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An Investigation of the Relationship Between Grades and Learning Mode in an English Composition Course

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Abstract

The education community has conducted studies on failure rates and withdrawal rates between learning modalities in the past, but few studies have evaluated grade distribution between learning modes or focused specifically on English Composition. Using 2,919 student grades from the 2015 – 2016 academic year for an English Composition course, researchers examined failure rates, grade distribution, and withdrawal rates between In-Person learning, Online learning, and Synchronous video learning modes. In this study, learning modes and failure rates were related. Synchronous video modes of instruction had higher failure rates than traditional In-Person classes. Synchronous video classroom students failed at a higher rate than online students. Grade distributions showed significant differences based on learning mode. In-Person students earned more Bs and fewer Cs, Ds, and Fs than Online and synchronous video classroom students. In-Person students also withdrew at a significantly lower rate than online students. With these findings, we suggest that finding the root cause and alleviating the differences in student performance across learning modes should be a high priority for the educational community.

Introduction

This study examines the grades, pass/fail percentages and withdrawal rates in various learning modalities at Embry-Riddle Aeronautical University (ERAU) Worldwide. Offering traditional classroom courses, synchronous courses via a videoconferencing platform and completely asynchronous online classes, ERAU attempts to ensure that its students can select the course options that best fit the schedules of its student population. The Worldwide study body is comprised mostly of working adults. ERAU also seeks to provide these diverse options without sacrificing academic quality; therefore, ensuring that students have a consistent experience regardless of modality is a significant concern.

The researchers focused on one specific course (ENGL 123: English Composition) to determine whether some measures of consistency of student experience could be observed in this highly distributed, multi-modality model. For the purposes of this study, 2,919 student records from the 2015-2016 sections of ENGL 123 were examined. Ideally, the study's findings can assist faculty members in determining where to best focus their efforts when attempting to improve the overall experience in ENGL 123. Beyond that, the study explores whether modality has an impact on student performance, potentially leading to course design and instructional practices that attempt to accommodate or eliminate these discrepancies and better serve the needs of all students.

University context

The university examined in this study features two residential campuses and a "Worldwide" campus, consisting of over 140 teaching sites around the world and a highly regarded online program. The Worldwide campus is the specific focus of this research. Worldwide students who enroll in "on-ground" courses have the option of taking courses at a teaching site, if one is located in an area convenient to them. Teaching sites (often called "campuses" or "campus locations") are located in both military and civilian locations. Campus locations can be found throughout the United States, in many European countries and in Singapore. In the 2016-2017 academic year, there were 23,092 students and 86,125 registrations. Of these, 3,594 were strictly classroom courses. Another 11,920 were EagleVision registrations (as described below), and there were 70,611 online registrations. The student population consisted of 16,799 undergraduate students and 6,283 graduate students. There were 11,679 military students and 11,413 civilian students. Male students made up 19,243 of the student population, and females 3,200 (another 649 did not indicate gender).

Modalities

Students at ERAU can choose from several modalities. Most familiar are the completely face-to-face courses offered at the 143 campus locations around the world. Another synchronous option is EagleVision, which uses videoconferencing features to bring live courses to students in classrooms at one of several linked campuses. The instructor is either also at one of the campuses or teaching from home. In EagleVision Home, both students and instructor access the course from home on a specified day and time. Hybrid versions of EagleVision courses exist where some students attend from home and others commute to a classroom. These courses are typically held once a week during a nine-week term.

Students may also opt to take completely online, asynchronous courses. Other modalities combine features of asynchronous and synchronous learning. Blended classes allow instructors to move

30% of their courses online, for example. Additionally, Canvas is used in all courses for the posting of syllabi as well as the submission and grading of assignments.

The Multi-Modality Template

ERAU Worldwide endeavors to provide a consistency of experience for students taking courses in any of its available modalities. One significant attempt is through the Multi-Modality Template (MMT). The MMT is a group of assignments that are common to all modalities. Course developers select these assignments from the online version of the course with the intention of covering as many of the learning outcomes as possible. Instructors in synchronous modalities are permitted to supplement the course with their own assignments, but they are required to incorporate the MMT assignments. In English 123, the MMT assignments and their associated percentages are as follows:

Summary and Strong Response	15%
Annotated Bibliography	10%
Exploratory Research Paper and Log	15%
Classical Argument Position Paper	20%

The grade weighting must also be preserved for each assignment. Therefore, in ENGL 123, 60% of the student's grade is derived from MMT assignments in this course. For the other 40%, instructors may decide to create their own assignments, use other assignments in the online template or devise some combination of each.

Training sessions were held upon the implementation of the MMT concept, and MMT assignments are outlined in a detailed MMT letter provided to all faculty. Furthermore, syllabus approvers for synchronous classes ensure that MMT assignments appear on the syllabus. Quality managers review course setup for all modalities, ensuring that an approved syllabus is posted and that the gradebook is properly configured. Finally, embedded rubrics are provided for all assignments, and instructors are strongly encouraged to use them.

Statement of the problem

The shift to distance learning has afforded students the opportunity to earn a tertiary degree without the constraints of campus location or, to a certain degree, class-meeting times. Students can even earn a degree from their homes. This has created a seismic shift in how academic courses are designed and delivered. Course developers and instructional system designers are taking on the challenge of ensuring students have access to quality courses regardless of the distance between students and the universities they attend. We are seeking to determine if there is a relationship between student performance (measured as failure rates, grade distribution and withdrawal rates) and the mode of instruction in which students choose to attend their classes. Specifically, we are examining ENGL 123 to explore the consistency of student experience across the modalities.

Significance

A tertiary education is a significant investment for any student. Students with particularly demanding schedules may seek out online learning as an alternative to more traditional avenues. There are many avenues for obtaining a degree, but does convenience compromise academic quality? Does students' choice of learning mode (synchronous vs. asynchronous) influence their performance in any meaningful way?

Literature review

Research efforts in online and blended learning, which got its start in the 1990s with the development of the Internet and World Wide Web (Dziuban 2016, p. 173), began as recently as 20 years ago. During this early research period, studies focused on psychology students. For instance, Maki et al. (2000) and Hughes et al. (2007) concluded that online students outperformed traditional classrooms. However, Wang and Newlin (2000) and Mottarella et al. (2004) found that online students achieved lower grades than those in traditional classrooms, even when the students had comparable grade-point averages. The research during this time revealed the apparent need for further studies to validate the true performance differential between online and traditional classes.

The next stage of research started around 2008 with the introduction of massive open online course (MOOC) offerings, which allowed students an opportunity to seek both higher education and cost-effectiveness (Dziuban 2016, p.174). During this time the US Department of Education subjected 51 independent studies that ranged from 1996 to July 2008 to a meta-analysis. The meta-analysis found that, on average, students taking the same class performed better online than in a traditional classroom (Means 2009, p.xiv). While the meta-analysis demonstrated strong support for online learning, it did not assert that online was the superior learning medium, because in many of the studies "the online and classroom conditions differed in terms of time spent, curriculum, and pedagogy" (Means 2009, p.xvii). The study also noted that the combination of classroom conditions and available materials contributed to the learning advantages of online classes (Means 2009, p.xvii). Emerson and MacKay (2011) found that students who took a paper questionnaire performed 24% better than those who took the questionnaire online. Despite their findings, they cautioned against a "rapid move of institutions of higher education towards online instruction" due to the lack of evidence regarding how learning modes affect student outcomes (Emerson 2011, p.734). Almost a decade later, studies still offer a cautionary tone because there is not yet conclusive proof that students attain learning outcomes equally in online and traditional classrooms, due to inconsistencies in students, teachers and assignments.

The current stage of research, from 2014 and on, shifted to include the development of blended-learning technologies to allow for "more extensive and personal faculty interaction" (Dziuban 2016, p.177). The most recent report from the Babson Survey Research Group, which aims to provide statistical representations of academic officers' perceptions about online courses, noted that while between 2003 and 2012 the percentage of academic leaders who positively viewed online learning increased, there has since been a decline from 77.0% to 71.4% in 2015 (Allen, 2015. p. 29). Further, there remains a dissenting view that online learning is inferior to traditional classrooms using face-to-face instruction (Allen 2015, p.32). Moving beyond nationwide trends, Stack (2015) addressed the limitations of previous work, which, he contended, were due in part to the "selection effects and differences in the degree of proctoring of exams between groups" (p.7). His study accounted for these limitations by offering both a quasi-randomisation of students between a lecture and online class and results that indicate no significant difference in exam scores between the two modes (n=64). The report also looked at blended learning, showing that academic

officers still favoured combined learning modes over fully online courses; this "favourability" increased from 39.2% in 2003 to 42.3% in 2015. However, 35.6% of academic leaders considered blended-learning outcomes to be superior to online and traditional-classroom learning modes (Allen 2015, p.31). Another study addressed issues of students' self-selection for particular learning modes and randomised students into online vs. traditional classes, with the same instructor as the proctor for both exams. Despite accounting for those two variables, the study found that there was no significant difference in the final exam between the two classes (Stack 2015, p.7). While research continues to explore the differences among learning modes, the results are still inconclusive.

Previous meta-analyses by Bernard et al. (2004) and Means et al. (2010) indicated either no difference between distance-learning performance and traditional classroom lectures or that online learning showed better learning results. Griffith, Roberts and Schultz (2014) and Dunn (2013) noted performance differences in previous research. Specifically, Griffith, Roberts and Schultz (2014) looked at all English courses using 2013 aggregate data, finding relationships in pass rates and grade distributions when compared by learning mode. In that study, students who attended traditional face-to-face classes had a significantly higher pass rate than EagleVision Classroom or Online courses. The English composition (ENGL 123) course was examined because it has the highest enrollment of ERAU's English courses. The study looked at the same problem this study analyses, but considered an aggregate of English classes instead of one specific class.

Although there have been multiple studies over the past two decades that researched the demographics, teaching pedagogies and learning outcomes between some combination of traditional learning, online learning and blended learning, few studies have focused explicitly on the differentials in final grades for all the learning modes, and no study has analysed data using only one specific class. This study aims to fill these gaps by taking a critical look at student outcomes and grade distributions across all modes of learning.

Hypotheses tested

H1. Failure rates for English composition course students in classroom, online and video synchronous learning modes are not equivalent.

H2. Grade distribution for English composition classroom, on-line and video synchronous learning modes are not equivalent.

H3. Student withdrawal rates are not equally distributed between the four learning modes (traditional classroom lecture, online learning, EagleVision Home and EagleVision Classroom) for English composition courses.

English 123: English Composition

The university in this study (ERAU-Worldwide) requires its students to take a total of nine credit hours in the general education area designated "Communication, Theory and Skill". English 123: English Composition is often the first course for many of these students, as it serves as the prerequisite for most other departmental offerings. The course description for this class states:

This course focuses on the principles of using writing for thinking, as well as a tool for expressing ideas. It addresses the composing process, research and documentation, and rhetorical strategies for various audiences and purposes. Students develop their communicative, evaluative, critical thinking, and research writing abilities.

The course goals state that the course "is a required course in every degree program. It is designed to help students learn to think critically, research ethically, and write clearly and effectively to achieve a variety of purposes." The course outcomes specify that students who complete the course will be able to:

- Respond orally and in writing to evaluate, analyze and critically assess the ideas and meanings of diverse texts.
- Compose reasoned responses to course readings, discussions, and visual prompts, by including a clear, engaging thesis statement and supporting that statement with well-organized, detailed evidence.
- Make appropriate rhetorical decisions to achieve the purpose of a written work, based on an understanding of ethical issues and underlying assumptions and values in the argument.
- Deepen understanding of a topic by conducting research that leads to a documented paper with appropriate documentation.
- Revise their writings to improve clarity, content, tone, and style, addressing such issues as audience, structure, and voice.
- Edit writing so understanding is not impaired as a result of errors in grammar, mechanics, or sentence structure.
- Demonstrate their understanding of the interdependent relationship of reading, writing, and thinking, and reflect on their thinking as part of a larger community of thinkers.

Any section of this course in any modality is required to contain this exact description, goals statement and list of outcomes. Additionally, the templated online course uses a standard syllabus for all sections, with every section containing exactly the same assignments and grade weights.

Students are required to take a multiple-choice placement examination before registering for any English course. Students who score a 70 or above on this exam are permitted to register directly for ENGL 123. Students who score below a 70 are required to take ENGL 106 (Introduction to Composition), a course designed to prepare them for college-level writing expectations. This course does not fulfill a general-education requirement. Multiple sections of ENGL 123 and ENGL 106 are offered in all of the university's available modalities in each of the five main terms (August, October, January, March and May).

Methodology

Researchers used an ex post facto, causal comparative research model to examine 2,919 student grades (aggregate data) for a 2015-16 academic year tertiary English composition course (Gay, Mills & Airasian 2006). The purpose was to determine if there were any differences in grade distribution, pass rates and withdrawal rates between four different modes of learning: traditional classroom lecture, online learning, EagleVision Home and EagleVision Classroom. The last two modes are video-based synchronous learning using webcams and headsets. This study uses

similar methodology to Griffith, Roberts and Schultz (2014), with the exception that it focuses on one specific class. This study does not include analysis of learning styles or life events, although it is recognised that these factors can also affect student performance.

Treatment of the data

Failure rates and grade distributions for all students who did not withdraw from ENGL 123 were examined using chi square (n=2,859). All testing used a Type I error rate (alpha) of .05. When dealing with multiple pairwise tests, the Bonferroni adjustment was applied (Gould & Ryan 2013) to avoid Type I errors. Withdrawal data were also considered nominal and examined using all 2,919 records using chi square and Fisher's Exact Test. The latter was only used in instances where chi-square results yielded low cell count warnings. (Gay et al. 2006).

Results

Data was evaluated to test the three hypotheses concerning failure rates, grade distributions and withdrawal rates. Table 1 gives the descriptive statistics on pass and fail rates broken out by learning mode.

Table 1. English composition course pass and failure rates based on learning modes (n=2,859)

Learning mode	F	P	Total
EV Home/BL	31	162	193
	(16.06%)	(83.94%)	(100%)
EV Class/BL	28	118	146
	(19.18%)	(80.82%)	(100%)
In-Person/BL	14	228	242
	(5.79%)	(94.21%)	(100%)
Online	256	2022	2278
	(11.24%)	(88.76%)	(100%)
Total	**329**	**2,530**	**2,859**
	(11.51%)	**(88.49%)**	**(100%)**

Note: Data is from academic year August 2015 through July 2016, and does not include student withdrawals.

EagleVision Classroom had the highest failure rate (19%), followed by EagleVision Home (16%) and Online (11%). Students who took the English composition course in person had the lowest failure rate, at 5.8% (rounded). The relationship between learning mode and failure rates was statistically significant, as shown in Table 2.

Table 2. Pass/failure rate comparison: chi-square contingency table results (α=.05)

Statistic	DF	Value	p-value
Chi-square	3	20.3118	0.0001*

Note: Data was tested with the chi-square test of independence using StatCrunch, Data Analysis on the Web, 2016, Pearson Education.

A series of pairwise chi-square tests were conducted to determine which modes were significantly different from each other. Table 3 shows that the largest statistically significant difference in failure rate was between EV Classroom vs. In-Person followed by EV Classroom vs. Online, EV Home vs. In-Person and EV Home vs. Online. In all four cases, synchronous video learning modes (EV Home and EV Classroom) had higher failure rates when directly compared to Online or In-Person classes, and Online had a higher failure rate than In-Person. After applying the Bonferroni adjustment to the alpha, each test would have to have a p-value less than .00833 to be considered significant (Gould & Ryan 2017).

Table 3. Chi-square post-hoc results: failure rate (α=.05)

	DF	Value	p-value
Synchronous Video Home vs. Synchronous Video Classroom	1	.5614	.4537
Synchronous Video Home vs. In-Person	1	12.2271	.0005*
Online vs. Synchronous Video Home	1	4.0337	.0446**
Synchronous Video Classroom vs. In-Person	1	16.9211	.000*
EV Classroom vs. Online	1	8.3631	.0038*
In-Person vs. Online	1	6.7993	.0091**

Note: n=2859. Data was tested with StatDisk (Triola, 2013). P values followed by ** indicate that the test was statistically significant before applying the Bonferroni adjustment, but considered not significant after performing the adjustment.

Three of the six individual comparisons (Synchronous Video Home vs. In-Person; Synchronous Video Classroom vs. In-Person; and EV Classroom vs. Online) were considered statistically significant. It should be noted that In-Person vs. Online (p=.0091) and Online vs. Synchronous Video Home (p=.0446) were greater than the Bonferroni adjusted alpha (.00833), which is considered a more conservative approach to adjusting the family-wise error rate in a multiple-comparisons test. However, these p-values were less than the original alpha, so it is worth noting that they were close to significant. These results indicate that English composition course failure rates in classroom, on-line and video synchronous learning modes are not equivalent. Based on these results, failure rates and learning modes are related.

Grade distribution between learning modes was evaluated to test if there was a relationship between learning modes and grades. Table 4 gives descriptive statistics of grade distributions categorised by learning mode.

Table 4. Grade distribution by modality (n=2859)

	A	B	C	D	F	Total
Synchronous Video Home	74 (38.34%)	54 (27.98%)	25 (12.95%)	9 (4.66%)	31 (16.06%)	193 (100%)

Synchronous Video Classroom	66 (45.21%)	31 (21.23%)	18 (12.33%)	3 (2.05%)	28 (19.18%)	146 (100%)
In-Person	114 (47.11%)	99 (40.91%)	11 (4.55%)	4 (1.65%)	14 (5.79%)	242 (100%)
Online	1201 (52.72%)	584 (25.64%)	184 (8.08%)	53 (2.33%)	256 (11.24%)	2278 (100%)
Total	1455 (50.89%)	768 (26.86%)	238 (8.32%)	69 (2.41%)	329 (11.51%)	2859 (100%)

Note: Data is from academic year August 2015 through July 2016, and does not include student

withdrawals.

As Figure 1 shows, online students earned the highest proportion of A grades (52.7%) followed by traditional In-Person classroom students (47.11%). In-Person classroom students earned the greatest proportion of B grades and fewer Cs, Ds or Fs. A greater percentage of EV Home students earned Cs and Ds and the second highest percentage of Fs. EV classroom students earned the greatest proportion of Fs (19.18%).
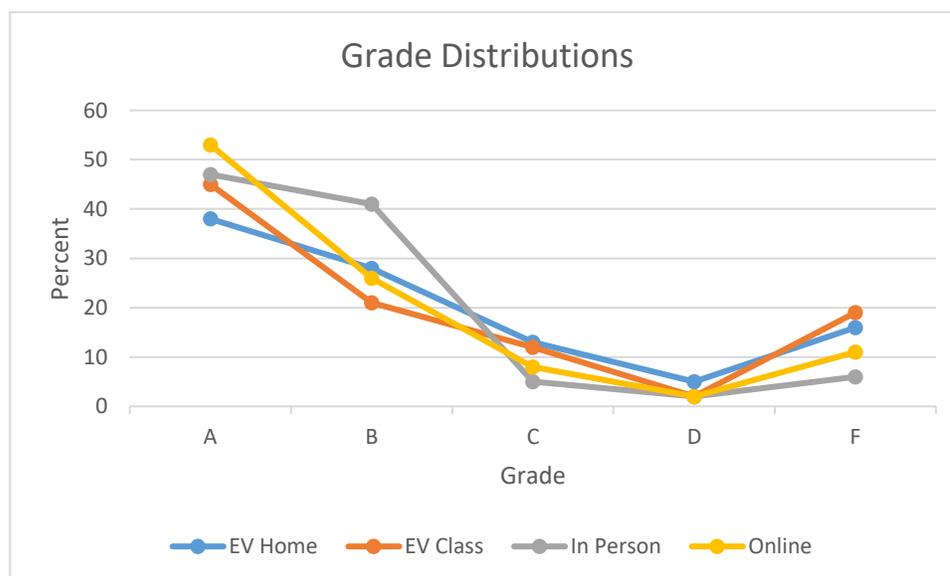

Figure 1. Grade distributions based on learning mode

This data was analysed to determine whether grade distribution and learning mode were related. Table 5 shows the chi-square results, which indicate a significant relationship between learning mode and grade distribution.

Table 5. Relationship of grades to learning mode: chi-square contingency table results (α=.05)

Statistic	DF	Value	p-value
Chi-square	12	64.791701	<0.0001*

Note: Data was tested with the chi-square test of independence using StatCrunch, Data Analysis on the Web, 2016, Pearson Education.

Pairwise comparisons were run to determine which modes significantly differed from each other. The EagleVision Home (EV-H) vs. EagleVision-Classroom (EV-C) test and EV-C vs. Online test were the only comparisons that exhibited grade distributions that were not statistically different from each other after applying the Bonferroni adjustment for multiple comparisons. All other mode comparisons showed statistically significant differences in grade distributions (Table 6).

Table 6. Chi square post-hoc results: grade distribution (α=.05)

	DF	Value	p-value
EV-H and In-Person	4	30.4019	.0000*
EV-H and Online	4	19.9469	.0005*
EV-C and In-Person	4	33.1449	.0000*
EV-C and Online	4	12.9348	.0116**
In-Person and Online	4	30.1841	.0000*
EV-H and EV-C	4	4.5439	.3374

Note: Data was tested with StatDisk, (Triola 2013). P values followed by ** indicate that the test was statistically significant before applying the Bonferroni adjustment, but considered not significant after performing the adjustment

The grade distribution for English-composition classroom, online and video synchronous learning modes were not equivalent. These results support the argument that there is a relationship between grades and learning mode.

Withdrawal rates ranged between 0 and 3% across the four learning modes. EV Home students showed the highest withdrawal rate, while In-Person students showed the lowest. In real numbers, Online courses saw the most student withdrawals; however, the percentage who withdrew from classes was just 2%.

Table 7. Student withdrawals by modality (n=2,919)

	T	**W**	**Total**
EV Home/BL	193 (97%)	5 (3%)	198 (100%)
EVClass/BL	146 (99%)	1 (1%)	14 (100%)
In-Person/BL	242 (100%)	0 (0%)	242 (100%)
Online	2278 (98%)	54 (2%)	2332 (100%)
Total	**2,859**	**60**	**2,919**

Note: Percentages rounded.

Chi-square testing did not provide enough evidence to support the idea that withdrawal rates and modes were related. Also, the data used for the test included only a small number of withdrawals, which can give less credible results. Nevertheless, these results are shown in Table 8.

Table 8. Withdrawal rate chi-square test results (α=.05)

Statistic	DF	Value	p-value
Chi-square	12	7.4603382	0.0586

Note: The data generated a low expected cell count warning.

To get a more accurate picture of withdrawal rates, Fisher's Exact Test was used. This test compares each individual mode to another. The results are shown in Table 9.

Table 9. Fisher's exact test post-hoc results: withdrawal rates (α=.05)

	p-value
EV-H and In-Person	.0179**
EV-H and Online	.8051
EV-C and In-Person	.3779
EV-C and Online	.2556
In-Person and Online	.008**
EV-H and EV-C	.2454

Note: The P value that is followed by ** indicates that the test was considered significant before applying the Bonferroni adjustment, but not significant after applying the adjustment to alpha.

Statistically significant findings were noted in the In-Person vs. Online comparison only. There is some evidence to suggest a significant relationship between learning mode and withdrawal rates in these cases. In both cases, the In-Person withdrawal rates were significantly lower. We suggest that more data would be needed to get a more accurate picture of withdrawal rates amongst learning modes in English 123.

Results and Discussion

The results of this study indicate that learning mode and failure rates were related variables. In this study, EagleVision Home and EagleVision Classroom had significantly higher failure rates than traditional In-Person classes. EagleVision Classroom also had a significantly higher failure rate than Online.

Grade distributions were related to learning modes overall. Specifically, traditional In-Person student performance differed significantly from all other modes. In-Person students earned the second highest percentage of As and the highest number of Bs of all the four modes. Additionally, In-Person Classroom students earned fewer Cs, Ds and Fs. Online and EagleVision Home students also differed significantly from each other. Online students earned more As and fewer Bs, Cs, Ds and Fs than EagleVision Home students.

The database used for this study consisted of 2,859 students who used one of four learning modes while taking English 123. Due to the large sample size, it is necessary to note that some statistical tests could appear stronger than they should be. However, the Bonferroni adjustment used in this study is also relatively conservative compared to other methods of adjusting alpha for multiple

comparisons. Still, most p-values in the tests were significant despite this conservative approach to adjusting Type I error rates for multiple comparisons, and the sample size should be considered when discussing the results of statistical tests used in this study.

Testing on different withdrawal rates between the modes suffered from low cell count warnings in chi-square testing. However, pairwise testing between the modes yielded a significant difference between the In-Person and Online withdrawal rates. In this study, In-Person classroom students withdrew at a lower rate than Online students.

The study also did not randomly assign students into different learning modes; instead, students chose their own learning mode. It is possible that the type of student who chose a specific mode would tend to have a better pass rate and higher grades than a student who chose a different mode. When Stack (2015) accounted for this in his research, he found no significant difference between online learning and traditional classroom learning. Therefore, we suggest that in future studies, if possible, students should be randomised. However, we do not believe that this randomisation is likely to greatly improve the accuracy of the tests.

Limitations

Additional variables could affect the results of this research. For instance, teacher experience was not assessed in this study. Additionally, some learning modes (In-Person and Online) have been used for longer periods of time than others. It is possible that the amount of experience an instructor has in teaching in a specific learning mode could affect the pass rate and grade distribution. Future studies should look to include this variable to determine its validity.

Student age was not assessed in the study. An older student could seem more or less capable in handling specific learning modes, which could affect the pass rate and grade distribution for a learning mode. Finally, the location of a class could affect the results.

Student learning styles were not examined, although it is recognised that learning styles can influence the choice of learning mode a student would prefer.

Significant life events include such changes as a birth or death in the family, financial hardship, loss of employment, illness or family breakup. These factors can affect student performance, but would have required a different methodological approach (surveys or interviews) than that used in this research.

Conclusions

The researchers found that grades, pass/fail percentages and withdrawal rates differ significantly among different learning modes. It is imperative that faculties and institutions work to create consistency of experience so that student grades are based on learning rather than on modality. The findings of this study have the potential to affect curriculum design to improve the likelihood that students will achieve similar results regardless of how they choose to take the course. Regardless of curriculum design, differences in faculty members' experience and students' experience in particular learning modes will always be present. Future research can focus on these areas.

Recommendations

Future studies should include a teacher-experience variable to determine the impact of instructor experience on student performance. Student age should also be considered in future studies that compare distance-learning modes with traditional in-person classrooms.

Students and teachers could have more experience with newer learning modes in different locations, which could affect students' grades and pass rate. These variables were not examined in this study, but should be assessed in future studies to achieve a more accurate understanding of the impact of a learning mode on pass/fail rates, grade distribution and withdrawal rates.

For English 123, our study showed a low number of withdrawals in each learning mode. Without a larger number of withdrawals in each learning mode, it is difficult to determine if the difference in withdrawal rates is truly due to the learning mode itself or if it is an outcome of chance or specific cases. Future research in this area should focus on getting a larger sample size than that was used in this study, to yield a more accurate picture of the true withdrawal rate for a specific learning module.

EV Classroom and EV Home showed no significant difference in any of the multiple comparison tests that this study conducted. For this reason, as well as the similar nature of the two learning modes, it might be unnecessary to separate the two EV modes in future studies. Combining these two classes into a singular EV variable could increase the number of students associated with the learning-mode variable and give the educational community a greater understanding of the difference between EV learning modes compared to other learning modes.

Despite ERAU's efforts to provide a consistent learning experience across all modalities, it is apparent there is variation in the grades and withdrawal rates; this leads to the conclusion that this consistency has not been entirely achieved. The reasons are likely multifaceted. The reality that students are able to self-select may mean that, in some cases, students are not merely selecting courses based on scheduling preferences but are attempting to match the modality with their preferred learning style. Future studies could also attempt to ascertain what students know about their style and what modalities work best for them.

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