Examining Incoming Credit Differences Between First-Year and Transfer Students

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*In this study, the difference in the number of initial credits between incoming transfer and first-year students entering a land grant university in a professional education program was examined (*N = *488). A multivariate analysis of variance revealed that transfer students transferred significantly more total credits and more credits that counted toward degree programs than did first-year students. Undergraduates who had graduated from small high schools transferred more credits and more credits that counted than did those from large high schools. However, first-year students transferred a significantly higher percentage of total credits that counted toward the degree programs than did transfer students. Implications for advisors, institutions, and policy makers are discussed*.

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Historically, students have attended a single institution to pursue a postsecondary degree; however, transferring between institutions has become increasingly common (Millard, 2014). This trajectory in attendance has led researchers to examine student enrollment and transfer patterns to identify new trends (Brown, 2011). For example, Shapiro, Dundar, Wakhungu, Yuan, and Harrell (2015) found that during a 6-year period, 37.2% of the 3.6 million students who entered college for the first time had transferred institutions at least once (p. 3). Many students start at a 2-year institution and transfer credit hours into a 4-year institution with the expectation of completing a bachelor's degree in 4 years. Some students even participate in dual-enrollment programs while in high school so they can earn college credit before graduating high school (Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; Tobolowsky & Ozuna Allen, 2016). As a result, 4-year institutions, with an increased stake in the transfer process between institutions of higher education (Johnson & Muse, 2011; Kozeracki, 2001; Townsend & Dever, 1999), have responded with increased flexibility for student movement between institutions. Also, several states have revised policies about college transfer credits between institutions (Millard, 2014, p. 1). Colleges and universities that enroll more students with transfer credits must offer appropriate advising and programming to these students, who face a complicated process without full understanding of the support system available to them. Without careful planning, transfer students can face significant academic and financial consequences.

In this exploratory study, we examined the initial credits of all incoming students into the College of Education at a comprehensive 4-year, land grant institution. The department offers professional programs that prepare students for licensure in a particular field according to specific state-mandated standards. As a consequence, students must take more required courses, with fewer unrestricted electives, than their peers in other colleges at the same university. Specifically, students in education programs must complete the university general education requirements, between 40 and 55 hours of teacher-education course work, and between 30 and 66 hours of content-specific course work as determined by their teaching field. In contrast, students completing a nonlicensure (i.e., general) program typically take between 32 and 65 required credit hours in addition to their general education requirements. Advisors at the research site realized that these strict requirements can result in fewer degree- or program-applicable credits from students transferring into the College of Education, which may extend a student's time to degree completion.

Because anecdotal evidence does not inspire policy change, we compared the number and nature of the credit hours that first-year and transfer students bring with them to the 4-year institution and the way these credits apply toward their major and degree. We specifically looked at the extent, if any, that differences in credit hours were associated

with the student characteristics of gender, enrollment type, and high school.

Literature Review

Historically, students pursued higher education as an investment in their future that would pay off the costs associated with attendance. However, in recent decades, the costs associated with a college degree have created substantial challenges for many students (Vilic, 2015). Therefore, students have started treating higher education as a commodity to be consumed (Jacob, McCall, & Stange, 2012) almost as if they approached their college experience as a shopping trip. For example, one institution offers classes at the most convenient times, while another allows students to participate in the co-curricular activities (e.g., a study abroad opportunity unique to that institution or a particular student organization) that most interests them; both types of inducement are known as *consumption amenities* (Jacob, McCall, & Stange, 2010, p. 3). According to these incentives, students pick and choose how, when, and where they consume higher education. Recent studies (e.g., Shapiro et al., 2015) have shown that more than one third of college students have transferred to a different institution at least once within 6 years. Institutional stakeholders, such as academic advisors, and parents need to be informed about student transfer patterns so that they can help students make the best possible academic and financial decisions about their college education and career choices.

To understand patterns of student transfer between institutions, we adopted a framework that has been used by several researchers in the past (e.g., Bahr, 2009; Hagedorn, Cypers, & Lester, 2008; Melguizo & Dowd, 2009; Wang, 2009). According to the characteristics of the sending and receiving institutions, we identified multiple common transfer patterns: lateral, upward, downward, and reverse (see also Aiken-Wisniewski & Koskowski, 2012; Bahr, 2009). We were most interested in the upward transfer, from a 2-year to a 4-year institution, in part, because it reflects the most common historical pattern of transfer (Peter, Cataldi, & Carroll, 2005). However, as Shapiro et al. (2015) noted, the transfer picture looks very different with new complexities today. In addition, many students do not make well-informed or strategic transfer decisions (Bahr, 2009; Bailey, Jenkins, & Leinbach, 2005; Wang, 2009). For example, students take classes in high school, such as Advanced Placement (AP), dual-credit, or college courses that do not transfer to the 4-year institution or to a specific college degree program. Their choices could negatively influence their progress toward degree completion and graduation.

The research comparing graduation rates of transfer students versus nontransfer students has shown inconclusive results (Gao, Hughes, O'Rear, & Fendley, 2002; McCormick, 2003; Monaghan & Attewell, 2015). For example, it revealed that among those who transfer, students with few credits that apply to program requirements were less likely to complete bachelor's degrees than nontransfer students (Monaghan & Attewell, 2015); however, it also indicated that while impairing the progress of students, attendance at multiple institutions did not necessarily prevent them from graduating (McCormick, 2003). The need to take extra classes at the receiving institution is recognized as extending degree completion times. For example, students can enter a 4-year institution having completed an associate's degree with 60 or more hours that can be counted toward bachelor's degree requirements; however, in prescriptive degree programs, such as education, with few, if any, elective hours, only some of those earned hours apply to bachelor's degree requirements. Students who choose a prescriptive degree program may need to attend more semesters than those who matriculated directly from high school or who received and acted on accurate information about the transfer process.

Further complicating the transfer, students may not understand the complexity of financial aid rules. Institutions with Title IV programs, must follow state and federal laws that prevent undergraduates from becoming professional students. That is, students must complete a degree within a certain number of earned hours. According to the *2015-2016 Federal Student Aid Handbook*, undergraduates are required to complete their program within 150% of the published academic program length; those who exceed this maximum number of hours must complete a Satisfactory Academic Progress Appeal to continue receiving financial aid (U.S. Department of Education, 2015). Furthermore, some federal loan programs limit the total amount students may borrow. Once they reach this limit, undergraduates must repay a portion of the loan before they can receive additional federal aid funds (U.S. Department of Education, 2015). In some states, such as Florida, students who accumulate too many credits are charged an excess-credit surcharge in addition to their tuition and fees (University of North Florida, n.d.).

To save money on college tuition, many students take AP classes and dual credit courses in high school; others take advantage of the lower cost of credit hours at 2-year colleges. As a result, many states have introduced articulation agreements designating the way credits transfer between institutions under the assumption that students who know in advance the credits that transfer to another institution can make the best possible choices. For example, the Kansas Board of Regents created a database showing the core classes that transfer between the in-state institutions under the Regents' purview (Kansas Board of Regents, n.d.). However, as Archambault, Forbes, and Schlosberg (2012) pointed out, articulation agreements do not prevent all issues faced by transfer students (p. 111). In fact, the evidence fails to show that these agreements improve student transfer rates or increase the number of hours applied to degree requirements (Gross & Goldhaber, 2009).

The lack of success of articulation agreements to alleviate transfer concerns may affect students in professional programs, such as education, more than students in less prescriptive programs. Students who complete many college credit hours that do not apply to their bachelor's degree can spend two or three extra semesters at the receiving institution than initially planned. Worse, these students can easily reach the maximum credit hours allowed for degree completion but not complete the requirements for graduation. Those who persist may spend more time in school and accumulate more private debt, creating troubling outcomes both professionally and economically for individuals (Hatton, Homer, & Park, 2009). Therefore, students needing or wanting to transfer must understand the process and possible consequences so that they make the best possible decisions about their educational plans.

Research Questions

For this study, we examined the credit hours that first-year and transfer students initially bring with them to the 4-year institution and the way these credits apply (or not) toward completion of major requirements and a bachelor's degree. Although most of the research comparing transfer and first-year students focused on student persistence and graduation rates, we specifically investigated the potential relationships between the credits of both incoming first-year and transfer students and the student characteristics of gender and the size of the high school from which they had graduated.

To address the relationship between accumulated credit and the students who matriculate, we developed three research questions:

RQ1. Do the total credit hours transferred differ according to students' gender, enrollment type (first year or transfer), or the size of the high school from which students graduated?

RQ2. Do the transferred credit hours counted toward the education degree programs differ according to students' gender, enrollment type (first year or transfer), or the size of the high school from which students graduated?

RQ3. Does the percent of total transferred credit hours counted toward the degree programs differ according to students' gender, enrollment type (first year or transfer), or the size of the high school from which students graduated?

RQ1 captures the overall pattern of the credit hours students bring into the 4-year institution and the potential systematic differences based on students' demographic characteristics. High school size was used to reflect the location and the available resources of the secondary schools across districts.

Because different colleges and programs implement specific requirements about the credit hours that can be counted toward a program, we developed RQ2 to determine the number of applicable hours that transferred. We specifically examined the number of credit hours that applied to the College of Education programs at the research site.

Finally, we examined the percent of total transferred credits that counted toward the College of Education program. We also looked at the potential systematic differences associated with students' demographic characteristics.

According to a review of the literature, limited research has focused on the initial credits of both incoming first-year and transfer students or any potential systematic differences related to students' gender or the size of the high school from which they graduated. Because of the multifaceted postsecondary enrollment and transfer strategies, an enhanced comprehension of the factors pertaining to students' initial credits can help institutional policy makers sufficiently advise students on various enrollment paths (Shapiro et al., 2015).

Table 1. Percent by gender and ethnicity in the initial and final samples

Characteristic	Initial Sample (%) ($n = 579$)	Final Sample (%) ($n = 488$)
Gender		
Female	80.0	79.3
Male	20.0	20.7
Ethnicity		
Non-Hispanic White	85.7	86.7
African American	3.3	3.1
Asian	1.7	1.2
Hispanic	4.7	4.7
Multiracial	3.1	3.1
Native American	0.7	0.6
Did not specify	0.8	0.6

Method

Procedure

The study took place at a large, midwestern, land grant research university. The approval was obtained from the Institutional Review Board. The university student information system, a PeopleSoft Campus Solution database program (Oracle 10gR2, n.d.), was used to collect all of the research data: student gender, enrollment type (first year or transfer), size of the high school from which students graduated, the number of college credit hours transferred into the university, and the number of transferred credit hours that counted toward a bachelor's degree program in the College of Education. This student information system database provided a student's transfer credit information, including the institution, year earned, and both the course numbers designated by the original institution and the transfer equivalency at the university.

Looking at each profile, we identified every college or university from which the student transferred credit before matriculating to the research university. Every credit was recorded and identified as either being accepted into a College of Education bachelor's degree program or simply as a generic transfer credit. At the time of the study, AP classes were included as credits earned at the university. Therefore, we did not include AP credits or credit by exam (e.g., CLEP) in the data on transfer credit, and they were not considered in this study.

For the purpose of this study, we developed specific definitions of enrollment type. First-year students are in their first year at an institution of higher education. They may have completed credits by exam or dual enrollment programs, but they have never matriculated into an institution of higher education. Transfer students previously attended at least one other 2- or 4-year institution of higher education. These students have left the sending institution to complete a degree in the College of Education at the receiving institution.

The size of the high schools from which students graduated was categorized according to the criteria of the Kansas High School Activities Association (n.d.). That is, a high school size of 250 students or fewer is *very small*, of 251–735 students is *small*, of 736–1,350 students is *medium*, and of 1,351 or more students is *large*.

Participants

The enrollment type sample initially included all incoming first-year and transfer students from the Fall 2013 and Fall 2014 cohorts who had enrolled in bachelor's degree programs in the College of Education. The cohorts were combined in the current study because the students showed very similar characteristics in terms of gender and the average number of college hours transferred. Among the total of 579 students (48.5% from Fall 2013 cohort), 385 were first-year and 194 were transfer students. The majority of the respondents were non-Hispanic White (Table 1), which aligns with the ethnic composition at the research institution. With respect to gender, 80% of the combined cohort identified as women.

Like most institutions, the research university in this study recorded the high school of matriculating students; however, enrollees who had been home schooled or who earned a general education degree (GED) did not have a traditional high school record. In addition, not all students associated with the local military base came from high schools that could be identified by size. Therefore, for the analyses, we included only data of students whose high school size was available.

The final sample included 488 undergraduates comprising 331 first-year and 157 transfer students. These students showed similarity to the initial sample of 579 students with respect to race, ethnicity, and gender. Sample sizes varied across each analysis because some student information was not specified in the student information system database.

Table 2. Mean (standard deviation) total credit hours transferred by enrollment type, gender, and high school size

	First Year		Transfer	
	Female	Male	Female	Male
HS Size (Students)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Very small ($\leq$ 250)	14.73 (7.75)	7.33 (8.05)	55.44 (18.85)	62.05 (27.05)
Small (251–735)	10.91 (12.39)	7.30 (7.73)	51.78 (26.95)	48.89 (18.68)
Medium (736–1,350)	8.72 (8.98)	3.60 (8.05)	62.40 (24.13)	30.50 (23.25)
Large ($\geq$ 1,351)	6.34 (7.92)	6.04 (8.28)	43.22 (22.88)	44.73 (26.75)

Analyses

All analyses were conducted using the Statistical Package for Social Science (SPSS) package, Windows version 22. The means of the total credit hours transferred (credits transferred variable) and the transferred credit hours counted toward the program (credits counted variable) were calculated by different group characteristics identified by the variables gender, enrollment type, and HS size. We also created the variable referenced as *percent of credits counted* to capture the ratio of credits counted toward the degree programs to the total credits transferred. Because the two dependent variables were moderately correlated, a multivariate analysis was used to control for the family-wise Type I error inflation (as per Field, 2013).

A 2 × 2 × 4 (Gender ×Enrollment Type × HS Size) multivariate analysis of variance (MANOVA) was first conducted on the data of credits transferred and credits counted. To decompose significant analysis of variance (ANOVA) effects on each outcome variable, Bonferroni and Games–Howell corrections were used, which are appropriate when sample sizes feature inequalities across cells, to decompose the main and interaction effects (as per Field, 2013).

Results

Tables 2 and 3 present the means of credits transferred and the credits counted by different variables, respectively. Enrollments were broken into first-year and transfer types. We found enrollment type statistically significant, showing the largest effect size in explaining the outcome variables, followed by HS size and gender. Table 4 shows the results for the MANOVA. The statistically significant interaction terms included Gender × HS Size and Gender × Enrollment Type × HS Size.

Research Question 1

To address RQ1 (do the total credit hours transferred differ according to students' gender, enrollment type [first year or transfer], or the size of the high school from which students graduated?), a 2 × 2 × 4 (Gender × Enrollment Type × HS Size) ANOVA was conducted on the credits transferred (Table 5). Enrollment type showed the largest effect size, $F(1, 472) = 423.01$, $p < .001$, $\eta_p^2 = .473$, suggesting that the credits transferred were predominantly related to student status as first year or transfer. Follow-up comparisons revealed that transfer students ($M = 49.88$, $SE = 1.52$) transferred significantly more credits than did first-year students ($M = 8.12$, $SE = 1.34$, $p < .001$).

Table 3. Mean (standard deviation) transferred credit hours counted toward the program by enrollment type, gender, ethnicity, and high school size

	First Year		Transfer	
	Female	Male	Female	Male
HS Size (Students)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Very small ($\leq$ 250)	13.96 (7.35)	7.00 (7.71)	37.78 (12.74)	37.19 (15.38)
Small (251–735)	10.12 (10.65)	6.80 (7.18)	31.32 (15.45)	34.89 (13.06)
Medium (736–1,350)	7.81 (8.29)	3.60 (8.05)	37.84 (15.56)	12.00 (12.73)
Large ($\geq$ 1,351)	5.86 (7.32)	5.48 (7.46)	28.89 (15.49)	28.31 (19.49)

Table 4. MANOVA: Enrollment × Gender × HS size for total credit hours transferred and transferred credit hours counted toward education degree programs

Effect	*F*	Wilk's λ	*p*	η_p^2
Enrollment	211.42	.527	.001***	.473
Gender	5.54	.977	.004**	.023
HS size	4.85	.941	.001***	.030
Enrollment × Gender	0.28	.999	.757	.001
Enrollment × HS Size	1.60	.980	.144	.010
Gender × HS Size	3.13	.961	.005**	.020
Enrollment × Gender × HS Size	2.75	.966	.012	.017

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

HS size was also significantly related to credits transferred: $F(3, 472) = 6.80$, $p < .001$, $\eta_p^2 = .041$. Post hoc comparisons among the four categories of high school sizes revealed that students in the very small group transferred significantly more credits than did those in the medium group ($p = .001$) and the large group ($p < .001$). Students in the small group ($p < .001$) and the medium group ($p < .001$) each transferred significantly more credits than did students in the large group. We found no statistical difference on credits transferred between any other pair-wise comparisons. In addition, gender was significantly related to the credits transferred: $F(1, 472) = 7.05$, $p = .008$, $\eta_p^2 = .015$. Follow-up comparisons revealed that women ($M = 31.69$, $SE = 0.91$) transferred significantly more credits than did men ($M = 26.31$, $SE = 1.81$, $p = .008$).

Significant interaction effects on the credits transferred included Gender × HS Size: $F(3, 472) = 3.40$, $p = .018$, $\eta_p^2 = .021$. Post hoc comparisons revealed that more credits from men were counted only for the medium group: $p = .001$. Men and women from other high school size groups showed no differences in credits counted.

Post hoc comparisons revealed that only women in the large group transferred fewer credits than the women in the very small ($p < .001$), small ($p = .047$), and medium ($p < .001$) groups. Only men in the very small group transferred significantly more credits than men in the medium group: $p = .015$. Data from men and women in other groups based on high school size showed no differences in the number of credits transferred.

We also found that the Gender × Enrollment Type × HS Size interaction was statistically significant: $F(3, 472) = 3.40$, $p = .018$, $\eta_p^2 = .021$. To investigate the Gender × Enrollment Type × HS Size interaction, comparisons on credits transferred were made separately for women and men of both enrollment types in all high school size groups. Women in the large group transferred significantly fewer credits than women in the very small group ($p < .001$), the small group ($p = .003$), and the medium group ($p < .001$). The analysis revealed that transfer students from each high school size transferred significantly more credits than did first-year students: All p values were less than .001. For men, no differences in the number of credits transferred were found by HS size.

Table 5. ANOVA: Enrollment × Gender × HS size for total credit hours transferred toward education degree programs

Effect	*F*	*p*	η_p^2
Enrollment	423.01	.000***	.473
Gender	7.05	.008**	.015
HS Size	6.80	.000**	.041
Enrollment × Gender	0.40	.529	.001
Enrollment × HS Size	1.68	.171	.011
Gender × HS Size	3.40	.018*	.021
Ethnicity × HS Size	1.17	.322	.013
Enrollment × Gender × HS Size	3.40	.018*	.021

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Full model $R_{adj}^2 = .652$.

Table 6. ANOVA: Enrollment × Gender × HS Size for transferred credit hours counted toward education degree programs

Effect	*F*	*p*	η_p^2
Enrollment	265.98	.000***	.360
Gender	11.10	.001**	.023
HS Size	8.23	.000***	.050
Enrollment × Gender	0.56	.456	.001
Enrollment × HS Size	1.15	.330	.007
Gender × HS Size	4.17	.006**	.026
Enrollment × Gender × HS Size	3.68	.012*	.023

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Full model $R^2_{adj} = .561$.

Transfer students transferred significantly more credits than did first-year students for each high school size: All p values were less than .03.

In summary, the difference in the number of credits transferred by first-year and transfer students was most salient: Transfer students transferred more credits than first-year students did. The results also suggested that students from smaller schools tend to transfer more credits than their counterparts from larger schools. Men and women transferred different numbers of credits depending on the size of their high schools.

Research Question 2

To analyze RQ2 (do the transferred credit hours counted toward the education degree programs differ according to students' gender, enrollment type [first year or transfer], or the size of the high school from which students graduated?), we conducted a 2 × 2 × 4 (Gender × Enrollment Type × 4 HS Size) ANOVA on the credits that counted for an education bachelor's degree (Table 6). The enrollment type showed the largest effect size: $F(1, 472) = 265.97$, $p < .001$, $\eta_p^2 = 360$, suggesting that credits counted was predominantly related to student status as first year or transfer. Follow-up comparisons revealed that transfer students ($M = 31.03$, $SE = 1.08$) transferred significantly more credits that counted than did first-year students ($M = 7.58$, $SE = 0.95$, $p < .001$).

In addition, HS size was significantly related to credits counted: $F(3, 472) = 8.23$, $p < .001$, $\eta_p^2 = .050$. Comparisons among the four categories of high school sizes revealed that students in the very small group transferred significantly more counted credits than did those in the medium group ($p < .001$) and the large group ($p < .001$). Students in the small group transferred significantly more credits that counted than did those in the large group ($p < .001$). Similarly, students in the medium group also transferred significantly more credits that counted than did those in the large group: $p = .003$.

Gender was also significantly related to credits counted: $F(1, 472) = 11.10$, $p = .001$, $\eta_p^2 = .023$. Follow-up comparisons revealed that women ($M = 21.70$, $SE = 0.64$) transferred significantly more credits that counted than did men ($M = 16.91$, $SE = 1.29$, $p = .001$).

Significant interaction effects included Gender × HS Size: $F(3, 472) = 4.17$, $p = .006$, $\eta_p^2 = .026$. Post hoc comparisons revealed that only in the medium group did women transfer significantly more credits that counted than men did: $p < .001$. Men and women in other size groups did not differ on the credits counted.

Gender × Enrollment Type × HS Size was also statistically significant: $F(3, 472) = 3.68$, $p = .012$, $\eta_p^2 = .023$. To investigate the Gender × Enrollment Type × HS Size interaction on credits counted, we compared women and men separately for both enrollment type and all HS sizes. Women from the large group transferred significantly fewer credits that counted than did women from the very small group ($p < .001$) and the medium group ($p = .004$). Transfer students transferred significantly more credits that counted than did first-year students from each high school size: All p values were less than .001. Men from the very small group transferred significantly more credits that counted than did men from the medium group: $p = .017$. No other high school sizes showed differences on counted credits. Transfer students transferred significantly more credits than did first-year students from each high school size: All p values were less than .001, except for those in the medium group, for which no difference was found.

In summary, differences in first-year and transfer student credits counted were the most salient; transfer students transferred more credits that counted toward an education degree than did first-year students. The results also suggested that students from small schools tended to transfer more credits that counted than did those from larger schools. As for the gender effect, men and women differed in credits counted, depending on the size of their high schools.

Research Question 3

To address RQ3 (does the percent of total transferred credit hours counted toward the degree programs differ according to student gender, enrollment type [first year or transfer], or the size of the high school from which students graduated?), we created the variable of percent of credits counted to capture the ratio of credits counted toward the degree programs to the total credits transferred. Among all the participants, 364 (212 first-year students) had transferred at least 1 total credit and were mathematically eligible for inclusion in the computation of the new ratio variable. The percent of credits counted ranged between 0.00 and 1.00 ($M = .82$, $SD = .215$).

A $2 \times 2 \times 4$ (Gender $\times$ Enrollment Type $\times$ HS Size) ANOVA was conducted on the percent of credits counted. Enrollment type was the only statistically significant predictor: $F(1, 363) = 54.10$, $p < .001$, $\eta_p^2 = .135$. Specifically, first-year students ($M = .94$, $SE = .14$) transferred a significantly higher percentage of credits counted than did transfer students ($M = .67$, $SE = .29$, $p < .001$). Neither gender nor HS size showed statistical significance in the percent of credits counted.

Discussion

This study examined the number of initial credits of incoming education majors according to student gender, enrollment type (first year or transfer), and the size of the high school from which students graduated. The results indicated that enrollment type showed the strongest relationship: Transfer students transferred both more credit hours and credit hours that counted toward an education degree than did first-year matriculants. However, first-year students transferred a significantly higher percentage of credits that counted toward the degree program than did transfer students. Students who graduated from small high schools transferred more credits and more that counted than did those from large high schools. Gender interacted with high school size in both number of credits transferred and number of credits that count toward the degree program. However, neither gender nor high school size was related to the percent of credits that counted to degree requirements.

The difference found in credits transferred between transfer and first-year students was expected. First-year students participate in dual credit or concurrent enrollment programs while completing high school, usually during their junior and senior year, in the limited number of courses available to them. In contrast, transfer students attend another higher education institution, for at least one semester, and possibly several. Many complete associate's degrees and can access many courses to complete relatively more credits before matriculation into the university than can first-year students.

A most interesting finding emerged in the number of transferred credits that counted. Most of the credits transferred by first-year students counted toward their College of Education program, such that a higher ratio of credits counted for them than for their transfer counterparts. In contrast, for transfer students, the total number of credits transferred and the number of credits that counted toward the College of Education programs diverged, such that the ratio of credits counted to credits transferred was lower than found for first-year students.

We speculate that this difference was the result of the more widely transferrable classes offered to first-year students, while transfer students can choose from more options that may not be transferrable. We acknowledge that transfer students may have decided on an education major relatively late in their academic career such that they had taken classes to complete another program, possibly an associate's degree, before they transferred. Because the requirements for an education degree do not match the requirements of many other programs, transfer students likely accumulated more nontransferable credits than did those who entered directly into an education program.

The results on high school size were surprising. They showed that the small schools were associated with more transferred credits. We surmise that large schools may offer more diverse AP programming than smaller schools do such that students from large schools matriculated with relatively more AP and concurrent

enrollment credits from community colleges. In addition, more credits from small high schools applied to the education degree programs, while fewer credits transferred from large schools counted toward the degree programs. Perhaps the reduced variety of course choices at small schools meant that students took more specific classes, such as college algebra or American history, while those at large schools could access courses in French, anatomy, or physiology, which did not transfer to the education program at the university studied.

In another surprising finding, the relationship between gender and the outcome variables in our study differed from results published in the literature. For example, Surette (2001) found that women were less likely than men to transfer and that fewer women who transfer earn a bachelor's degree. Our study only included data on the 2013 and 2014 cohorts; therefore, we did not consider any information concerning completion rates. However, our results showed that women transferred more credits than men did, and that more women than men transferred into the 4-year university education program studied. Because this study focused on education, into which a higher proportion of women than men matriculate, the findings could be specific to these participants in this college.

Most interesting is the finding that neither gender nor school size was related to the percent of credits that applied to degree requirements. This outcome means that all transfer students needed assistance in navigating the transfer process because, despite the existence of articulation agreements, transfer students lost credits in the transfer process.

Implications

This study carries implications for current institutional practices. The current models of college retention place a greater emphasis on student involvement in single institutions than on integration into the system of higher education (Wang & McCready, 2013); that is, college student retention is tracked at an institution, not throughout multiple postsecondary institutions (Rab, 2004). Because of these priorities, student retention takes precedence over easing the transfer process.

Enrollment Patterns and Retention

Despite institutional interests, students seek to complete degrees in the most cost-effective and timely way. Because of the high percentage of students who transfer (Hossler et al., 2012), institutions could gain a better understanding of their matriculants by tracking student transfer patterns. Advisors at both 2- and 4-year institutions who know when students tend to transfer during their undergraduate career can help institutional leadership create a more complete picture of student success and identify those with statistical profiles that indicate failure to complete degree programs and distinguish them from students who transfer and graduate from another institution (Wang & McCready, 2013).

Student enrollment patterns show important differences in degree completion rates, time to graduation, program attrition, and retention rates that affect institutional resources like at no other time. With performance-based funding becoming increasingly common (Harnisch, 2011) and state budgets for public institutions cut nationwide (Elliott & Lewis, 2015), tuition now accounts for a larger percentage of public institution revenues than the state budget (Government Accountability Office, 2014). As a result, 4-year institutions rely on students to keep their doors open more than ever before. In addition, four states have recently appropriated funds to cover tuition and fees for students at 2-year institutions (Lobosco, 2017), which could result in a drop in initial enrollment in 4-year institutions and increase the likelihood for future student transfer.

Funding

Furthermore, the federal government continues to put increasing pressure on 2- and 4-year institutions both to improve graduation rates and to encourage students to earn a degree within a relatively short time frame (Shapiro, Dundar, Yuan, Harrell, & Wakhungu, 2014). Because of the way that graduation rates and time to completion are currently tracked, these two metrics do not effectively tell the story of students who transfer institutions. Historically, college student retention and completion were tracked only at the original institution, and students were not followed through their entire higher education journey (Rab, 2004); that is, the graduation rates at the original institution reflected attrition, but the receiving institution did not see increased graduation numbers. Because receiving institutions do not typically identify the transfer students in graduation statistics, information about them are lost from the system. Recently, the National Student Clearinghouse increased

tracking of transfer students to benefit the understanding of the transfer process and transfer students so that institutional leadership can respond appropriately to funding and government pressures while supporting all matriculants.

Efficiency and Expense

Many parents think that they save money and time to graduation by sending their student to a 2-year institution or recommending the student take AP classes. However, the increased time and expense of these choices, as Becker (1993) noted, can increase the total cost of the degree, both in terms of direct expenses from schooling (tuition, fees, books, etc.) and indirect expenses in terms of earnings opportunities lost while taking classes. Concurrent enrollment, which requires "careful, intentional, and focused" partnership between high school counselors and academic advisors, can help students graduate efficiently (Nutt, Lowe, Schmidt, Mudd, Zehr, & Stephenson, 2017, Slide 5). In many cases, secondary students indicate an interest in attending a particular institution and program, and high school counselors can tailor their advice based on information they have received from college academic advisors at that institution and program of interest. Therefore, both high school counselors and academic advisors should take the time and opportunity to develop strong relationships with their students so that they can get to know their long-term goals and help them craft an educational and career pathway. Without careful partnerships designed to support students at both the secondary and collegiate levels, students may encounter problems as they transition to college (Nutt et al., 2017). As of 2017, The National Alliance of Concurrent Enrollment Partnerships started partnering with NACADA: The Global Community for Academic Advising to develop formal conversations to support these relationships (Nutt et al., 2017).

Advisors who understand the transfer process can work more effectively with students transferring to or from another institution and thus minimize the number of extra credits transferred (Avalos, Briggs, & Martinez, 2017). While helping students create short- and long-term plans, advisors at the sending institution can help students research requirements for the desired programs. Advisors at receiving institutions can open lines of communication with feeder schools to make sure that everyone receives the most accurate and updated information possible. These strategies keep advisor ratios low, which encourages advisors to get to know their students and help them create personalized plans. Advisors can also spend time to develop relationships with other institutions so that dual advising and pre-advising help is leveraged to minimize lost hours.

Culture for Transfer Success

By creating a culture of transfer, and not just focusing on advising for traditional first-year students, institutions will graduate more students on time (Sanchez, 2016). Creation of cross-functional task forces that address transfer advising policies, strategies, and success interventions constitutes a reasonable first step in creating an environment for efficient transfer. Collaboration of units within an institution and between institutions bolsters critical understanding and supports transfer success.

In addition, providing appropriate tools to students and advisors can help create this culture as well. For example, an electronic database updated annually with curriculum requirements and information on all state courses that transfer as equivalents among institutions could help students, with the help of academic advisors, proactively make the best choices. Initiatives such as reverse transfer agreements, through which students can fulfill requirements for an associate's degree with courses that also meet requirements for their bachelor's program, also help the prospects of students who change direction and increase graduation rates while reducing credits students need to take.

Clear articulation agreements and transfer guides can be used to improve communication between advisors at 2- and 4- year institutions. They can prove instrumental in creating clear paths, when explained consistently and accurately, for students who begin their program at one school and complete it at another and increase the opportunity for dual advising. The creation of a campus-wide transfer advising committee and center, with representatives from each college, gives prospective students and advisors ease of access to accurate information. Better communication leads to better relationships, allowing institutional representatives to work collaboratively to promote transfer student success.

Coordinated Support and Advocacy

At an individual level, advisors at 4-year institutions can research their student data to determine the feeder schools for the programs in

which they advise. They can then reach out to high school counselors and academic advisors at those institutions to enhance communication and information sharing. Organized tours to visit feeder-school locations, although time intensive and potentially costly, can result in relationships that improve transferability and increase the number of incoming students. Alternatively, either through an advising center or in collaboration with other campus units, an annual lunch or workshop may encourage advisors from other institutions to build relationships through which they can subsequently share information regularly. For institutions with an advising center, an individual designated as the transfer-student point person could serve as the contact for prospective students needing information, degree audits or evaluations, and transfer plans. Connecting with prospective transfer students early can help them create academic plans that fulfill the requirements at both institutions.

Advisors who understand the transfer behaviors of students can influence policy to the students' advantage. For example, as a result of this research, during a recent program review, we were able to present empirical data about the number of credit hours transfer students lose when they enter the education program at the research university under study. This data contributed to a change in program requirements that increased the flexibility for incoming students, which encourages incoming students to use more of their transfer hours toward degree requirements so they can potentially avoid taking an extra semester (or more) of course work.

Limitations

Several limitations characterize this study. First, the sample only included students for whom data on their high school were available. Whether or not the students without high school information differ from those studied herein remains unclear, but failure to include them may have resulted in a biased sample and thus limits the generalizability of the findings.

Second, some students in the College of Education were associated with the U.S. military and may have earned both concurrent enrollment credits and credits by exam; however, we could only consider concurrent enrollment credits, which may have affected both the total number of credits earned and the number of credits that apply to degree requirements considered in our study. Like AP classes, credits by exam were recorded differently in the university student information system than transfer courses, and data about these credits were not collected. Also, some of the students seeking additional hours to transfer attend community college classes but sit for the for-credit exam and transfer the higher grade. Because we did not count these nontransfer credits, the number of community college classes counted was likely lower than those attended by students, but we did not want to inflate the numbers by double counting the credit-by-exam and transfer credits.

This study was solely focused on education majors, for which women are overrepresented and prescriptive course work is required. Also, the student information system did not collect nonbinary gender identities, so gender was treated as binary for this study. Finally, some transfer students likely changed their major during their academic career such that their accumulated credits do not necessarily reflect their transfer story, which differs from first-year students who may change their major, and would affect the way their transfer credits are used. In addition, we did not examine internal transfer students who changed their major to the education department from elsewhere on the same campus. These major changers may have similar transfer profiles as those who came from other institutions.

Future Direction and Conclusion

We encourage further research on a broad range of disciplines across multiple types of institutions. Such investigations may provide more researchers, practitioners, institutional stakeholders, and policy makers to gain more information about the factors or characteristics that influence the student transfer process. A longitudinal study that looks specifically at the impact of initial credits on retention and time to degree completion would also add to the conversation.

In conclusion, despite the limitations, this study stands as one of the few in which initial credits of incoming undergraduates and systematic differences, such as those based on gender, enrollment type (first year or transfer), and the high school from which they graduated, were investigated. The findings can inform institutional leaders, students, and academic advisors about the initial credits students bring and potentially help them make better strategic decisions about their own educational plans.

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