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Academic Performance of ELS Students at U.S. Colleges and Universities: White Paper

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Introduction

The number of international students studying at US colleges and universities has been steadily rising over the past decade. The latest enrollment data for 2012-13 show a 7% increase from the previous academic year which brings the total number of international students in US higher education to a record high of 819,644 (IIE, 2013a).

As more and more international students choose to study in the United States, ensuring their success in accomplishing educational goals becomes a critically important task for US colleges and universities. A key factor for educational success is proficiency in English which research has linked not only to academic achievement but also to other important outcomes such as social and cultural adjustment (Andrade, 2006). To ensure that international students have sufficient English language skills to fruitfully participate in academic study, colleges and universities impose English proficiency standards for admission by requiring minimum test scores from an accepted English language proficiency test such as the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). However, as recruitment efforts of international students are increasing, many US colleges and universities are also interested in offering conditional admission status to students who meet academic requirements but lack the requisite English skills for regular admission. These students can fulfill English proficiency requirements for admission by completing a remedial English language instruction program in lieu of English proficiency test scores.

A large number of colleges and universities have partnered with ELS Education Services to provide an intensive course program for English for Academic Purposes. Students who complete level 112 of the ELS program are fully admitted to the college or university and are able to begin their degree programs. Given the important role of English language skills for academic study, ensuring the comparability of admission standards regarding English proficiency is critical. In 2011, ELS Education Services commissioned a validation study to investigate the academic performance of students who had completed the ELS program and to compare them to international students who gained admission with TOEFL or IELTS scores. The study was primarily designed to identify and explore available measures of academic

performance and graduation data in order to inform a long-term strategy for collecting suitable student data on a continuous basis. Based on the preliminary findings of that study, ELS launched a five-year long-term validation study in 2013 with the plan to include an increasing number of ELS partner schools each year. The overall goal of this study is to collect sufficiently large samples of data over multiple years to enable meaningful comparisons between the ELS and non-ELS student groups while taking into account other important student characteristics and factors such as country of origin, graduate and undergraduate degree level, or degree type.

In this paper, we attempt to take stock of what has been found so far in both the short-term study and the first year of the long-term study¹. Although data limitations continue to impact the interpretability of some findings, taking a broader look across both studies will facilitate the identification of trends. As the long-term study continues in the next years, new student data will add evidence to these findings so that a clearer picture can be formed about the comparability of ELS students vis-à-vis other international and domestic student groups.

Who are ELS and non-ELS students?

International students in the US are a very heterogeneous group that represents a large number of different cultures, languages, and educational backgrounds. Academically, international students pursue many different educational goals and enroll in a wide range of degree programs at both the undergraduate and graduate level. In both studies, we found a considerable degree of diversity in the ELS and international non-ELS student samples, although as a result of the generally smaller sample sizes, the ELS group tended to be slightly less heterogeneous than the non-ELS group.

¹ Data samples were provided by a total of seven participating ELS partner schools to date. Adelphi University (Adelphi U.), Indiana University-Purdue University Indianapolis (IUPUI), Fairleigh-Dickinson University (FDU), St. Joseph College (St. Joseph), and the University of Cincinnati (U. Cincinnati) participated in the short-term validation study. In this study, IUPUI also provided data for domestic students; St. Joseph College provided data for ELS students only. Adelphi University, Fairleigh-Dickinson University, Marquette University (Marquette U.), Northern Illinois University (NIU), and University of Cincinnati participated in the first year of the long-term validation study. In this study, Adelphi University also provided domestic student data; Marquette University only provided data for undergraduate level ELS and non-ELS students.

The degree of diversity within these groups is most apparent when considering the number of countries represented in each. A break-down by country is provided below in Table 1. Combined ELS students represented 51 different countries, and international non-ELS students 144 countries. Students from China, Saudi Arabia, South Korea, and Taiwan made up a majority within each group. Together they represented over 88% of ELS students and 49% of non-ELS students. Among international non-ELS students, a top-sending country was also India which was not represented in the ELS group. Overall, the high proportion of students from these countries matches national trends which also show China, India, South Korea, Saudi Arabia, and Taiwan as among the top 6 sending countries of international students in the US (IIE, 2013b).

Table 1. Country of origin for combined school samples

	ELS		Non-ELS
China	49.2%	China	31.3%
Saudi Arabia	19.1%	India	19.8%
Taiwan	12.7%	South Korea	9.4%
South Korea	7.0%	Saudi Arabia	4.8%
Japan	1.9%	Taiwan	3.2%
Other Countries	10.2%	Other Countries	31.5%

Across school samples, ELS students were fairly even split between those seeking undergraduate degrees (47.3%) and those seeking graduate level degrees (52.7%) as shown in Table 2. Non-ELS international students on the other hand were more likely to be graduate level students (69.7%) while domestic students in turn were predominantly undergraduate students (66.3%). However, actual percentages of undergraduate or graduate level students varied considerably across school samples. The percentage of undergraduate ELS students at each school ranged from 21% to 84% and the percent of undergraduate non-ELS students ranged from 12% to 49%. There was also considerable difference between the two ELS schools that provided domestic student data. The IUPUI data set included 70.6% undergraduate students while Adelphi University included 46.9% undergraduate students.

Table 2. Degree Level for combined school samples

	ELS	Non-ELS	Domestic*
Undergraduates	47.3%	30.3%	66.3%
Graduates	52.7%	69.7%	33.7%

* Combined domestic student data is based on only two school samples.

Comparing diverse students groups

When making comparisons between different student groups, the inherent diversity in students' linguistic and cultural background and their choice of degree program must be taken into account as these characteristics can produce effects on outcome measures like GPA and graduation rate. If left uncontrolled, an observed difference may be erroneously interpreted as a difference between ELS and non-ELS students rather than as a reflection of differences in the groups' composition. In both the short-term and the first year of the long-term study, attempts were made to statistically control for country and degree level effects when sample size was sufficient. When that was not feasible, smaller subgroups were analyzed with similar country profiles and matching degree level. One limitation of the latter approach is that not all available data can be utilized to inform conclusions. However, with the continuation of the long-term validation study, more data will be collected and analyzed to establish a more complete picture of ELS and non-ELS student GPA achievement and graduation-related outcomes at ELS partner schools.

GPA Achievement of ELS and International Non-ELS Students

The primary focus of both the short-term and the long-term validation study is on the academic achievement of ELS and non-ELS students which was measured using first-term and cumulative GPA. Both student groups were compared within matching subgroups that were formed based on degree level and country of origin. The availability of data largely determined which country subgroups in combination with degree level could be formed from each school sample. Although most school samples included sufficient data for subgroups with students

from China, other countries were less frequently included as separate subgroup in the analyses. In some cases, it was necessary to combine students from similar countries such as China and Taiwan in order to gain sufficient sample size. Once subgroups were determined, the GPA means of these subgroups were then compared. In addition, overall differences between ELS and non-ELS students were also tested statistically while also controlling for country effects and degree level with analysis of variance techniques.

The global statistical analyses for each school sample produced mixed results. A summary specifically for the effect of ELS group membership is shown in Table 3 above. Five of the ten analyses conducted for each GPA measure found that ELS students were not statistically different from non-ELS students after effects of country membership and degree level were controlled. In three of the remaining five analyses conducted on data sets from Fairleigh-Dickinson University and the University of Cincinnati, ELS group membership did produce statistically significant global effects. In those analyses, ELS students achieved generally lower GPA means compared to non-ELS students, though not in all subgroups included in the analyses. For example, ELS graduate students at Fairleigh-Dickinson University achieved slightly higher means than non-ELS graduate students. Data from Marquette University, which provided a small data set consisting exclusively of Chinese and Malaysian undergraduate students, also found a statistically significant group difference in both GPA measures, that favored the non-ELS group.

Table 3. Statistical significance of ELS effect across school samples.

School Sample/Study	First-term GPA			Cumulative GPA		
	ELS Mean	Non-ELS Mean	ELS Effect (p-value)	ELS Mean	Non-ELS Mean	ELS Effect (p-value)
Adelphi U.						
Short-term study	3.22	3.5	<i>n.s.</i> (p=0.066)	3.29	3.51	<i>n.s.</i> (p=0.270)
Long-term study: Undergraduates	2.81	2.71	<i>n.s.</i> (p=0.895)	2.92	3.03	<i>n.s.</i> (p=0.908)
Long-term study: Graduates	3.33	3.43	<i>n.s.</i> (p=0.104)	3.32	3.41	<i>n.s.</i> (p=0.209)
IUPUI						
Short-term study	3.15	3.29	<i>n.s.</i> (p=0.460)	3.00	3.23	<i>n.s.</i> (p=0.311)
FDU						
Short-term study	3.21	3.28	sig. (p=0.007)	3.24	3.3	<i>n.s.</i> (p=0.059)
Long-term study	3.06	3.34	sig. (p<.001)	3.11	3.35	sig. (p<.001)
Marquette U.						
Long-term study	3.02	3.49	sig. (p<.001)	3.02	3.53	sig. (p<.001)
NIU						
Long-term study	2.95	3.46	<i>n.s.</i> (p=0.752)	2.91	3.51	<i>n.s.</i> (p=0.127)
U. Cincinnati						
Short-term study	2.66	3.50	sig. (p=0.001)	2.78	3.55	sig. (p=0.012)
Long-term study	3.04	3.54	<i>n.s.</i> (p=0.320)	3.16	3.57	sig. (p=0.012)

Note. Statistical significance was determined at $p < 0.05$. Non-significant values are marked *n.s.*, significant values are marked **sig.** with bold font. Results for Marquette University and Adelphi University (long-term study) are based on t-tests. All other evaluations are based on analysis of variance. As a note of caution, some analyses were conducted on samples with significant variation in sample size between the comparison groups. This sample size imbalance has likely reduced the statistical power of the analyses performed on those samples, thus making it more difficult to find statistically significant effects.

As a follow-up to the statistical analyses and to further explore patterns stemming from specific country and degree level subgroups, the mean difference in first-term and cumulative GPA were computed for each individual subgroup and then plotted. Subgroups representing East and Southeast Asian countries (China, Malaysia, South Korea, and Taiwan) are shown in *Figure 1a-b*, and subgroups representing students from Saudi Arabia and those grouped under 'Other' countries are shown in *Figures 2a-b*. Panel *a* shows mean differences for first-term GPA and panel *b* shows those for cumulative GPA. In each plot, positive values indicate a higher mean GPA for the ELS group.

Across all four plots, it is apparent that in a majority of comparisons, ELS students achieve lower mean GPAs than non-ELS students. However, for approximately half of them, the observed differences are relatively small, staying within an absolute value of 0.2 or less, which suggests that these differences may not be meaningful. A few subgroups are able to achieve higher GPAs than their non-ELS peers. These tend to be undergraduate level groups from Indiana University-Purdue University Indianapolis, but are not specific to any country. Among the subgroups with fairly large mean differences with absolute values of 0.4 or greater and favoring non-ELS students, most of these are from the University of Cincinnati and from Marquette University, which is consistent with the findings from the statistical analyses which observed a statistically significant effect of ELS group membership in those schools. It is worth noting that mean differences are somewhat narrower for cumulative GPA, especially for subgroups with larger mean differences. This decrease suggests that ELS students are able to make up some ground over time to catch up to their non-ELS peers.

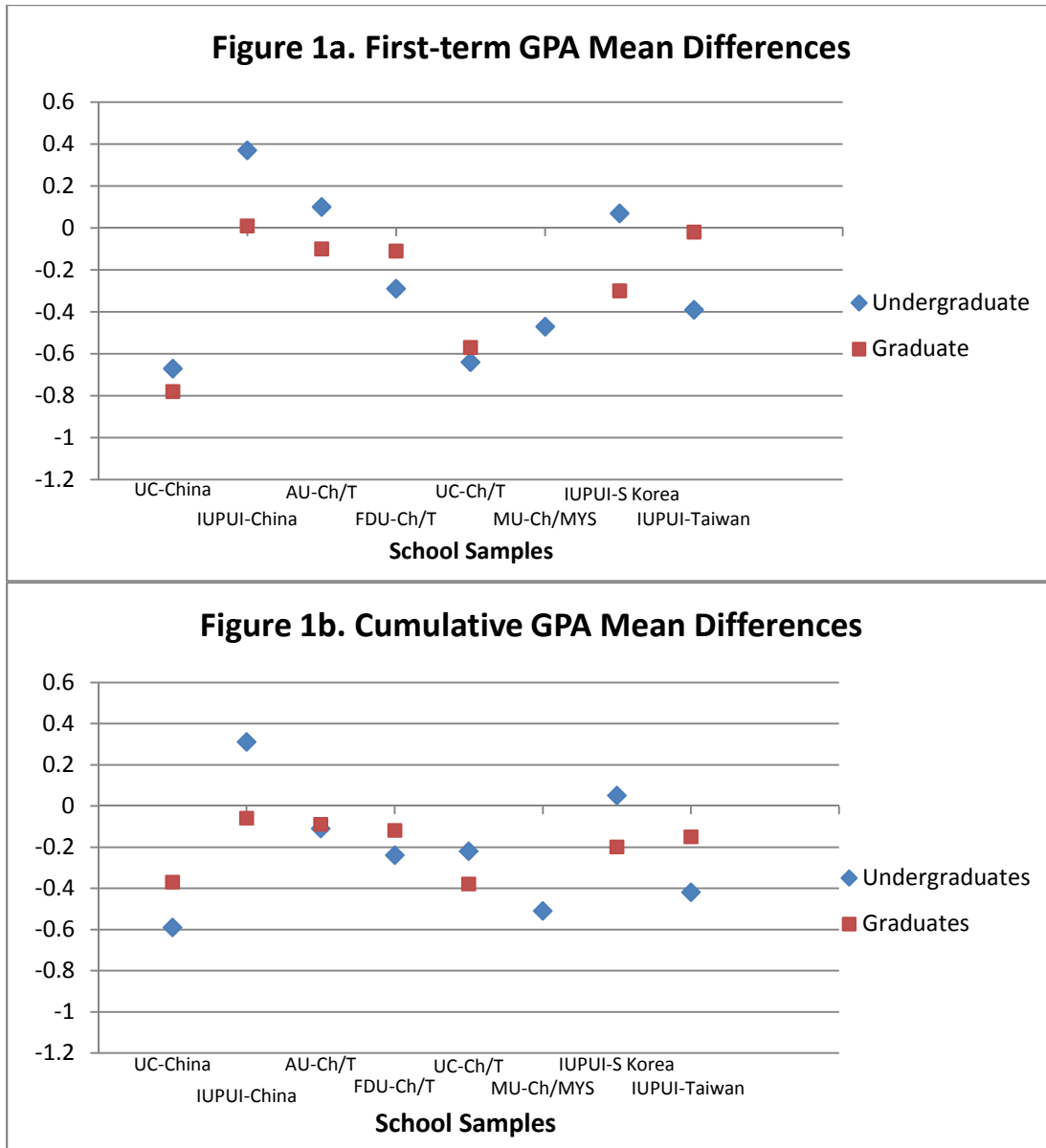


Figure 1a-b. First-term and cumulative GPA comparisons of students from China, Malaysia, South Korea, and Taiwan. School sample labels refer to UC-China: University of Cincinnati, China; IUPUI-China: Indiana University-Purdue University Indianapolis, China; AU-CH/T: Adelphi University, China/Taiwan; FDU-CH/T: Fairleigh-Dickinson-University, China/Taiwan; UC-CH/T: University of Cincinnati, China/Taiwan; MU-CH/MYS: Marquette University, China/Malaysia; IUPUI-S Korea: Indiana University-Purdue University Indianapolis, South Korea; IUPUI-Taiwan: Indiana University-Purdue University Indianapolis, Taiwan.

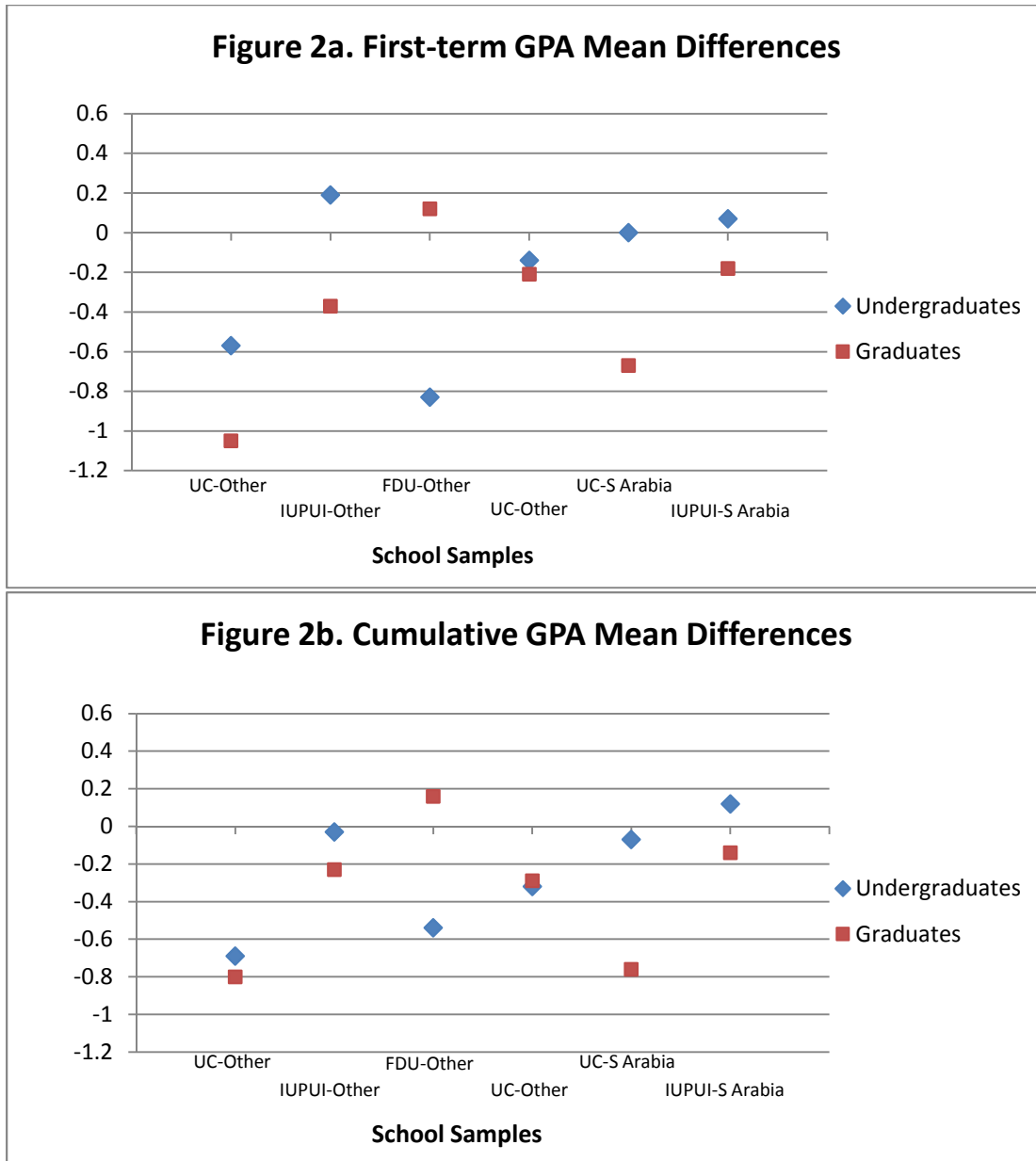


Figure 2a-b. Cumulative GPA comparisons for Students from Saudi Arabia and countries grouped under 'Other'. School sample labels refer to UC-Other: University of Cincinnati, 'Other' countries; IUPUI-Other: Indiana University-Purdue University Indianapolis, 'Other' countries; FDU-Other: Fairleigh-Dickinson-University, 'Other' countries; UC-Other: University of Cincinnati, 'Other' countries; UC-S Arabia: University of Cincinnati, Saudi Arabia; IUPUI-S Arabia: Indiana University-Purdue University Indianapolis, Saudi Arabia.

Overall, the statistical evidence along with the descriptive analysis of mean differences suggests that on average ELS students earn GPAs that are close in level to those achieved by their non-ELS peers and that ELS students' academic achievement is by and large comparable to that of non-ELS students. Where there are larger gaps in GPA achievement, they appear to be related to specific ELS partner schools but affect only some of the subgroups within those schools. However, these findings remain tenuous and require further data exploration. With the continuation of the long-term study, additional data collection will likely provide further evidence to better understand the observed patterns and to corroborate findings.

GPA Achievement of ELS and Domestic Students

Two of the ten school samples examined in the two studies included GPA and graduation data for domestic students, which permitted that comparisons could also be conducted between ELS and domestic student groups. Analogous to the comparison of ELS and international non-ELS students, differences in first-term and cumulative GPA were statistically evaluated using independent-samples t-tests and analysis of variance. The results are summarized below in Table 4.

Table 4. Statistical significance of ELS effect in comparison with domestic students.

School Sample/Study	First-term GPA			Cumulative GPA		
	ELS Mean	Domestic Mean	ELS Effect (p-value)	ELS Mean	Domestic Mean	ELS Effect (p-value)
Adelphi U.						
Long-term study: Undergraduates	2.81	3.22	<i>sig.</i> (p<.001)	2.92	3.20	<i>sig.</i> (p=0.016)
Long-term study: Graduates	3.33	3.63	<i>sig.</i> (p<.001)	3.32	3.62	<i>sig.</i> (p<.001)
IUPUI						
Short-term study	3.15	3.04	<i>n.s.</i> (p=0.864)	3.00	2.97	<i>n.s.</i> (p=0.961)

Note. Statistical significance was determined at p<0.05. Non-significant values are marked n.s., significant values are marked sig. with bold, italicized font. Results for Adelphi University (long-term study) are based on t-tests which were conducted separately for each degree level. Results for IUPUI represent the main effect of ELS group membership based on two-factor analysis of variance with degree level as second factor.

Separate t-test comparisons were conducted for undergraduate and graduate level students from Adelphi University. At both degree levels, the observed GPA differences were statistically significant and favored domestic students. The observed mean differences were moderately large with domestic students earning on average first-term GPAs that were 0.41 units higher at the undergraduate level and 0.3 units higher at the graduate level. Differences in cumulative GPA means narrowed slightly at the undergraduate level though continued to favor domestic students with a difference of 0.32 units. Mean cumulative GPA difference remained the same at 0.3 units for graduate students.

For IUPUI students, the effect of ELS group membership was evaluated globally using analysis of variance which also accounted for differences in degree level. In this analysis, the global effect of ELS group membership across both degree levels was not statistically significant for first-term or cumulative GPA. Overall GPA means for ELS students were slightly higher for first-term GPA (+0.11) and minimally higher for cumulative GPA (+0.03).

An interesting pattern emerged when GPA means were examined separately for each degree level. At the undergraduate level, ELS students at IUPUI achieved higher first-term (+0.27) and cumulative GPAs (+0.19) than domestic students. However, this trend was reversed at the graduate level where ELS students lagged behind domestic students in both first term (-0.24) and cumulative GPA (-0.20). In the analysis of variance results, this interaction between degree level and student group was statistically significant ($p=0.001$) along with a statistically significant overall effect for degree level ($p<.001$).

Because only two ELS partner schools provided achievement data for domestic students, the generalizability of the reported findings is limited. Furthermore, the results from the two school samples do not provide a consistent picture of ELS performance in comparison to domestic students. The GPA data from IUPUI suggests that ELS students on average outperform their domestic peers. On the other hand, ELS students at Adelphi University tend to achieve lower GPAs than the domestic students at that school. Altogether, the findings from both analyses thus remain inconclusive and do not support a particular trend in ELS achievement when compared to domestic students.

Graduation Rate and Length of Study for ELS, Non-ELS, and Domestic Students

A second focus of the short-term and long-term study concerns ELS students' graduation rate and the length of time before they complete their degree program. Most ELS partner schools provided information about each student's matriculation term and, if they have graduated, the term of graduation. These data were used to compile graduation rates for ELS, international non-ELS, and domestic students and to compute the number of academic terms students required to complete their degree.

Figures 3 and 4 below show the graduation rates for students seeking undergraduate degrees and graduate degrees. The information is presented by matriculation year and was pooled across school samples (two samples for the domestic students). Because data collection for the short-term study was completed in 2011, students in those samples, who matriculated in 2011 or years prior and graduated since then, are not captured here. This resulted in relatively low overall graduation rates in both student groups for matriculation years as far back as 2007. Furthermore, none of the school samples collected in 2013 as part of the first-year of the long-term study included students from matriculation cohorts of 2011 or later who have graduated with an undergraduate degree. Figure 3, therefore, shows only graduation rates up to year 2010. Given that most undergraduate students seek four-year degree programs, it may not be surprising that none of the students in those later cohorts have graduated when data was collected in 2013. It should be noted though, that for the same matriculation cohorts there have been students who graduated with graduate level degrees. Hence, graduation rates for graduate level degrees are reported up to year 2012 in Figure 4.

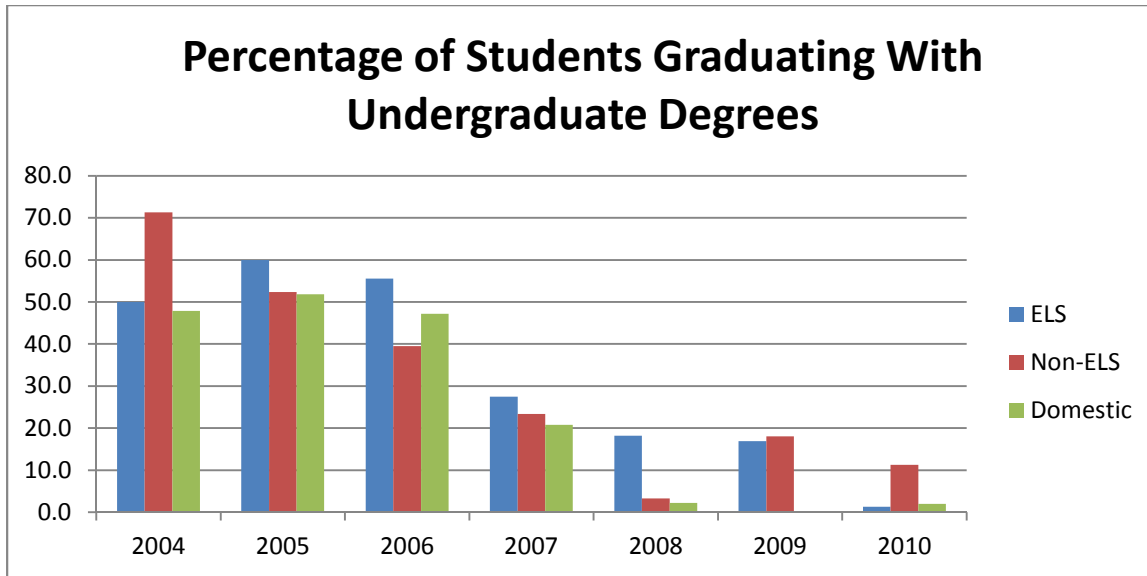


Figure 3. Graduation rates for undergraduate level degrees across matriculation years.

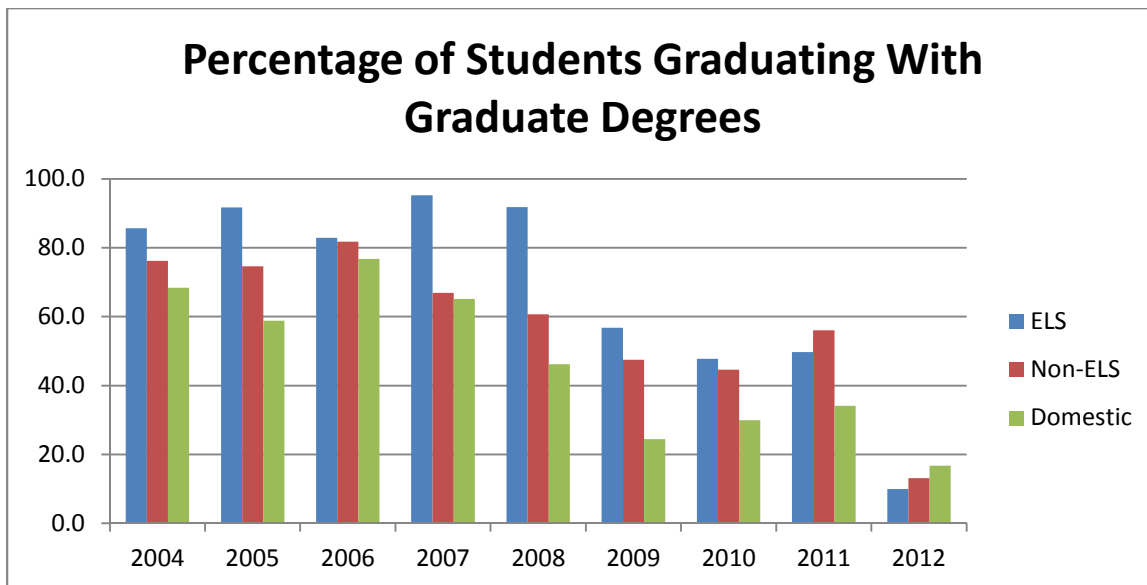


Figure 4. Graduation rates for graduate level degrees across matriculation years.

Across both degree levels, ELS students are consistently more successful to graduate from their degree programs than either international non-ELS students or domestic students. ELS students completing graduate level degrees have particularly high graduation rates of 80% or higher for matriculation years 2004 to 2007. For subsequent matriculation

years, the graduation rates are generally lower which, as was described above, is likely the result of graduation data not being captured after 2011 for some school samples. Non-ELS students only show higher graduation rates for the last two matriculation years in each Figure. Similarly, domestic students consistently graduate at lower rates than ELS and non-ELS students with the exception of the 2012 matriculation cohort. The slightly lower ELS graduation rates for the last two matriculation years may be caused by a larger percentage of non-ELS and domestic students completing shorter degree programs. There is also some evidence that ELS students at the undergraduate level require slightly longer to graduate than non-ELS students and thus would not have graduated at the time of data collection.

Table 5 below shows the mean number of academic terms required by ELS, international non-ELS, and domestic students to complete a Bachelor, Master's, or Doctoral Degree. For Bachelor degrees, ELS students on average require a little over 12 academic terms or four academic years while non-ELS students require on average 11 academic terms or slightly less than four academic years. Domestic student require the longest time with an average of 13.4 terms or about 4.5 academic years to graduate with a Bachelor Degree. Although all three groups are near the expected time of approximately four years to complete a Bachelor degree, non-ELS students appear to do so at a slightly faster pace than ELS and domestic students.

For Master's degrees, only minor differences are observed in the mean number of academic terms between the ELS, non-ELS, and domestic student groups. ELS students require just under 6 academic terms or two academic years, non-ELS and domestic students require slightly longer. Overall, the three groups are within or close to an expected amount of time of approximately two years to complete Master's degree programs.

Table 5 also shows limited data for the completion of Doctoral degrees. The ELS sample size is too small to warrant any conclusions. However, the data generally suggests that ELS, non-ELS, and domestic students are able to complete Doctoral degrees in a fairly short amount of time of less than four academic years. The non-ELS students on average required about two academic terms longer than the domestic doctoral students. With ongoing data collection, it may be possible to obtain additional data on doctoral level international students in order to

monitor their graduation success and length of study as well as to make comparisons of ELS students to international non-ELS and domestic students.

Table 5. Number of academic terms needed to complete degree

	ELS		Non-ELS		Domestic	
	n	mean	n	mean	n	mean
Bachelor	46	12.6	243	11.0	1339	13.4
Master	317	5.9	2369	6.2	2132	6.4
Doctor	2	9.5	22	11.8	763	9.6

* Note. Three terms were counted for each academic year.

Conclusion

This paper took a look at some of the initial findings obtained from two research studies designed to evaluate the academic achievement and graduation success of ELS students and to determine the comparability of ELS students to non-ELS international students and domestic students on those outcomes. A total of ten different data sets from seven ELS partner schools were analyzed and results were pooled to facilitate the identification of trends and patterns. The following observations summarize the findings from this research thus far:

- ELS students overall represent a diverse group of students from a large number of different countries. Across ELS partner schools, however, different clusters of students from specific countries predominate in the ELS student sample making it difficult to disentangle country and school effects.
- ELS students generally achieve similar GPA levels to non-ELS students.
- In a few country and degree level subgroups, ELS students are able to outperform their non-ELS peers on GPA measures.
- For some subgroups at specific ELS partner schools, differences in GPA can be fairly large. These differences lessen slightly when cumulative GPA is considered. It may be beneficial to monitor academic achievement of these subgroups in order to identify

potential reasons for their underperformance and to determine possible strategies to provide additional support.

- The results of the GPA comparisons of ELS students to domestic students are inconclusive and require further data collection to evaluate the comparability of these student groups in terms of GPA achievement.
- ELS students are fairly successful at completing their degree programs, especially at the graduate level. They have generally higher graduation rates than non-ELS and domestic students.
- There are only small differences between ELS, non-ELS, and domestic students in terms of length of study. ELS students completing Bachelor degrees require slightly more time than non-ELS students, and ELS Master's level students require slightly less time. Domestic students overall needed the most amount of time to graduate with those degree types, but not for Doctoral Degrees. Overall, all three groups are able to complete their degrees within the expected number of academic years for each degree.

Altogether, the reported findings from independent analyses suggest that ELS student performance is generally similar to the performance of their non-ELS peers on student success metrics of GPA and length of study. The comparison of ELS students to domestic student remains inconclusive. The analyses also found that ELS students generally outperform their non-ELS and domestic classmates in degree attainment with overall higher graduation rates.

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