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From: The Southern Oregon University Center for Instructional Research – Evidence Not Anecdotes (Mark Siders PhD)

Subject:Spring 2019 vs Spring 2020 Effects of Remote Learning on Student Success

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Introduction

Spring of 2020 was a trying time for students and faculty at Southern Oregon University. We delivered a large number of our courses via remote delivery with little notice to students or faculty. Analyzing student success under such conditions may inform us as we move into the future. Anecdotal evidence abounds about our results and how things in Spring of 2020 were different than in previous terms. The Southern Oregon Center for Instructional Research systematically analyzed all registrations for the for Spring of 2019 and Spring of 2020 in an effort to quantify student results and provide guidance for future practices.

Method

The SOU data warehouse contains student registrations and grades for all students. A custom query was created via the Cognos portal to capture the relevant data. This research captured all student registrations for both Spring of 2019 and Spring 2020 and included all undergraduate courses. Students who dropped courses before the term started (registration status ED and EW) were eliminated from the analysis. This data set yielded 25,779 individual registrations (13,553 for Spring 2019 and 12,226 for Spring 2020. We took two approaches for our analysis. In the first approached we simply compared student results across all courses, all instructors, and all delivery modes for the two terms (All Classes All Modes). A second analysis was performed utilizing only courses and instructors where the course was delivered in a traditional face-to-face mode in Spring of 2019 and subsequently delivered via remote delivery in Spring 2020 by the same instructor (Same Instructors Two Modes). This subset of the data contained 10,665 individual registrations (5,176 Remote Delivery and 5,489 In Person Instruction). Minitab was used for statistical analysis.

Student success was measured across a number of variables including:

1) Grade received in the course
2) Did the student drop the course?
3) Did the student take the course P/NP or Graded?
4) Was the result a DFWI? (Grade of NP, Grade lower than C-, Dropped Class, Grade of NC, Incomplete Grade)
5) Grade Difference (The difference between the course grade and the student's GPA)
6) Course Grade Variation. A measure of how individual course grades are spread (or not) among students in a class

Results and Discussion

Course Grades:

(All Classes All Modes)

For those students who received a letter grade, we detected a significant difference (p=0.000) between the two terms. Students, on average achieved a course grade of 3.280 on a four point scale in Spring of 2019 and an average course grade of 3.425 on a four point scale in Spring of 2020. This result supports anecdotal evidence that our collective grading scheme was softer in Spring of 2020 as compared to prior terms. This could also be explained by the prevalence of P/NP grading. Simply put, there were less letter grades given, marginal students instead, took classes P/NP.

(Same Instructors Two Modes)

We also detected a significant difference between Face to Face classes versus Remote classes (p=0.000). Face to Face had an average grade of 3.320 and Remote classes had an average grade of 3.438. Clearly, even experienced instructors also experienced some degree of grade inflation for students who took courses for grades.

Drop Rates

(All Classes All Modes)

We captured the students' final registration status and using the registration code we can determine if a student dropped the class or finished the class. For Spring of 2019 the drop rate was 2.34% and for Spring of 2020 the drop rate was 2.27% We found no significant difference between the two terms (p=.728). Clearly our change in teaching modes overall had no effect on student drop rates. We have heard anecdotal reports that drop rates increased in Spring of 2020. Clearly, that is not the case.

(Same Instructors Two Modes)

The two modes yielded essentially identical drop rates indicating no difference between the two modes (p=.875). Both modes had a drop rate of 2.1%. Even for the same courses taught by the same instructors, the drop rate is unaffected by these two delivery modes.

Pass/No Pass Rates

(All Classes All Modes)

Not surprisingly, we did find a significant difference (p=0.000) in courses that were taken Pass/No Pass between the two terms. The University temporarily changed policies allowing students to take multiple classes in the same term Pass/No Pass as well as allowing for many major requirement courses to be taken Pass/No Pass as well. In Spring of 2019, 6.06% of courses were taken Pass/No Pass, In Spring of 2020 the Pass/No Pass rate increased to 11.03%.

(Same Instructors Two Modes)

The instructors who taught in these two modes also experienced a dramatic increase in P/NP students when teaching Remotely. Face to Face classes had a P/NP rate of 6.01%. The same instructors teaching remotely experienced a P/NP rate of 11.92%, a significant increase (p=0.000).

DFWI Rates

(All Classes All Modes)

The DFWI metric is intended to identify course registrations that yield suboptimal results. Course registrations that resulted in a grade less than C-, a NP grade, a dropped course, a grade pf NC, or an Incomplete grade are identified in our data set as DFWI. We did detect a significant difference between the two terms regarding the DFWI rate (p=0.000). The DFWI rate in Spring of 2019 was 9.74%. The DFWI rate in Spring of 2020 rose to 12.08%. This does support some anecdotal reports of students and instructors struggling to adapt to our circumstances in Spring of 2020. Even with the rise in overall course grades noted above, students certainly struggled during Spring of 2020.

(Same Instructors Two Modes)

DFWI rates for the same instructors teaching the same classes under two modes experienced the same significant change we saw for the University overall (p=0.000). Face to face classes had a DFWI rate of 9.29% and remote classes had a DFWI rate of 11.86%. Even courses taught by experienced instructors using the similar methods and materials had difficulty with student success when teaching remotely.

Grade Difference

(All Classes All Modes)

The grade difference metric captures the difference between a student's course grade and that same student's overall GPA. Clearly one of the best predictors of a student's grade in a course is the student's prior performance as measured by their GPA. This analysis only included students who received a letter grade for the course (A through F) AND had a GPA. Hence a first term student would not be included in the analysis since they have no GPA, also students who took the class P/NP would be excluded as well. We did find a difference between the two terms (p=0.000). The grade difference metric for Spring of 2019 was .024 grade points and for Spring of 2020 that difference rose to .097 grade points. This means that in both terms students improved their overall GPA, but the difference was magnified nearly 4 fold in Spring of 2020.

(Same Instructors Two Modes)

The same instructors teaching the same classes under the two different modes did show a significant difference (p=.019), however the difference between the two modes was much smaller than we found when comparing all classes and all modes. Face to face classes averaged a grade difference of .044 grade points, while Remote classes averaged a grade difference of .083 grade points. Clearly, when the same teachers teach the same material in either mode, they are more consistent.

Course Grade Variation

(All Classes All Modes)

For students who took the course for a grade, we computed the standard deviation among those grades to determine if our grading scheme become more or less compressed during Spring of 2020. We did find a significant difference between the two terms (p=0.000). Spring of 2019 yielded a standard deviation of .986 grade points on average, while Spring of 2020 had a standard deviation of .880. This is clear evidence that there was less discrimination among grades during Spring of 2020 than in Spring of 2019. This certainly could be explained, in part, to the rise in P/NP grades which eliminated some of the richness in variety of grades assigned.

(Same Instructors Two Modes)

The distribution of grades significantly changed even for the same instructors teaching the same courses under the two modes (p=0.000). Face to face classes had a standard deviation of .927 grade points while remote classes had a standard deviation of .867. The grade compression can be attributed, in part, to the prevalence of P/NP grades.

Conclusion

This research systematically analyzed the course registration for the terms Spring 2019 and Spring 2020. While most results are not surprising, The Center for Instructional Research feels that having hard data and benchmarks is superior to anecdotal reports.

The good news is that course drops rates seemed unaffected and that by and large results seem consistent across all classes and all modes regardless of whether an instructor teaches under multiple modes. The bad news is that DFWI rates increased indicating that student success is at risk in these difficult times.

We are less concerned about the increase in course grading and grading variability in that the dramatic increase in P/NP options has the effect of positively increasing average course grades and reducing the number of options for grade variance.