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Comparing In-Person and Online Air Force Professional Military Education Instruction during the COVID-19 Pandemic

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Abstract

U.S. Air Force enlisted professional military education taught leadership development courses in a facilitated online format for the first time in the program's history during the COVID-19 pandemic. This cross-sectional, quasi-experimental study collected and analyzed 12 months of data from three of the largest Airman leadership schools globally. This study examined students from nearly all enlisted Air Force specialties (n = 1,183). Comparing process, demographic, and student learning data from six months of in-person and six months of online instruction, independent samples t-tests revealed students generally earned significantly higher grades in online classes than in person. Course length and student travel costs were the same for both course types. Instructors took as long or longer to complete initial instructor qualification training when teaching online compared to teaching in-person courses. The switch to online instruction eliminated disciplinary disenrollments. Military decision-makers can utilize these data when considering the benefits of continuing to conduct professional military education in online learning environments.

U.S. Air Force (USAF) Enlisted Professional Military Education (EPME) shifted traditionally in-person leadership development courses to an online facilitated format due to the COVID-19 pandemic (Culbert, 2020). Keys (2021) evaluated the teachers' sense of efficacy of 26% (n = 129) of the 500 EPME in-

structors teaching in 80 schools worldwide. Results indicated that instructors across all military ranks teaching across all levels of EPME generally felt confident and competent when teaching EPME in online learning environments, despite not having received preservice or in-service training specific to online teaching and learning. While Keys (2021) relied solely on perceptions data (how staff felt about the learning environment), this research aimed to continue the work of Keys by evaluating additional data types: process, demographic, and student learning data. This study collected and analyzed 12 months of data from students (n = 1,183) attending three schools teaching the Airman Leadership School (ALS) curriculum both in person (n = 558, 47%) and online (n = 625, 53%) for six months preceding and six months after the onset of the COVID-19 pandemic and the shift to online instruction. EPME decision-makers of all military branches can utilize this study's results when determining the benefits of teaching professional military education online.

Background

Synchronous Online EPME—An Unprecedented Shift

The COVID-19 pandemic forced educators nationwide to shift traditionally in-person instruction to online learning environments in Spring 2020, and Air University was at the forefront of this mandated change in course delivery (Culbert, 2020). Over 500 enlisted USAF instructors teaching EPME leadership courses across 80 schools had no choice but to teach online for the first time in the history of the program (Culbert, 2020; Keys, 2021). Instructors had between one and four years of total teaching experience within the USAF EPME enterprise.

Tens of thousands of airmen who are chosen for promotion each year require EPME completion before assuming the next rank (AF/A1D 2018), spurring Air University to continue hosting courses online during the COVID-19 pandemic.

Air Force guidance stated, "distance learning instructors must complete the same qualification process as a traditional classroom instructor" (Community College of the

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Air Force, 2017, p. 25) but did not mandate preservice or in-service training specific to teaching online. Keys (2021) challenged the validity of this guidance by examining the efficacy of preservice training for USAF EPME instructors teaching online during the COVID pandemic. In this study, 26% (n = 129) of all instructors across all levels of USAF EPME responded to a teacher sense of efficacy survey focusing on Robinia and Anderson's (2010) four facets of teaching efficacy: technology use, classroom management, student engagement, and instructional strategies. Results indicated that instructors generally felt confident and competent teaching online despite not having specialized training to teach in online learning environments. Results also indicated a positive relationship between higher reported senses of teaching efficacy and years of instructor experience. Instructors who worked with an instructional support specialist (someone who provides coaching and mentorship, and models effective teaching strategies in areas such as educational technologies or educational psychology) showed a significantly higher sense of teaching efficacy than instructors who did not. Finally, the study recommended that future research incorporate process, demographic, and student learning data types, which will be described in the Conceptual Framework section.

This study aims to continue the work of Keys (2021) by comparing online and in-person process, demographic, and student learning data from the ALS level of USAF EPME to examine the efficacy of online courses during the COVID-19 pandemic.

EPME Instructor Training

USAF EPME instructors attend preservice training traditionally consisting of 158 hours of in-person instruction at the EPME instructor course taught at Air University (Air University, 2020). Preservice training focuses on teaching the basics of in-person instruction methodology, student engagement, and classroom management (Air University, 2020). After preservice training, instructors teach in the schoolhouse to certify on a specific curriculum under the guidance of an instructor trainer for 120 hours before teaching independently (Department of the Air Force [DAF], 2018).

Airman Leadership School

ALS is the first level of USAF EPME and is a 24-day leadership development course (Department of the Air Force [DAF], 2021). There are 68 ALS schools worldwide for active-duty airmen and one for Air National Guard airmen, all centrally managed by and subordinate to the Thomas N. Barnes Center for Enlisted Education (BCEE) within Air University (Air University, 2021). Senior airmen are mandated to complete ALS before promoting into the noncommissioned officer corps (AF/A1D, 2018; BCEE, 2021a; DAF, 2021). Per the BCEE (2021a), the mission of ALS is "to pre-

pare Senior Airmen to be professional, warfighting Air and Space professionals who can supervise and lead Air and Space Force work teams to support the employment of air, space, and cyberspace power" (p. 3). Airmen earn eight semester hours of college credit in leadership, management, and military studies through the Community College of the Air Force upon graduating ALS (BCEE, 2021b).

This study examined the ALS curriculum taught from September 2019 through September 2020. Per the BCEE (2019), the ALS program outcomes were as follows:

- students communicate their contribution to the wing and USAF missions,
- students collaborate and connect with members of the USAF team,
- students apply cognitive strategies to solve USAF problems, and
- students exhibit the USAF core values and instill them in others.

The ALS curriculum consisted of five graded assignments:

- a briefing on the USAF mission (individual oral presentation),
- a presentation on being a professional airman (individual oral presentation),
- a problem-solving presentation (group oral presentation),
- an evaluation of the USAF core values (individual written assignment), and
- a capstone assignment synthesizing all course concepts (individual written assignment).

Community College of the Air Force (2017) guidance did not mandate instructors attend preservice or in-service education tailored to the online learning environment when teaching ALS online. While some instructors potentially sought out best practices for online instruction to learn on their own, Air University did not provide formal training to prepare instructors to teach ALS online during the COVID-19 pandemic.

Conceptual Framework: Data-Driven Decision-Making for School Improvement

This study utilized Bernhardt's (2018) data-driven decision-making for school improvement framework, utilized across myriad educational research studies to evaluate program efficacy (Dunn et al., 2013; Lange et al., 2012; Parham, 2015). Bernhardt posits that educational leaders can utilize data-driven decision-making for school improvement by collecting and analyzing four data types: perceptions, process, demographic, and student learning data.

Perceptions Data

Perceptions data include the opinions, values, beliefs, and convictions of educational stakeholders, including students, staff, administrators, parents, and community members (Bernhardt & Geise, 2009). Perceptions data answer the question

how do we do business, and can be collected via interviews, observations, surveys, and questionnaires (Al Ahbabi, 2019; Bernhardt, 2018). Administrators can use perceptions data to evaluate how faculty members perceive the school environment, utilizing the data in planning, resourcing, and allocating professional development opportunities to teachers (Akert & Martin, 2012).

Process Data

Per Bernhardt (2018), school processes are actions, decisions, and behaviors exhibited by school staff and faculty to achieve a school's vision. Examples of school processes include the techniques and strategies instructors employ in learning environments, those structures schools put in place to implement a shared vision, elements about schooling that we count, such as class sizes, and the structures and elements that help schools continuously improve their systems.

School process data include information about the processes employed to deliver educational programs, to include class sizes, assignment types, attendance, policies, use and number of staff, inclusion, differentiated instruction, and the school's mission and vision (Kowalski et al., 2008; Lange et al., 2012).

Demographic Data

Demographic data provide insight into the characteristics of the student population (Bernhardt, 2018). They include information, for example, about student and faculty ethnicity, teacher and student attendance, socioeconomic status, age, special needs status, number of students enrolled in a program, number of graduates, dropout rates, and number of teachers by years and experience (Bernhardt, 2018; DuFour et al., 2013; Lange et al., 2012). Schools can leverage demographic data to analyze how it has served past and current populations and identify changes needed to meet the needs of future students and faculty (Bernhardt, 2018; Reeves, 2005).

Student Learning Data

Student learning data allows researchers to understand what students know because of instruction, what teachers are teaching, and where students need assistance (Bernhardt, 2018). Student learning data includes formal and informal assessments of learning, progress monitoring, grade distributions, benchmark tests, and formative and summative assessments (Moskal et al., 2008; Wilhelm, 2011). In addition, researchers can utilize quantitative and qualitative methods to obtain student learning data (Lange et al., 2012).

This study aims to continue the research of Keys (2021) by adding process, demographic, and student learning data types to already-reported perceptions data. Together, these data should present a holistic picture of the efficacy of online ALS courses during the COVID-19 pandemic.

Research Questions

This study began with three research questions:

1. Was there a difference in travel and lodging costs, instructor training timelines, and course length between online and in-person ALS courses (process data)? If yes, how significant were these differences?
2. Was there a difference in student body size or student disenrollment numbers between online and in-person courses (demographic data)? If yes, how significant were these differences?
3. Was there a statistically significant difference in grades across all graded assignments in the ALS course when comparing online and in-person courses (student learning data)? If yes, what were the effect sizes of these differences?

Hypotheses

Per the BCEE (2021a), schools can teach ALS online or in person. ALS graded assignments include briefings and written papers not tailored to a particular course delivery method (in-person or online; synchronous or asynchronous). Community College of the Air Force (2017) policy does not mandate online instructors complete preservice or in-service education tailored to the online learning environment. With this information as a foundation, this study's hypotheses were as follows:

1. There will be no statistically significant difference in travel and lodging costs, instructor training timelines, and course length between online and in-person ALS courses.
2. There will be no statistically significant difference in student body size or student disenrollment numbers between online and in-person courses.
3. There will be no statistically significant difference in grades across all graded assignments in the ALS course when comparing online and in-person courses.

Methods

While EPME consists of four levels of leadership training (DAF, 2021), this research focused on the ALS level due to the other levels teaching different course material

before and after the shift to online learning during the COVID-19 pandemic (Keys, 2021). ALS was the only EPME level to teach the same material online and in person, providing the opportunity to compare similar data between the delivery methods that could produce valid and reliable results utilizing a cross-sectional design.

There are 68 ALS schoolhouses worldwide for active-duty airmen and one for Air National Guard airmen globally (Air University, 2021). The author chose the representative sample in this study based on the following criteria:

- in the top 10% of ALS schools based on student population size,
- diversity of student body when considering students' specialties within the USAF,
- each school trained at least one instructor during in-person learning and at least one instructor during virtual learning,
- at least one school was located within the United States and at least one school was located outside the United States,
- each school taught at least three iterations of ALS in-person before the COVID pandemic, and
- each school taught at least three iterations of the same ALS curricula online after the start of the COVID pandemic.

Upon screening all 69 schools, the author chose three schools for this study once it was determined there would be students from all USAF career field specialty groups represented in the sample. The one exception was the special investigations career field, as airmen typically complete ALS before entering that career field. Schools 1 and 2 were located within the continental United States, while School 3 was in a country other than the United States. All three schools primarily served active-duty airmen. Therefore, results cannot be generalized to the Reserve Component population within EPME.

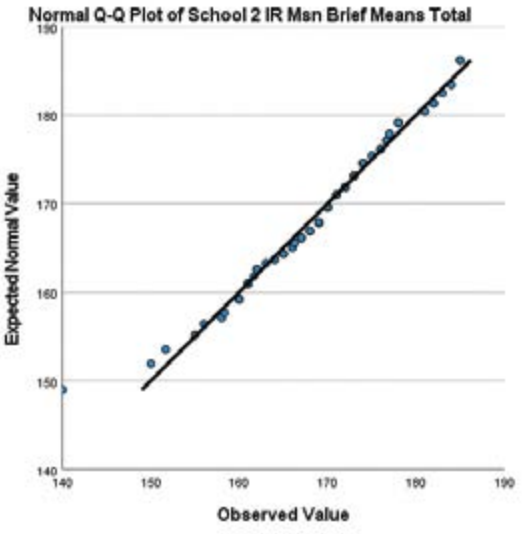
This study was granted exempt status from the institutional review board at Air University. The author obtained all relevant process, demographic, and student learning data for this study from the Academic Affairs department at the Thomas N. Barnes Center for Enlisted Education within Air University. This study analyzed data for the six months of in-person learning prior to the COVID-19 pandemic and six months of online learning immediately after EPME shifted to the online learning environment.

The Thomas N. Barnes Center for Enlisted Education provided student travel and lodging cost, course length, disenrollment, and instructor training data for in-person and online ALS courses for each of the three schools in this study. For these data, the center did not provide more granular data for each specific 24-day seminar or each student within the 12 months of data.

This study obtained student grades for all five assignments for in-person (n = 558, 47%) and online (n = 625, 53%) students at each school. The author calculated the mean, standard deviation, and range of each assignment's score for in-person and online instruction for each school using IBM SPSS Statistics (Version 28). Kolm-

Figure

Normal Q-Q Plots of School 2's In-Residence Mission Briefing Assignment



ogorov-Smirnov and Shapiro-Wilk tests were run for each school's in-person and online grade data and confirmed normality of data along with histograms and Q-Q plot charts (see Figure).

This research utilized independent samples *t*-tests to compare student learning data between each school's in-person and online iterations of ALS. Each school was compared against itself, as opposed to other schools, to ensure consistency across instructor personnel, populations from which students were chosen (each base aligned to each ALS schoolhouse), personnel experience, school leadership, and local rules and regulations specific to each school. Eliminating these variables ensured a valid, reliable, and unobscured analysis of student grades across all assignments, as the goal was to eliminate as many outside variables as possible, including differences in the execution of instruction between schools. In total, this study analyzed three sets of five different assignments completed in-person and online. This research used an alpha of 0.05 throughout all tests. Therefore, any independent samples *t*-tests resulting in an alpha of $p < 0.05$ would indicate that differences in grades are statistically significant, with the difference not simply occurring due to chance.

When examining statistically significant results, this study utilized Cohen's (1998) method to determine effect sizes, or how large a statistically significant difference is. This method involves calculating the mean difference between two groups, and then dividing the result by the pooled standard deviation.

Table 1
Average Instructor Internship Completion Time by School

	In-Person	Online
School 1	7 months (1 instructor)	9 months (1 instructor)
School 2	3.5 months (3 instructors)	8 months (1 instructor)
School 3	9 months (2 instructors)	9 months (4 instructors)

Table 2
Average Student Cohort Size per 24-Day Airman Leadership School Seminar

	In-Person	Online
School 1	56.3	55
School 2	73.3	64.6
School 3	82.5	88.6

Results

Process Data

Student Travel and Lodging Costs. Active-duty students attending ALS in person lived in the local area near their ALS schoolhouse and did not incur travel, lodging, or per diem costs when attending training in person. Air University provided no data on Air Guard or Reserve students who would have traveled to the in-residence course.

Active-duty students attending ALS online also incurred no travel or lodging costs, as there was no mandated travel for the online course.

Course Length. ALS courses were 24 academic days in length for all schools, both in person and online.

Instructor Training Timelines. New USAF EPME instructors are required to complete a 120-hour teaching internship before consideration for a fully qualified instructor (BCEE, 2021c). A total of 12 instructors completed internships during in-person (n = 6, 50%) and online (n = 6, 50%) courses. Instructors in the online environment completed internships at the same rate or slower than instructors teaching in person at the same school (see Table 1). Air University provided average instructor internship completion times for each school for in-person and online instruction and did not provide specific timelines for individual instructors.

Table 3
Total Airmen Disenrolled from Airman Leadership School In Person and Online

	Sep 2019–Mar 2020 (in-person)			Apr–Sep 2020 (online)		
	Academic	Disciplinary	Administrative	Academic	Disciplinary	Administrative
School 1	0	3	0	0	0	1
School 2	0	0	0	0	0	0
School 3	0	0	0	0	0	0

Demographic Data

Student Population. This research studied data from 1,183 students across three schools; 558 (47%) attended in-person courses, while 625 (53%) attended online courses. Table 2 displays the average cohort size per 24-day course. Students were serving in the pay grades of E-4 or E-5 and were representative of all Air Force specialties, except for the special investigations specialty, as airmen typically complete ALS before entering the special investigations career field (Air Force Personnel Center, 2021).

Course Disenrollment. Per the BCEE (2021a), there are three EPME disenrollment types: academic, disciplinary, and administrative. Academic disenrollment occurs when a student fails to meet academic standards and an academic review board determines that the student should be disenrolled due to subpar academic performance. Students receive a disciplinary disenrollment when they violate USAF directives, school policies, or commit offenses under the Uniform Code of Military Justice. Administrative disenrollment occurs when a student is needed to return to his or her operational squadron to accomplish a military mission or in emergencies involving the student or an immediate family member.

Total disenrollments across all schools in a six-month period dropped from three to one after switching to online learning. Disciplinary disenrollment numbers were eliminated in the online environment, while they previously comprised 100% of the disenrollments from in-person courses (see Table 3). The only disenrollment in the online course was for administrative reasons.

Student Learning Data

Across all three schools, mean grades were higher in online courses than in-person courses on 13 of 15 assignments analyzed in this study. Grade ranges were higher in online learning environments than in-person learning environments on 14 of 15

Table 4
School 1 Student Learning Data by Assignment

Assignment	Mean		*SD*		Range		Sig
	In-Person	Online	In-Person	Online	In-Person	Online	
Mission	153.44	156.72	6.73	14.27	30	70	0.066
Prof. Amn.	119.2	123.6	4.24	7.99	20.5	40	< .001
Prob. Solv.	83.25	87.25	3.36	6.6	15	25	< .001
Core Value	120.2	126.12	4.05	10.39	20	45	< .001
Capstone	284.51	292.45	7.94	22.1	42	96	0.003

Table 5
School 2 Student Learning Data by Assignment

Assignment	Mean		*SD*		Range		Sig
	In-Person	Online	In-Person	Online	In-Person	Online	
Mission	169	181	8.09	10.04	45	55	< .001
Prof. Amn.	131.9	140.1	7.75	6.65	45	35	< .001
Prob. Solv.	91.39	93.58	4.39	4.41	20	20	< .001
Core Value	134.6	136.4	5.9	8.9	30	37.5	0.103
Capstone	330.3	341.2	21.64	25.31	96	114	0.002

assignments analyzed across all schools. In online learning environments, standard deviations were larger than for in-person environments in 14 of 15 assignments analyzed across all schools.

The group problem-solving presentation was the only assignment with statistically significant higher scores in the online learning environment across all three schools.

School 1. Independent samples *t*-tests were conducted to compare School 1 student scores across five assignments in online and in-person learning environments (see Table 4). There was a significant difference in scores on four of the five assignments: problem solving briefing in person ($\mathcal{M}$ = 83.25, $\mathcal{SD}$ = 3.36) and online ($\mathcal{M}$ = 87.25, $\mathcal{SD}$ = 6.60); $t(158) = -4.819$, $p < .001$; professional airman presentation in person ($\mathcal{M}$ = 119.2, $\mathcal{SD}$ = 6.73) and online ($\mathcal{M}$ = 123.6, $\mathcal{SD}$ = 7.99); $t(158) = -4.349$, $p < .001$; core values written assignment in person ($\mathcal{M}$ = 120.2, $\mathcal{SD}$ = 4.05) and online ($\mathcal{M}$ = 126.12, $\mathcal{SD}$ = 10.36); $t(158) = -4.759$, $p < .001$; and capstone assignment in person ($\mathcal{M}$

Table 6
School 3 Student Learning Data by Assignment

Assignment	Mean		*SD*		Range		Sig
	In-Person	Online	In-Person	Online	In-Person	Online	
Mission	177	174	10.14	16.8	44	60	0.208
Prof. Amn.	138.3	139	5.57	8.4	23	32.5	0.606
Prob. Solv.	96.1	97.3	2.8	3.4	12	10	0.03
Core Value	131.4	129	7.59	11.83	36.67	55	0.194
Capstone	353.3	360	14.07	28.61	69.6	120	0.117

= 284.51, $\mathcal{SD}$ = 7.94) and online ($\mathcal{M}$ = 292.45, $\mathcal{SD}$ = 22.1); $t(158) = -3.023$, $p = 0.003$. Effect sizes ranged from .48 to .75, which are considered medium per Cohen (1988).

These results suggest that online learning affects student achievement in School 1. Specifically, results suggest that students at this ALS schoolhouse achieve significantly higher grades when completing assignments online as opposed to in person.

School 2. Independent samples *t*-tests were conducted to compare School 2 student scores across five assignments in online and in-person learning environments (see Table 5). There was a significant difference in scores on four of the five assignments: mission presentation in person ($\mathcal{M}$ = 169, $\mathcal{SD}$ = 8.09) and online ($\mathcal{M}$ = 181, $\mathcal{SD}$ = 10.04); $t(188) = -9.34$, $p < .001$; professional airman presentation in person ($\mathcal{M}$ = 1.32, $\mathcal{SD}$ = 7.75) and online ($\mathcal{M}$ = 140.1, $\mathcal{SD}$ = 6.65); $t(188) = -8.511$, $p < .001$; problem solving briefing in person ($\mathcal{M}$ = 91.39, $\mathcal{SD}$ = 4.39) and online ($\mathcal{M}$ = 93.58, $\mathcal{SD}$ = 4.41); $t(188) = -3.432$, $p < .001$; and capstone assignment in person ($\mathcal{M}$ = 330.1, $\mathcal{SD}$ = 21.64) and online ($\mathcal{M}$ = 341.2, $\mathcal{SD}$ = 25.31); $t(188) = -3.189$, $p = .002$. The effect sizes ranged from .49 to 1.35, which are medium to much larger than typical, respectively, per Cohen (1988).

These results suggest that online learning influences student achievement in School 2. Specifically, results suggest that students at this ALS schoolhouse achieve significantly higher grades when completing assignments online as opposed to in person.

No School 2 students recorded a perfect score on the mission brief or capstone assignment in six months of in-resident courses, but 22% (n = 39) of students obtained perfect scores on the mission briefing, and 6% (n = 12) of students obtained perfect scores on the capstone in six months of online ALS.

School 3. This study conducted independent samples *t*-tests to compare School 3 student scores across five assignments in online and in-person learning environments (see Table 6). There was a significant difference in scores on the problem-solving assignment in person ($\mathcal{M}$ = 96.1, $\mathcal{SD}$ = 2.8) and online ($\mathcal{M}$ = 97.3, $\mathcal{SD}$ = 3.4); $t(114) = -2.203$, $p = .03$. The effect size was .49, which is typical per Cohen (1988).

These results suggest that online learning did not generally influence student achievement in School 3. Specifically, results suggest that students at this ALS schoolhouse do not achieve significantly higher grades when completing assignments online as opposed to in person.

Discussion

ALS schools around the globe pivoted to online learning environments due to the COVID-19 pandemic. To evaluate the efficacy of these online courses, this study examined 12 months of online and in-person process, demographic, and student learning data from three of the largest ALS schools, analyzing data from 1,183 students representing all Air Force specialties expected to attend ALS courses.

Data revealed no difference in course length or student travel and lodging costs when comparing online and in-person ALS courses. Instructor training took as long or longer to complete in the online environment compared to in-person learning environments.

The average student cohort size varied when comparing online and in-person learning. Schools 1 and 2 had a larger average student cohort size in person, while School 3 had a larger average cohort size online.

Total course disenrollments dropped from three to one in a six-month period after schools switched to online learning. There were no disciplinary releases from online courses, while in person they accounted for 100% of student disenrollments. These changes in disenrollments cannot be explained by currently available data and require a qualitative approach to investigate the cause(s) for this shift in demographic data.

Results indicated that students in Schools 1 and 2 displayed a significant difference in grades in the majority (80%) of assignments, scoring higher grades in online learning environments than in-person environments. Students in School 3 displayed a significant difference in grades on one assignment in the online learning environment, but generally did not have significantly different scores when comparing online and in-person learning environments.

Hypothesis Findings

Hypothesis 1 was partially supported, as there was no variance in course length. However, there was a variance in disenrollment rates and student body sizes when comparing online and in-person instruction. Hypothesis 2 was also partially supported, as School 3 instructors trained for the same amount of time online and in person. However, Schools 1 and 2 had longer training times in the online environ-

ment. Hypothesis 3 was not supported, as there was a statistically significant difference in grades across most assignments analyzed in this study.

Conclusion

Keys (2021) collected and analyzed perceptions data when evaluating the efficacy of online USAF EPME and found that instructors generally felt confident and competent when teaching online, despite not having received specialized training to do so. The study found that instructors felt online EPME courses to be generally effective. This study adds additional data supporting the efficacy of online EPME as process, demographic, and student learning data revealed that students in three of the largest ALS schools generally performed significantly better in online environments than in-person. There were no student disenrollments due to disciplinary issues in the online courses. In addition, the switch to online learning affected neither course length nor student travel and lodging costs.

Limitations and Future Research

This was a quantitative study focused on examining what the differences were between leadership training presented in two different delivery methods, but did not focus on why the data differed, as that data is best collected in a qualitative manner. Now knowing that there were statistically significant differences across data types in USAF EPME before and after the switch to online learning, future qualitative research should focus on learning why these differences occurred. Potential qualitative research questions follow:

- Why were instructor qualification timelines longer during online courses than in-person courses?
- Why did School 2 have perfect scores on assignments in the online environment, but not in the in-person environment?
- Why were there no disciplinary disenrollments in the online courses, while there were disciplinary disenrollments in person?
- Why were grades in School 3 significantly different on only one assignment, while grades in Schools 1 and 2 were significantly different across most of their assignments?

This research examined three of the largest ALS schools for active-duty USAF personnel. Future studies should collect data from additional ALS schools to generalize findings more accurately to the EPME enterprise. Additionally, while instructor training timelines were as long or longer in the online learning environment as they were in person, no data was available to determine whether instructors remained in a training

status when EPME courses were paused at the beginning of the COVID-19 pandemic. This possible inability to continue instructor training during class pauses may have potentially increased the length of instructor training timelines. Finally, while this study compared each school's in-person and online courses, future studies should compare schools to one another, including the ALS school for Air National Guard students.

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