ACUE

LASTING IMPACT:

IMPROVED GRADES AT TEXAS WOMAN'S UNIVERSITY

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EXECUTIVE SUMMARY

Several recent evaluations have found positive effects of the ACUE credential on student course outcomes (Hecht, 2019; Lawner & Snow, 2018; Lawner & Snow, 2019a; Lawner & Snow, 2019b; Lawner, Snow & Burt, 2019; Lawner et al., 2019; Lawner & Snow, 2020). While nearly all of the prior evaluations have examined the impact on student outcomes while faculty were earning the credential, only a few have examined outcomes in the year(s) after faculty earned their ACUE credential (Hecht, 2019; Lawner & Snow, 2019b, Lawner & Snow, 2020). To more fully understand the impact of the ACUE credential, it is important to study the continued impact after faculty have earned their credential.

This evaluation examines the impact of the ACUE course on student course outcomes at Texas Woman's University (TWU), a mid-sized public co-educational university that grants degrees from bachelor's through doctorates. TWU is located in the Dallas-Fort Worth area, with two additional branch campuses in Dallas and Houston. The first cohort of TWU faculty to earn an ACUE credential consisted of faculty from across all three campuses. The differences in course completion and grades over time of students who were taught by an ACUE-certified faculty from the first cohort are compared to the differences in course completion and grades over time of students taught by match faculty members.

The evaluation found that there was a significant impact of the ACUE course on students' average course grades in the year after faculty earned their credential. Relative to the baseline year, students in course sections taught by ACUE-certified faculty had significantly higher grades in the year after faculty earned their credential. Importantly, there was not a significant improvement among match faculty over the same time period.

ABOUT ACUE

The Association of College and University Educators' (ACUE) mission is to ensure student success and equity through quality instruction. In partnership with colleges, universities, higher education systems and associations, ACUE prepares and credentials faculty in the evidence-based teaching practices that improve student achievement and close equity gaps. Numerous and independently validated studies confirm that students are more engaged, learn more, and complete courses in greater numbers—more equitably with their peers—when taught by ACUE-credentialed faculty. ACUE's online, cohort-based credentialing programs are delivered through institutional partnerships and open enrollment courses endorsed by the American Council on Education.[1]

INTRODUCTION

The Association of College and University Educators aims to improve student outcomes through quality college instruction (MacCormack et al., 2018). ACUE developed an accountability framework in order to conduct evaluations of its partnerships with colleges and universities where faculty are credentialed in effective college instruction through ACUE's

[1] To learn more visit acue.org.

courses in effective teaching practices (see MacCormack et al., 2018). This accountability framework has six levels of evaluation, from faculty engagement through institutional outcomes. Student outcomes is level 5.

Several prior evaluations using course-level data found positive effects of the ACUE course on student outcomes, specifically rate of student success (Lawner & Snow, 2018; Hecht, 2019) and average grades (Hecht, 2019; Lawner & Snow, 2019a; Lawner & Snow, 2019b; Lawner, Snow, & Burt, 2019). More recent evaluations have used student-level data to examine the effect of the ACUE course on student outcomes across subgroups, finding that students taught by ACUE faculty were more likely to complete and pass their courses, with a course completion gap closing for Black students and a course passing gap closing for Pell-eligible students (Lawner, Snow, MacCormack et al., 2019; Lawner & Snow, 2020).

While nearly all of the prior evaluations have examined the impact on student outcomes of earning the ACUE credential while faculty were earning the credential, only a few have examined outcomes during the year after faculty earned their ACUE credential (Hecht, 2019; Lawner & Snow, 2019b, Lawner & Snow, 2020). To more fully understand the impact of the ACUE credential, it is important to study the continued impact on student outcomes after faculty have earned their credential.

This evaluation similarly uses student-level data to examine the impact of the ACUE course in Effective Teaching Practices on student outcomes at Texas Woman's University (TWU), a mid-sized public co-educational university that grants degrees from bachelor's through doctorates. TWU is located in the Dallas-Fort Worth area, with two branch campuses in Dallas and Houston. The evaluation focuses on the first cohort of TWU faculty across all three campuses who participated in the ACUE course and received an ACUE credential during the 2017-2018 academic year. To determine the impact of the ACUE credential, the analysis compares the differences in outcomes over time of students who were taught by an ACUE- certified faculty to the differences in outcomes over time of students taught by match faculty members. Whereas a prior evaluation of TWU compared student outcomes in 2016-2017, the year before faculty took the ACUE course, to student outcomes in 2017-2018, while faculty were earning their credential (Lawner, Snow, MacCormack et al., 2019), this evaluation updates findings by analyzing student outcomes in the year after faculty earned an ACUE credential, 2018-2019.

METHODS

Participants and Procedures

In the 2017-2018 academic year, twenty-four TWU faculty earned an ACUE credential. This evaluation focuses on the 16 TWU faculty who earned an ACUE credential, consented to participate in the evaluation, and who were still employed at TWU in the 2018-2019 academic year.[2]

The TWU office for Institutional Research and Improvement identified a "match" for each of the ACUE-certified faculty in the years before the faculty started the ACUE course (2016-2017), while the faculty were taking the ACUE course (2017-2018), and after faculty earned their credential (2018-2019). Matches were based on 1) courses taught, 2) type of faculty (e.g., full-time, adjunct), and 3) years of experience, in that order. Due to the emphasis in matching on

[2] A previous evaluation (Lawner, Snow, MacCormack et al., 2019) focuses on the eighteen TWU faculty who earned an ACUE credential in 2017-2018 and consented to participate in the analysis. Two of the consenting faculty were no longer employed at TWU in 2018-2019.

courses taught, ACUE-certified faculty were not always matched with the same person in each semester. Thus, the evaluation includes 60 unique match faculty.

Demographic data provided for the consenting ACUE-certified faculty and match faculty reveal that there was not a significant difference between ACUE-certified faculty and match faculty in their rank (simplified to staff, graduate student, non-tenure track, tenure track, and tenured), $\chi^2(4, N = 76) = 6.61$, $p = .158$, or gender, $\chi^2(1, N = 76) = 0.08$, $p = .776$. There was, however, a significant difference between ACUE-certified and match faculty in the total years of teaching experience, $F(1, 74) = 6.50$, $p = .013$, with ACUE-certified faculty having significantly fewer years of experience ($M = 5.53$, $SD = 3.80$) than the match faculty, ($M = 11.03$, $SD = 8.36$).

Institutional Research and Improvement also provided course and demographic data at the student enrollment level for all students who were enrolled in the courses taught by ACUE-certified and match faculty between the 2016-2017 and 2018-2019 academic years. The total sample of 9,405 student enrollments represents 4,748 non-unique student enrollments from 332 course sections taught by 16 ACUE faculty and 4,657 non-unique student enrollments from 288 course sections taught by 60 match faculty. See Table 1 for a breakdown of student enrollments and course sections by time period. Some students appear multiple times in the dataset because they were enrolled in more than one course that was included.[3] There are 6,535 unique students from the 9,405 student enrollments.

Table 1

Number of Student Enrollments and Course Sections by Faculty Type and Time Point for the 2017–2018 Cohort Sample

	Faculty type			
	ACUE		Match	
Time point	Non-unique student enrollments	Course sections	Non-unique student enrollments	Course sections
Baseline	1,684	160	1,022	98
During ACUE	1,681	99	2,054	120
Post-ACUE	1,383	83	1,581	255

There was a significant difference between students enrolled in courses taught by ACUE-certified faculty and those enrolled in courses taught by match faculty in their race/ethnicity, $\chi^2(4, N = 9{,}405) = 10.86$, $p = .028$, with ACUE-certified faculty teaching a smaller proportion of Hispanic/Latino students $\chi^2(1, N = 9{,}405) = 4.60$, $p = .032$, and a larger portion of Asian students, $\chi^2(1, N = 9{,}405) = 7.91$, $p = .005$ (see Figure 1). There was also a significant difference in class standing between students enrolled in courses taught by ACUE-certified faculty and those enrolled in courses taught by match faculty, $\chi^2(5, N = 9{,}405) = 68.41$, $p < .001$, with courses taught by ACUE-certified faculty enrolling significantly more freshmen, $\chi^2(1, N = 9{,}405) = 6.41$, $p = .011$, and juniors, $\chi^2(1, N = 9{,}405) = 20.26$, $p < .001$, marginally more sophomores, $\chi^2(1, N = 9{,}405) = 3.50$, $p = .061$, and significantly fewer graduate students, $\chi^2(1, N = 9{,}405) = 54.22$, $p < .001$

[3] Each unique student was included up to 10 times in the dataset, with a median of 1 time.

(see Figure 2). Finally, there was a significant difference in enrolled students' age, $F(1, 9{,}405) = 22.43$, $p < .001$, with courses taught by ACUE-certified faculty having younger students enrolled ($M = 24.74$, $SD = 7.96$) compared to courses taught by match faculty, ($M = 25.55$, $SD = 8.66$). There was not a significant difference in enrolled students' first-generation college status, $\chi^2(2, N = 9{,}405) = 1.66$, $p = .436$, or international student status, $\chi^2(1, N = 9{,}405) = 0.01$, $p = .936$.

Figure 1

Enrolled students' race/ethnicity by faculty type. N = 4,748 for students enrolled in sections taught by ACUE-certified faculty; N = 4,657 for students enrolled in sections taught by match faculty.

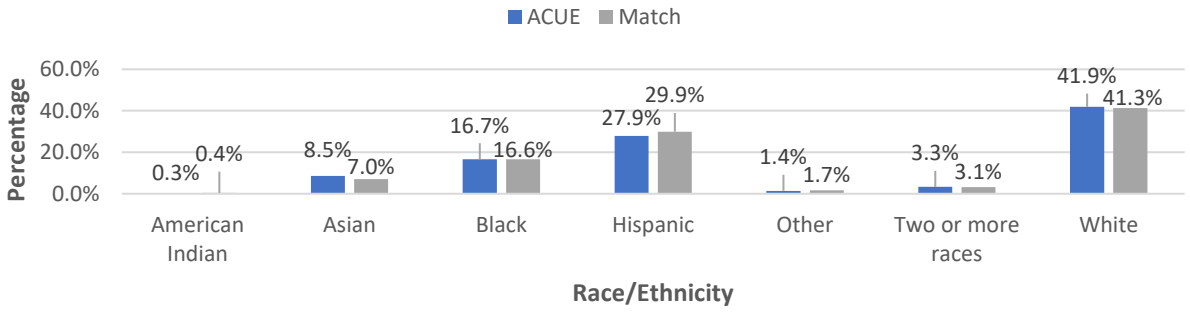
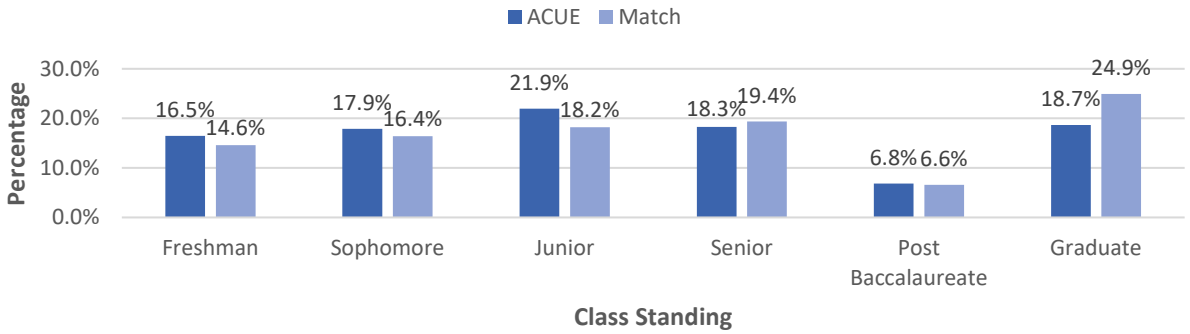


Figure 2

Enrolled students' class standing by faculty type. N = 4,748 for students enrolled in sections taught by ACUE-certified faculty; N = 4,657 for students enrolled in sections taught by comparison faculty.



Measures

Course outcomes were assessed in terms of course grades and course completion for all students who did not drop the course before the end of the add/drop period. Course grades were examined based on average grades, passing grades, and successful grades. To measure average grades, course grades were converted from an alphabetic scale to a

numeric equivalent (A = 4, B = 3, C = 2, D = 1, F = 0). However, since some students withdrew from a course before receiving a final grade or had grades that could not be converted to a numeric scale (e.g., P), there were 8,968 student enrollments in the analytic sample when using average grades as an outcome.[4] A passing or failing grade was identifiable for all students. Passing grades include A, B, C, D, P, PR, and CR.[5] Course completion encompasses all students who did not withdraw from a course or receive an incomplete (I), regardless of whether their final grade in the course was a passing grade.

RESULTS

Data Analysis Plan

Analyses were conducted using hierarchical linear regression for average course grades and hierarchical logistic regression for course passing, and completion. Control variables for faculty demographics (faculty rank, gender, years of teaching experience), student demographics (race, class standing, and age), and semester were entered in Step 1.[6] Faculty rank was simplified and dummy coded 1 if the faculty member was on the tenure track or tenured and 0 otherwise. For faculty gender, female was used as the reference group because the majority of faculty were female. Student race/ethnicity was converted to multiple binary variables. Because the vast majority of students were Hispanic/Latino, Black, or White, race/ethnicity was simplified to four categories, with the fourth category combining Asian, American Indian, Multiracial, and unknown or unreported races/ethnicities. White students, who were the highest performing group on all outcomes, were used as the reference group. Student class standing was converted to a numeric value with freshman = 1, sophomore = 2, junior = 3, senior =4, post-baccalaureate = 5, and graduate student = 6 since outcomes progressively improved with each successive level of seniority. Semester was dummy coded 1 if the course took place in the spring term and 0 if it took place in the fall.

Main effects for faculty type (dummy coded 1 for ACUE-certified faculty and 0 for match faculty) and time period (2016-2017 versus 2017-2018 versus 2018-2019) were entered in Step 2. Henceforth, each time period will be referred to as the baseline, during ACUE, and post-ACUE years, respectively. Two-way interactions between faculty type and time period were entered in Step 3. Analyses were conducted with the baseline time period as the reference group so that time period effects, including interactions, would indicate change from baseline.

The primary effects of interest are the two-way interactions between faculty type and time period because this would indicate that the change over time was different for students taught by ACUE faculty compared to students in

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[4] There was not a significant difference between ACUE-certified faculty and match faculty in the proportion of students with missing grades, χ^2 (1, N = 9,405) = 2.05, p = .152. Specifically, 4,542 students received grades for sections taught by ACUE-certified faculty and 4,426 students received grades for sections taught by match faculty.

[5] Students in the sample received one of the following course grades: A (Excellent), B (Good), C (Average), D (Inferior, but passing), F (Failure), CR (Credit), S (Satisfactory), P (Pass), PR (In progress), I (Incomplete), W (Withdrawal), and WF (Withdrawal while failing). For more information on how TWU interprets grades, visit: https://catalog.twu.edu/undergraduate/academic-information/standards/grades-points/

[6] The controls for student demographics only included those that were significantly different between students taught by the ACUE-certified faculty and students taught by match faculty.

matched sections. When those interactions were significant, follow-up analyses were conducted to examine the main effect of time among students taught by ACUE faculty and separately among students taught by match faculty.

Since Black/African American and Hispanic/Latino students are underrepresented in higher education (Nettles, 2016), there is a particular interest in understanding the impact of the ACUE course on students from these groups. Thus, when the interaction between faculty type and time period was significant, additional analyses were conducted that examined interactions with race/ethnicity. In these analyses, the effect of interest is the three-way interaction between the race/ethnicity, time period, and faculty type. When that three-way interaction was significant, follow-up analyses were conducted that examined the interaction between the race/ethnicity and time period within each faculty group to understand whether the three-way interaction was driven by students of the ACUE faculty or matched faculty. When the two-way interaction between time period and race/ethnicity was significant among students taught by ACUE faculty, analyses were conducted to examine change over time within each combination of race/ethnicity and faculty type and to explore whether any gaps by race/ethnicity were closed.

Since all of these models involve many effects, the results below focus on the primary effect of interest in each model.

Grades

Average Grades. The hierarchical linear regression on average grades with baseline as the reference group showed a significant interaction between faculty type and the post-ACUE time period, b = .14, SE = .06, 95% CI [0.02, 0.26], β = .04, p = .021. The interaction between faculty type and the during-ACUE time period was not significant, b = .09, SE = .06, 95% CI [-0.02, 0.20], β = .03, p = .121. Follow-up analyses, including analyses on differences in effects by student demographics, focus specifically on exploring the interaction between faculty type and the post-ACUE time period, compared to baseline.

Follow-up analyses examining students of ACUE faculty and students of matched faculty separately showed students taught by ACUE faculty experienced an improvement in grades in the post-ACUE time period compared to the baseline time period, b = .15, SE = .05, 95% CI [0.06, 0.24], β = .06, p = .001, while for students taught by matched faculty there is no evidence of an improvement in grades in the post-ACUE time period compared to the baseline time period, b = .06, SE = .04, 95% CI [-0.02, 0.15], β = .03, p = .136.

Interactions with Race/Ethnicity. Analysis adding interactions with race/ethnicity found no significant interaction between Black students, faculty type, and post-ACUE time period, b = -.13, SE = .17, 95% CI [-0.47, 0.21], β = -.02, p = .453, Hispanic/Latino students, faculty type, and post-ACUE time period, b = .14, SE = .14, 95% CI [-0.14, 0.43], β = .02, p = .328, or students categorized as "Other", faculty type, and post-ACUE time period, b = .14, SE = .18, 95% CI [-0.22, 0.50], β = .02, p = .459.

Passing Grades. The hierarchical logistic regression on course passing with baseline as the reference group showed no significant interaction between faculty type and the during-ACUE time period, b = .02, SE = .02, OR = 1.20, 95% CI [0.82, 1.74], p = .334, or faculty type and the post-ACUE time period, b = .01, SE = .02, OR =1.00, 95% CI [0.66, 1.52], p = .994.

Course Completion

The hierarchical logistic regression on course completion with baseline as the reference group showed a marginally significant interaction between faculty type and the during-ACUE time period, *b* = .02, *SE* = .01, *OR* = 1.80, 95% CI [0.42, 3.26], *p* = .054. The interaction between faculty type and the post-ACUE time period was not significant, *b* = .01, *SE* = .01, *OR* = 1.17, 95% CI [0.59, 2.32], *p* = .653. Follow-up analyses, including analyses on differences in effects by student demographics, focus specifically on exploring the interaction between faculty type and the during-ACUE time period, compared to baseline.

Follow-up analyses examining students of ACUE faculty and students of matched faculty separately showed that students taught by matched faculty experience a decline in the likelihood of course completion in the during-ACUE time period compared to the baseline time period, *b* = -.01, *SE* = .01, *OR* = .60, 95% CI [0.37, 0.98], *p* = .041, while for students taught by ACUE faculty there was no evidence of a decline or improvement in the likelihood of course completion in the during-ACUE time period compared to the baseline time period, *b* = .00, *SE* = .01, *OR* = .94, 95% CI [0.63, 1.41], *p* = .769.

Interactions with Race/Ethnicity. Analysis adding interactions with race/ethnicity found a significant interaction between Black students, faculty type, and during-ACUE time period, *b* = .07, *SE* = .03, *OR* = 10.02, 95% CI [1.40, 72.00], *p* = .022. Follow-up analyses showed that the interaction between Black students and during-ACUE time period was significant within the ACUE faculty group, *b* = .05, *SE* = .02, *OR* = 3.60, 95% CI [1.24, 10.45], *p* = .018, but not within the matched sections, *b* = -.02, *SE* = .02, *OR* = 0.35, 95% CI [0.07, 1.87], *p* = .222. Additional analysis focusing on the effect of year among only Black students of ACUE faculty found that Black students taught by ACUE faculty were not significantly more likely to complete courses in the during-ACUE time period compared to baseline, *b* = .02, *SE* = .02, *OR* =1.83, 95% CI [0.63, 5.26], p = .265. The interactions between Hispanic/Latino students, faculty type, and during-ACUE time period, *b* = .00, *SE* = .02, *OR* = 1.04, 95% CI [0.26, 4.16], *p* = .952, and between other race/ethnicity students, faculty type, and during-ACUE time period, *b* = .02, *SE* = .03, *OR* = 2.67, 95% CI [0.34, 21.16], *p* = .352, were not significant.

DISCUSSION

There was a significant difference between students taught by ACUE-certified faculty versus match faculty in the improvement in their average grades over time. Students in course sections taught by ACUE-certified faculty had significantly higher grades in the year after faculty earned their credential when compared to the baseline period, while there was not a significant improvement among students taught by match faculty over the same time period.

The coefficients from the regression equation, along with the demographics of the ACUE faculty and their students in the year after they earned their credential, were used to estimate the improvement in average grades due to the ACUE course. The calculations indicate that average grades were .14 grade points higher in 2018-2019 among students taught by ACUE faculty than would have been otherwise—3.35 instead of 3.21 on a 4.0 scale.

While there was also a significant difference between students taught by ACUE-certified faculty versus match faculty in course completion from the baseline to during ACUE time period, this was due to a decline in the likelihood of course completion in the during period for students taught by match faculty. There was no evidence of a decline or an improvement in course completion for students taught by ACUE faculty in the during-ACUE time period compared to baseline. These findings differ from a prior TWU evaluation (Lawner, Snow, MacCormack et al., 2019), which found a

marginally significant increase in course completion from the baseline to during period among students taught by ACUE-certified faculty. This was in contrast to a marginally significant decline in course completion among students taught by comparison faculty during the same time period. Part of the difference is likely attributable to the slight change in the analytic sample. Eighteen TWU faculty who earned an ACUE credential were evaluated in previous analyses. However, as two of the consenting faculty were no longer employed at TWU in 2018-2019, they were dropped in follow-up analyses. Additionally, course completion rates in the sample were already high (96.2 percent) in 2016-2017. Results on course completion may therefore be attenuated by a ceiling effect, in which room for improvement is narrow for students in subsequent years.

The results reported here on increased average grades complement prior findings that demonstrate credentialing faculty can result in improvements across several types of student outcomes, including student success (Lawner & Snow, 2018), average grades (Lawner & Snow, 2019a), and passing (Lawner & Snow, 2020). However, this evaluation extends previous research by demonstrating the continued impact of the ACUE course on students' average grades after faculty earned the ACUE credential. There are multiple possibilities for why the course leads to increased grades, including broadly stronger instruction by ACUE-certified faculty that leads to better student learning. Additionally, specific practices around clarity in grading and expectations might allow students to better demonstrate their knowledge.

One limitation of the current study is that the analyses do not account for clustering of outcomes, such as within sections, courses, instructors, or individuals. This non-independence of observations can affect the standard errors and thus statistical significance. However, given that instructors teach multiple courses and courses include some sections taught by ACUE faculty and others taught by match faculty, it is unclear whether sections should be considered nested within instructors or vice versa. Choosing a method of clustering is additionally complicated by students with multiple observations because they are taught by both ACUE faculty and match faculty. In these cases, the interdependence of observations makes it more difficult to find significant differences because it means that the observations across the two groups are more similar to each other. Furthermore, the benefit of the ACUE course on students' growth mindset, for example, could carry over into those students' outcomes in their other courses. Therefore, the complicated nature of the data makes for a more conservative test of the ACUE impact in some ways, and a more liberal test in other ways, variations that could balance each other out. However, future research should account for at least one aspect of the clustered nature of the data.

Though this study found no differential effects for Black/African American or Hispanic/Latino students, future research should continue to explore impacts on subgroups of students who are underrepresented or marginalized in higher education, including analyzing data by other demographic variables, such as socio-economic status. Future research should also explore why impacts on student outcomes sometimes occur while faculty are taking the ACUE course and at other times after faculty have earned their credential.

REFERENCES

Hecht, D. (2019). *A study of ACUE professional development at Rutgers University-Newark.* Center for Advanced Study in Education, The Graduate Center, City University of New York.

Lawner, E. K., & Snow, M. (2018). *Teaching makes the difference: Higher student success rates at Delta State University.* Association of College and University Educators.

Lawner, E. K., & Snow, M. (2019a*). Improved learning at democracy's college: Findings from Miami Dade College, part B.* Association of College and University Educators.

Lawner, E. K., & Snow, M. (2019b*). Strong instruction, sustained: Higher student evaluations and grades at the University of Nevada, Reno.* Association of College and University Educators.

Lawner, E.K., & Snow, M. (2020). *Advancing academic equity at Broward College: Improved course completion and passing, particularly among Pell-eligible and Black students.* Association of College and University Educators.

Lawner, E. K., Snow, M., & Burt, T. (2019). *Grades up: Quality teaching at the heart of student success in San Francisco.* Association of College and University Educators.

Lawner, E. K., Snow, M., MacCormack, P., & Waltje, J. (2019). *Better in Texas! Impact of ACUE-credentialed faculty on student course completion.* Association of College and University Educators.

MacCormack, P., Snow, M., Gyurko, J., & Candio Sekel, J. (2018). *Connecting the dots: A proposed accountability method for evaluating the efficacy of faculty development and its impact on student outcomes.* Association of College and University Educators.