A Spanish Version of The Lexile Framework® for Reading

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"Accountability for student performance is one of the two or three-if not the most-prominent issues in policy at the state and local levels right now," stated Richard F. Elmore, a professor at Harvard University's Graduate School of Education (Olsen, 1999). Based on the survey conducted as part of *Quality Counts '99*, 48 states now test their students, and 36 publish annual report cards on individual schools.

Many states require students identified as limited English proficient to take the same tests as fully proficient students. While this may work for school or district accountability, it does not help these students to improve their reading skills. Some states allow these students to be exempt from the assessment for a limited period of time e.g., two years. But, the policies often require that the schools "adopt appropriate evaluative standards for measuring the progress of limited English proficient students in school" (North Carolina State Board of Education, Policy ID Number HAS-K-000).

The question often asked is "What reading skills does the student need to work on and what has been mastered?" That question deals with the reading skills the student actually possesses regardless of the language that the material is presented in. The skills needed to be a proficient reader in English-identifying, selecting, and collecting information; analyzing, synthesizing, and organizing information and discovering related ideas, concepts, or generalizations; and applying, extending, and expanding on information and concepts-are the same skills needed to be a proficient reader in any language. The only difference is the language that the material is presented in.

Readability equations can be used to order text in terms of comprehensibility. Likewise, reading tests can be used to order readers in reading skills. What distinguishes the Lexile Framework® is its ability to conjointly order texts and readers on the same scale. The ability to characterize a reader as 1000L and a text as 1000L enables a forecast of the comprehension rate that the reader will experience with that particular text. Comprehension, itself, is not an absolute; rather it is the consequence of an encounter between a reader and the text. The Lexile Framework® provides a single scale that can be used for targeting readers with text that provides an appropriate level of challenge. [For further information concerning The Lexile Framework® refer to the following documents: Scholastic Inc., 1999; Stenner, 1996; Stenner and Burdick, 1997; and Wright and Stenner, 1999.]

In 1998, MetaMetrics, Inc. undertook research to apply the premise that reading skills are independent of the presentation language. This project began with the development of a scale comparable to the Lexile Framework® that could be used to estimate the readability of Spanish texts and the reading ability of Spanish readers.

What did we do to develop a Spanish readability equation?

The first step in developing the Spanish readability equation was to identify English items that had confirmed the Lexile Theory. Differences between theoretical measure and empirical measure was small; less than 90L. The Lexile calibrations of the 227 selected items ranged from 260L to 1420L. Next, the 227 items were translated into Spanish for meaning, not just literal translations. Three items were not used because they did not work in Spanish e.g., a passage about the differences between "to," "too," and "two". The remaining 224 items were then translated back into English by a different set of translators.

The third step was to evaluate the accuracy of the translation process. The original English version of each item was compared with the back-translated version to identify those items that did not lose their meaning in the translation process. Five reviewers examined both versions of each item. An item was retained if the overall meaning remained the same and the statement could still be answered. In addition, the foils for each item were examined to see if they were still at the same level of difficulty. A total of 133 items were retained for further analyses.

The next step was to examine the text features that related to the difficulty of the Spanish items. All symbol systems share two features: a semantic component and a syntactic component. In language, the semantic units are words. Words are organized according to rules of syntax into thought units and sentences (Carver, 1974). Semantic units vary in familiarity and syntactic structures vary in complexity. The comprehensibility or difficulty of a message is dominated by the familiarity of the semantic units and by the complexity of the syntactic structures used in the message.

For the semantic component, it is clear that operationalization is a proxy for the probability that an individual will encounter a word in a familiar context and thus be able to infer its meaning (Bormuth, 1966). The semantic difficulty of Spanish text was estimated by calculating the mean of the log word frequency of each word in the text. The word frequency measure used was the raw count of how often a given word appeared in a corpus of 3,981,128 words sampled from a broad range of topics.

In the English Lexile Framework®, the syntactic complexity of a text is estimated by calculating the mean number of words per sentence in the text. Specific editing rules are employed to adjust for one-word sentences and dialogue qualifiers e.g., "said Patrick" and "Ami said." In English, dialogue qualifiers with two or less words are appended to the previous sentence (for example, " 'I see the moon,' he said." would be treated as one sentence, whereas, " 'I want to go to the store,' John stated loudly." would be treated as two sentences).

The same rules used to determine sentence length in English were used with Spanish texts except in the case of dialogue. In Spanish, dialogue qualifiers with three or less words were appended to the previous sentence.

Next, a regression analysis used the Spanish semantic and syntactic characteristics of the item to predict the reading comprehension difficulty of the 133 items in English. The premise was that overall comprehension difficulty of text is language independent. Four variables were used to quantify the difficulty of the text in English: (1) the theoretical Lexile measure of the original text, (2) the empirical Lexile measure of the original text, (3) the theoretical Lexile measure of the back-translated text, and (4) the mean theoretical Lexile measure of the text. The four analyses resulted in R^2s of greater than 0.89 and RMSEs less than 84L.

The mean difference between the original theoretical Lexile measures of the items and the back-translated Lexile measures of the items was 24.17L (N = 133 items). This process involved two sets of translations (English to Spanish and then back to English). In order to go from English to Spanish only one translation is needed. Therefore, the difference between the original English Lexile measures of the items and the mean theoretical Lexile measures of the items (original and back-translated) corresponds to the amount associated with one translation (0.5 x 24.17 = 12.085). The final regression equation was derived from the Spanish semantic and syntactic characteristics (independent measures) of the 133 items and the mean theoretical Lexile measure of the English item (criterion measure). This equation explained most of the variance found in the set of reading comprehension items (R^2 = 0.938).

Validation of the Spanish Lexile Framework® is being examined from two perspectives: the text and the reader. The text perspective is being examined by looking at the level of difficulty of matched texts e.g., newspapers, literature, and empirical difficulty of items administered to native Spanish-language readers and basal readers. The reader perspective is being examined by looking at the relationship between level of reading comprehension and growth of native Spanish-language readers (Puerto Rico public and private school students), other standardized measures of reading comprehension, and teacher judgements of reading comprehension level.

How will the Spanish version of the Lexile Framework® be used?

MetaMetrics is developing the following materials for the classroom: (1) Spanish Lexile Framework® Map with representative titles and authors from across the Spanish-speaking world; (2) a series of assessments for students in grades 1 through high school to evaluate a student's reading comprehension skills when English is not their primary language; and (3) a series of Reading Pathfinder lists to be used with Spanish-speaking students to identify texts that match their reading comprehension level to instill more reading.

Not all languages are the same!

During this research we learned about differences between the structures of Spanish and English. It was hard to develop a corpus of Spanish text that could be used to construct the word frequency measure. Many Spanish books are actually translations of English books. It was much harder to find text that was originally written in Spanish.

The average length of Spanish sentences is longer than English sentences and the average length of Spanish words is longer than English words. This impacts readability formulas that use word length. Another difference between English and Spanish is word usage, e.g., verb tenses and masculine/feminine versions of the same word. Also, dialogue in Spanish differs from dialogue in English in the markers used, the placement of markers, and the length of qualifiers.

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