107% increase) and lecture courses (18, an 11% increase) while increasing course success rates by 5% for both types. Other courses increased, respectively, from term to term, in 100% online enrollments while their lecture enrollments decreased; WR-131 (92, a 105% increase; -116, a 50% decrease), SOC-131 (71, a 27% increase; -26, a 15% decrease), TCM-131 (47, a 49% increase; -25, a 61% decrease). CRJ-131 experienced the opposite (-28, a 48% decrease; 13, a 6% increase). For some courses, both types of enrollments decreased: BBA-131 (-30, a 34% decrease; -56, a 16% decrease) and BMA-110 (-55, a 100% decrease; -87, a 100% decrease). It is important to note that there were no enrollments for either type of course offering for BMA-110 in the 18/WI term. Faculty in these areas can best speak to what is alarming, expected, or extraordinary in their particular

disciplines and why (e.g., course sequencing, increased/decreased student interest/demand, staffing, etc.).

To address the issue of student achievement at the course level, grade points were compared for students who completed a course of either type; excluding drop (DR), withdraw (W), incomplete (I), and never attended (NA) grades. Both groups share a mean grade point value that is between a B- and a B (2.8). Both groups' standard deviation from that mean ranges from between the D+/C- range (1.5/1.6) to the A/A+ range (4.0/4.1). Although this result was not statistically significant, identical means and standard deviations, through this lens, suggest no difference in student achievement based on course type. Keeping in mind that a letter grade of C is the marker for successful course completion in this study, students who completed a course under either instructional method, on average, received between a D+ and an A+. Practically speaking, an examination of course completion rates may not be preeminent when having a conversation about access to education and student achievement (persistence, retention, and completion of a certificate or degree).

Future research should examine if online course offerings make course attempts and completions more accessible. If so, how does that influence retention and completion of a certificate or degree? Are certain courses better leveraged as one type of course offering than others? Finally, what best practices and procedures exist to raise the level of achievement for students in online courses?

If you have any questions regarding this data and analysis, please see the full report below or contact Rick Michalski, Business Intelligence Systems Analyst, at remichalski@hfcc.edu.

Part I. Introduction

Explanation:
The following is the sequential process by which the above results and conclusions were established. The original research question was put forth to compare the success of students in online courses against their lecture counterparts. The iterative nature of research allowed further detailed exploration of the results and an alternative perspective of how to measure any difference of success by these instructional methods (course types).

Part II. Successful Course Completion

Research Question:
Do differences exist in successful course completion for students in 100% online courses when compared to students in lecture courses?

Sample Used:
The sample consists of all students in a term (examining 17/FA and 18/WI combined) who were enrolled in courses with an instructional method of *100% online* or *lecture*. This study only includes courses that ran using both instructional methods in a term.

Definition(s):
Successful Completion: A grade of C or better (final grades of DR, W, I, and NA are all included as unsuccessful completions for this study).

Conclusion:
When examining the results of both terms combined, the students had statistically significant lower successful completion rates in 100% online courses than those in lecture courses (Table 1).

Results of Independent Groups T-Test:
Table 1.
Descriptive Statistics and Independent-Samples T-Test Results on Successful Completion Rates by Instructional Methods for 17/FA and 18/WI Courses

Instructional Method	Total Courses	Total Enrollments	Mean	Std. Deviation	Minimum	Maximum
100% Online	16	3,112	71%	13%	41%	93%
Lecture	16	4,037	79%	8%	63%	96%
Total	16	7,149	75%	11%	41%	96%
Significance Level (p)						0.006

Further Analysis:
The following three tables display a course level picture of the difference of students enrolled, successful completion, and successful completion rates from 17/FA to 18WI. Table 2 includes both instructional methods: 100% online and lecture. Table 3 and Table 4 display results for 100% online and lecture courses, respectively. When examining success rates, also consider the total number of enrollments for context.

Table 2.
Enrollment, Success Rates, and Differences between Terms 17/FA and 18/WI by Instructional Method

Course Name	Instructional Method	Term	Students	Success	Success Rate	Course Name	Instructional Method	Term	Students	Success	Success Rate	Students (Diff.)	Success (Diff.)	Success Rate (Diff.)
AH-100	100% Online	17/FA	111	92	83%	AH-100	100% Online	18/WI	110	94	85%	-1	2	2%
AH-100	Lecture	17/FA	189	151	80%	AH-100	Lecture	18/WI	214	158	74%	25	7	-6%
BBA-131	100% Online	17/FA	89	52	58%	BBA-131	100% Online	18/WI	59	33	56%	-30	-19	-2%
BBA-131	Lecture	17/FA	350	234	67%	BBA-131	Lecture	18/WI	294	185	63%	-56	-49	-4%
BBA-153	100% Online	17/FA	27	11	41%	BBA-153	100% Online	18/WI	30	19	63%	3	8	22%
BBA-153	Lecture	17/FA	38	27	71%	BBA-153	Lecture	18/WI	28	20	71%	-10	-7	0%
BEC-133	100% Online	17/FA	30	26	87%	BEC-133	100% Online	18/WI	31	21	68%	1	-5	-19%
BEC-133	Lecture	17/FA	43	31	72%	BEC-133	Lecture	18/WI	24	18	75%	-19	-13	3%
BEC-151	100% Online	17/FA	88	50	57%	BEC-151	100% Online	18/WI	116	65	56%	28	15	-1%
BEC-151	Lecture	17/FA	266	217	82%	BEC-151	Lecture	18/WI	267	210	79%	1	-7	-3%
BEC-152	100% Online	17/FA	117	85	73%	BEC-152	100% Online	18/WI	91	67	74%	-26	-18	1%
BEC-152	Lecture	17/FA	154	121	79%	BEC-152	Lecture	18/WI	161	112	70%	7	-9	-9%
BMA-110	100% Online	17/FA	55	33	60%							-55	-33	-60%
BMA-110	Lecture	17/FA	87	63	72%							-87	-63	-72%
CRJ-131	100% Online	17/FA	58	45	78%	CRJ-131	100% Online	18/WI	30	24	80%	-28	-21	2%
CRJ-131	Lecture	17/FA	206	163	79%	CRJ-131	Lecture	18/WI	219	171	78%	13	8	-1%
GEOG-132	100% Online	17/FA	109	66	61%	GEOG-132	100% Online	18/WI	145	88	61%	36	22	0%
GEOG-132	Lecture	17/FA	89	85	96%	GEOG-132	Lecture	18/WI	83	66	80%	-6	-19	-16%
MGT-230	100% Online	17/FA	30	18	60%	MGT-230	100% Online	18/WI	54	34	63%	24	16	3%
MGT-230	Lecture	17/FA	42	35	83%	MGT-230	Lecture	18/WI	54	46	85%	12	11	2%
MUS-130	100% Online	17/FA	71	62	87%	MUS-130	100% Online	18/WI	72	59	82%	1	-3	-5%
MUS-130	Lecture	17/FA	46	39	85%	MUS-130	Lecture	18/WI	24	20	83%	-22	-19	-2%
POLS-131	100% Online	17/FA	114	76	67%	POLS-131	100% Online	18/WI	236	169	72%	122	93	5%
POLS-131	Lecture	17/FA	169	125	74%	POLS-131	Lecture	18/WI	187	147	79%	18	22	5%
SOC-131	100% Online	17/FA	262	166	63%	SOC-131	100% Online	18/WI	333	208	62%	71	42	-1%
SOC-131	Lecture	17/FA	176	139	79%	SOC-131	Lecture	18/WI	150	135	90%	-26	-4	11%
TCM-131	100% Online	17/FA	95	88	93%	TCM-131	100% Online	18/WI	142	129	91%	47	41	-2%
TCM-131	Lecture	17/FA	41	39	95%	TCM-131	Lecture	18/WI	16	14	88%	-25	-25	-7%
THEA-131	100% Online	17/FA	70	57	81%	THEA-131	100% Online	18/WI	70	57	81%	0	0	0%
THEA-131	Lecture	17/FA	52	41	79%	THEA-131	Lecture	18/WI	18	17	94%	-34	-24	15%
WR-131	100% Online	17/FA	88	77	88%	WR-131	100% Online	18/WI	180	149	83%	92	72	-5%
WR-131	Lecture	17/FA	233	186	80%	WR-131	Lecture	18/WI	117	90	77%	-116	-96	-3%

Table 3.
Enrollment, Success Rates, and Differences between Terms 17/FA and 18/WI for Courses with 100% Online as an Instructional Method

Course Name	Instructional Method	Term	Students	Success	Success Rate	Course Name	Instructional Method	Term	Students	Success	Success Rate	Students (Diff.)	Success (Diff.)	Success Rate (Diff.)
AH-100	100% Online	17/FA	111	92	83%	AH-100	100% Online	18/WI	110	94	85%	-1	2	2%
BBA-131	100% Online	17/FA	89	52	58%	BBA-131	100% Online	18/WI	59	33	56%	-30	-19	-2%
BBA-153	100% Online	17/FA	27	11	41%	BBA-153	100% Online	18/WI	30	19	63%	3	8	22%
BEC-133	100% Online	17/FA	30	26	87%	BEC-133	100% Online	18/WI	31	21	68%	1	-5	-19%
BEC-151	100% Online	17/FA	88	50	57%	BEC-151	100% Online	18/WI	116	65	56%	28	15	-1%
BEC-152	100% Online	17/FA	117	85	73%	BEC-152	100% Online	18/WI	91	67	74%	-26	-18	1%
CRJ-131	100% Online	17/FA	58	45	78%	CRJ-131	100% Online	18/WI	30	24	80%	-28	-21	2%
GEOG-132	100% Online	17/FA	109	66	61%	GEOG-132	100% Online	18/WI	145	88	61%	36	22	0%
MGT-230	100% Online	17/FA	30	18	60%	MGT-230	100% Online	18/WI	54	34	63%	24	16	3%
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SOC-131	100% Online	17/FA	262	166	63%	SOC-131	100% Online	18/WI	333	208	62%	71	42	-1%
TCM-131	100% Online	17/FA	95	88	93%	TCM-131	100% Online	18/WI	142	129	91%	47	41	-2%
THEA-131	100% Online	17/FA	70	57	81%	THEA-131	100% Online	18/WI	70	57	81%	0	0	0%
WR-131	100% Online	17/FA	88	77	88%	WR-131	100% Online	18/WI	180	149	83%	92	72	-5%

Table 4.
Enrollment, Success Rates, and Differences between Terms 17/FA and 18/WI for Courses with Lecture as an Instructional Method

Course Name	Instructional Method	Term	Students	Success	Success Rate	Course Name	Instructional Method	Term	Students	Success	Success Rate	Students (Diff.)	Success (Diff.)	Success Rate (Diff.)
AH-100	Lecture	17/FA	189	151	80%	AH-100	Lecture	18/WI	214	158	74%	25	7	-6%
BBA-131	Lecture	17/FA	350	234	67%	BBA-131	Lecture	18/WI	294	185	63%	-56	-49	-4%
BBA-153	Lecture	17/FA	38	27	71%	BBA-153	Lecture	18/WI	28	20	71%	-10	-7	0%
BEC-133	Lecture	17/FA	43	31	72%	BEC-133	Lecture	18/WI	24	18	75%	-19	-13	3%
BEC-151	Lecture	17/FA	266	217	82%	BEC-151	Lecture	18/WI	267	210	79%	1	-7	-3%
BEC-152	Lecture	17/FA	154	121	79%	BEC-152	Lecture	18/WI	161	112	70%	7	-9	-9%
CRJ-131	Lecture	17/FA	206	163	79%	CRJ-131	Lecture	18/WI	219	171	78%	13	8	-1%
GEOG-132	Lecture	17/FA	89	85	96%	GEOG-132	Lecture	18/WI	83	66	80%	-6	-19	-16%
MGT-230	Lecture	17/FA	42	35	83%	MGT-230	Lecture	18/WI	54	46	85%	12	11	2%
MUS-130	Lecture	17/FA	46	39	85%	MUS-130	Lecture	18/WI	24	20	83%	-22	-19	-2%
POLS-131	Lecture	17/FA	169	125	74%	POLS-131	Lecture	18/WI	187	147	79%	18	22	5%
SOC-131	Lecture	17/FA	176	139	79%	SOC-131	Lecture	18/WI	150	135	90%	-26	-4	11%
TCM-131	Lecture	17/FA	41	39	95%	TCM-131	Lecture	18/WI	16	14	88%	-25	-25	-7%
THEA-131	Lecture	17/FA	52	41	79%	THEA-131	Lecture	18/WI	18	17	94%	-34	-24	15%
WR-131	Lecture	17/FA	233	186	80%	WR-131	Lecture	18/WI	117	90	77%	-116	-96	-3%

Part III. Student Achievement

Student Level Data:

After analyzing the course level data, the focus migrated toward student level data to see how these delivery methods potentially affected students on an individual basis. The same dataset used above was leveraged for this analysis. Grade points (Table 5) were used instead of successful completion because it is the available marker for a student achievement in a course. Grades of drop, withdraw, incomplete, and never attended were excluded from the analysis to only examine those who earned a letter grade.

Table 5.
Grade Point Legend

Letter Grade	Grade Point Value	Letter Grade	Grade Point Value
A+	4.0	C	2.0
A	4.0	C-	1.7
A-	3.7	D+	1.3
B+	3.3	D	1.0
B	3.0	D-	0.7
B-	2.7	E	0.0
C+	2.3		

Research Question:

Do differences exist in the achievement of students, as measured by the mean grade point value achieved, who completed 100% online courses when compared to students who completed lecture courses?

Sample Used:

The sample consists of all students in a term (examining 17/FA and 18/WI combined) who completed a course (earning a letter grade [A+ through E]) with an instructional method of *100% online* or *lecture*. This study only includes students enrolled in courses that ran using both instructional methods in a single term.

Conclusion:

Students who completed courses delivered as 100% online had similar achievement levels as those who completed lecture courses (Table 6). However, the results are not statistically significant.

Results of Mann-Whitney U Test:

Table 6.
Descriptive Statistics and Mann-Whitney U Test Results on Grade Points by Instructional Method for the 17/FA and 18/WI Terms

Instructional Method	Total Courses	Total Enrollments	Mean	Std. Deviation	Minimum	Maximum
100% Online	16	2,789	2.8	1.3	0.0	4.0
Lecture	16	3,726	2.8	1.2	0.0	4.0
Total	16	6,515	2.8	1.3	0.0	4.0
Significance Level (p)						0.739

Part IV. Conclusion

Outcome:
The results of this analysis show roughly an eight percent difference in successful completion rates between 100% online courses and their lecture counterparts. However, there was little to no difference between the two when examining student achievement using grade points for only those who earned letter grades. POLS-131 emerged as a champion of success from term-to-term (increasing in both size and success for both course types).

A dive into the literature on increasing success of online students could help form best practices and lead to measurable initiatives. Future work should examine whether online courses increase accessibility to postsecondary education or the ability of a student to persist through completion of a certificate or degree.