

Online Education Program for English Learners in High Schools

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Abstract:

Aim:

This study aims to build a model for online education program for English learners using logistic regression model.

Methods:

A public database was used in this study. All the participants who were eligible were randomly assigned into 2 groups: training sample and testing sample. Logistic regression was built using training sample. We used these two models to predict the career satisfaction of software developers in the testing sample. Sensitivity, specificity, receiver operating characteristic (ROC) were calculated.

Results:

A total of 918 schools offered online program for the English learners, representing about 79.1% of the total of 1161 schools.

Schools in Southeast were 208% more likely to provide online program for English learners than schools in Northeast. Central and West regions had a slightly higher likelihood to offer online program than Northeast, however, the differences were not significant.

Schools which did not offer bilingual instruction were 52% less likely to offer online English education. Schools which did not offer English as a Second Language (ESL) instruction were 45% less likely to offer online education. Schools which did not offer English as a Second Language (ESL) push-in or pull-out instruction were 33% less likely to have online program for English learners. Schools which did not provide instructional support by a paraprofessional who speaks the student's native language were 35% less likely to have online program.

The area under curve was 0.6479. The optional cutoff time is 0.4262. The mis-classification error was 0.2083. the sensitivity rate is about 100% and the specificity is 0.8%.

Conclusions: This study identified the potential predictors for online education for English learners, for example: regions, availability of other support for English as a Second Language.

Keywords: Online Education, English learners, English as a Second Language, logistic regression, ROC

1. INTRODUCTION

Modern technology connects us and allows communities to share resources in unprecedented ways. Virtual education leverages these connections to provide everyone, regardless of geographic location, access to experts and high quality learning experiences. As technology has improved, virtual education has evolved to become a tool that helps close gaps in high schools and colleges. Quality online learning programs provide rigorous curriculum, meaningful teaching resources, and access to specialized programs, such as industry training for students, schools and teachers.¹

The Babson Survey Research Groups latest report Grade Increase: Tracking Distance Education in the United States reveals an interesting paradox. Online education is both highly concentrated in the U.S., and also highly dispersed. In other words, a small number of institutions provide online learning for a

large proportion of all distance learners - but a large number of schools are involved in some way in teaching online courses. In fact, of the 4,717 degree granting institutions in the U.S., fully 71 percent reported that they participated in online education.ⁱⁱ

This study aims to build a model for Online Program for English learners of software developers using logistic regression model.

2. METHOD

2.1. Data

The data is available at: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016150>

The 2015–16 survey Programs and Services for High School English Learners provides the first nationally representative data on this topic. This report is based on that survey and presents data on programs and services for high school English learners (ELs), including instructional approaches, newcomer programs, online or computer-based programs, and programs or services (e.g., tutoring) designed specifically for high school ELs. The report provides findings on the use of native language(s) for content instruction, instructional support, materials, and services. Data are presented about the information that districts provide about educational programs or services to ELs ages 18 to 21 seeking to newly enroll in the district, as well as the factors districts consider when providing information about these programs and services to ELs in this group.

2.2. Statistical Analysis

A public database was used in this study. All the participants who were eligible were randomly assigned into 2 groups: training sample and testing sample. Logistic regression was built using training sample. We used these two models to predict the career satisfaction of software developers in the testing sample. Sensitivity, specificity, receiver operating characteristic (ROC) were calculated.

3. RESULTS

A total of 918 schools offered online program for the English learners, representing about 79.1% of the total of 1161 schools.

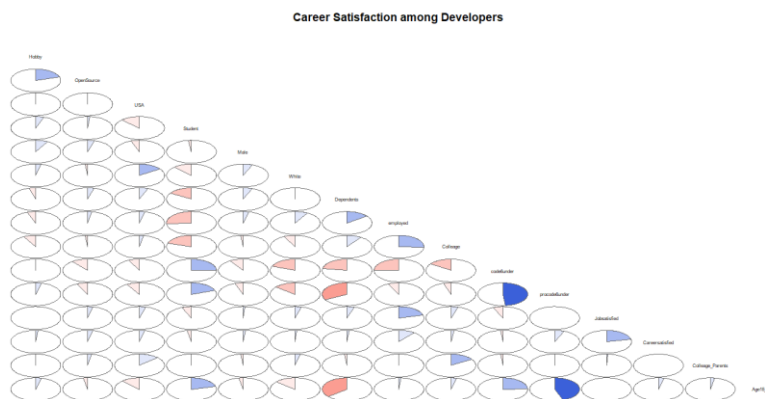


Figure 1. matrix of correlations between variables

According to the logistic regression, the significant predictors of Online Program for English learners were regions, availabilities of bilingual instruction, English as a Second Language (ESL) instruction, English as a Second Language (ESL) push-in or pull-out instruction, instructional support by a paraprofessional who speaks the student’s native language.

Table 2. Logistic Regression for Online Program for English learners

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	7.856	4.429	1.774	0.076	.
Q3A	-0.741	0.362	-2.050	0.040	*
Q3B	0.185	0.465	0.398	0.691	
Q3C	-0.599	0.190	-3.153	0.002	**
Q3D	-0.404	0.159	-2.534	0.011	*
Q3E	-0.195	0.174	-1.121	0.262	
Q3F	-0.426	0.191	-2.225	0.026	*
Q3G	-0.222	0.172	-1.295	0.195	

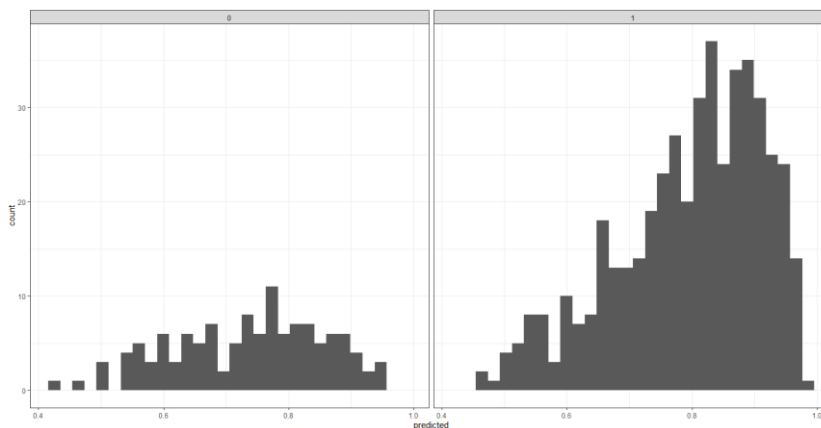
Q3H	-0.168	0.245	-0.685	0.493	
Q4	-2.326	3.654	-0.637	0.524	
Q5	-0.235	0.388	-0.605	0.545	
enrollsize2k_5K	0.025	0.193	0.129	0.897	
enrollsize5K	0.348	0.291	1.197	0.231	
City	0.009	0.295	0.030	0.976	
Suburban	-0.057	0.222	-0.258	0.796	
Town	-0.118	0.221	-0.534	0.594	
Southeast	1.124	0.270	4.166	0.000	***
Central	0.017	0.223	0.078	0.938	
West	0.135	0.233	0.582	0.561	

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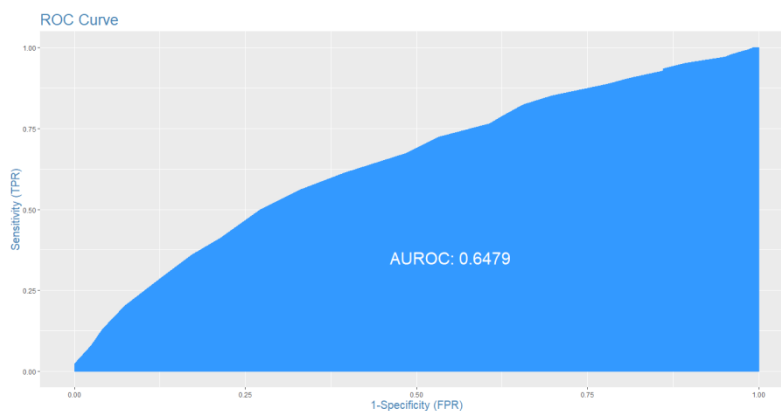
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	OR	Risk Increase	
Q3A	0.477	-52%	*
Q3B	1.204	20%	
Q3C	0.549	-45%	**
Q3D	0.668	-33%	*
Q3E	0.823	-18%	
Q3F	0.653	-35%	*
Q3G	0.801	-20%	
Q3H	0.846	-15%	
Q4	0.098	-90%	
Q5	0.791	-21%	
enrollsize2k_5K	1.025	3%	
enrollsize5K	1.417	42%	
City	1.009	1%	
Suburban	0.944	-6%	
Town	0.889	-11%	
Southeast	3.077	208%	***
Central	1.017	2%	
West	1.145	14%	

The distribution of the predicted probability to have a online program for the English learners among schools which did not have a online program (0) and which had a online program (1).



The area under curve was 0.6479. The optional cutoff time is 0.4262. The mis-classification error was 0.2083. the sensitivity rate is about 100% and the specificity is 0.8%.



4. DISCUSSIONS

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This study identified the potential predictors for online education for English learners, for example: regions, availability of other support for English as a Second Language.

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AUTHOR'S BIOGRAPHY

Ms. Qing Chen, graduated from college majoring in English in 1990. She is a senior English teacher at the Experimental High School affiliated to Beijing Normal University. She has over 30 years of experience of teaching English to middle school and high school students. In addition to classroom teaching, she did extensive exploration in online English teaching, and got exciting research results.

Citation: Ms. Qing Chen. "Online Education Program for English Learners in High Schools" *International Journal of Humanities Social Sciences and Education (IJHSSE)*, vol 8, no.1, 2021, pp.55-58. doi:<https://doi.org/10.20431/2349-0381.0801007>.

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ⁱ<https://vhslearning.org/virtual-education-future-k-12-students>

ⁱⁱ<https://www.insidehighered.com/blogs/technology-and-learning/looking-future-online-education-through-strategic-institutional-lens>