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Title: "A Case Study Analyzing the Reading Levels of Print and Electronic Health Education Material for Health Consumers with Low Levels of Literacy."

### Narrative Abstract

The purpose of this case study was to determine if two samples of health education literature (one in print media; the other in electronic media), and published by the same health education organization, provided the requisite reading level for their intended audiences: immigrants and native speakers with a fourth-grade level of literacy. A randomly selected page from a Spanish language health education publication and an informational webpage intended for health care consumers—both targeting individuals with approximately fourth-grade reading skills—were assessed with appropriate readability instruments to determine their level of difficulty. The results indicated that while the Fernandez-Huerta Scale indicated that the printed material was suitable for Spanish readers with a fourth-grade reading level, the Flesch Reading Ease Formula indicated that the English language webpage required a reading level of 12<sup>th</sup> grade or higher. This suggests that electronic text may not be as rigorously tested to comply with the needs of low-literacy individuals. Given the recency and substantial growth of electronically-based health education material, and the lack of expertise that website designers may have (as compared to traditional textbook publishers) in gearing content for individuals with varying levels of literacy, both private and public organizations that provide electronically-delivered health education material should be vigilant in assuring the content meets the requirements of the intended audience.

### Background

With the increasing use of health care providers and health care educational material by recent immigrants and the consistently large percentage of native residents with low levels of literacy, health care education must cater to the literacy levels of individuals who may have limited English language literacy and/or limited literacy in their primary language, since many recent immigrants have had limited formal education in their country of origin.

With the internet becoming a medium for the transmission of health education information (at times not available in any other form), material geared for individuals with modest reading abilities that was once relegated to traditional print media, i.e., brochures, books, pamphlets, questionnaires, and similar material must now must be understandable to those who receive similar information via electronic sources. To determine whether both print and electronically-delivered educational material disseminated by one community health care organization (the Institute for Health Care Advancement of La Habra, California) met the literacy standards for which the information was intended (approximately a fourth-grade reading ability), a case study

was done that measured two samples of consumer-oriented information produced for each of the two media.

The printed sample was taken from the book *Qué Hacer Cuando Su Niño Se Enferme*<sup>1</sup>, published by IHA, and the same organization's website landing page entitled "For Our Clients" and intended for consumers with the same literacy level.<sup>2</sup> The results showed that the language of the print sample was appropriate for the literacy levels of its intended audience; however, the website landing page had a level of difficulty that far exceeded that of the intended reader. This case study suggests that publishers and providers of health oriented educational material should subject the same testing they use for written material for electronically-delivered health information.

### Study

The Institute for Health Care Advancement (IHA) of La Habra, California strives to create health education material for consumers with limited reading levels in either English or Spanish, typically assessed to be at a fourth-grade reading level.

The question this study attempted to answer was to what degree does the written material conform to these standards. A case study was done by examining two sample texts (one in English, the other in Spanish; one in print; the other electronic) to ascertain the level of such educational material to see if they met the criteria for the intended audiences. The English sample was selected from the "For Our Clients" section of the La Habra Family Resource Center website, a clinical division of IHA. The Spanish text was taken from the publication *Qué Hacer Cuando Su Niño Se Enferme*, a book intended for use by Spanish speakers and geared toward Spanish-speaking parents in the United States.

The English text was measured via two instruments: the Flesch Reading Ease formula, which was then interpreted via the Flesch-Kincaid Grade Level Determinant. The level of reading difficulty of the Spanish text was subjected to the Fernandez-Herta Spanish language reading guidelines (the preferred instrument used to assess the reading difficulty of Spanish text for U.S. Government health publications).

The Flesch Reading Ease Formula is considered as one of the oldest and most accurate readability formulas for the English language. This assessment instrument was developed in 1948 by Rudolph Flesch, an author, writing consultant, and supporter of the Plain English Movement. The Flesch Reading Ease Formula is a simple approach to assess the grade-level of the reader. It is considered to be valid and reliable, and has been the standard readability formula used by many US Government Agencies, including the US Department of Defense.

Using the Flesch Reading Ease Readability Formula, the sample electronic text was found to rate a 40.8 score, which, according to the guidelines of the test developers and administrators, places the comprehension level at "difficult," indicating that the 40.8

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<sup>1</sup> Kuklierus, Ann and Gloria Mayer. *Qué Hacer Cuando Su Niño Se Enferme*. La Habra, CA: IHA Publishing, 2000.

<sup>2</sup> [http://frclahabra.org/default.aspx/MenuItemID/123/MenuGroup/\\_Home.htm](http://frclahabra.org/default.aspx/MenuItemID/123/MenuGroup/_Home.htm)

rating would require that the reader have a twelfth-grade reading level, or be a high school graduate with “normal” reading skills. (Some web-specific text such as “Go to Top” was expunged from the material so as not to confound the measurement). The results of the analysis were borne out by a related measurement instrument to which the text was subjected: the Flesch-Kincaid Grade Level determinant. This measure was consistent with the former, suggesting a difficulty of a *minimum* twelfth-grade reading level. Since this scale’s maximum level is the twelfth-grade, the text may in fact be more difficult.

This suggests that the website content—if it is intended for low-level readers—should be revised for easier comprehension.

To test the ease of reading for a sample print-based Spanish text, the introductory material intended for readers of *Qué Hacer Cuando Su Niño Se Enferme* was subjected to a commensurate reading level determinant test, the Fernandez-Huerta scale. This instrument is the preferred method used to judge the readability level of Spanish text for government documents in the United States such as drivers’ licenses, employment applications, consumer questionnaires, and similar texts.

The results of this analysis showed the printed text material was commensurate with the language level skills of the targeted Spanish readers, resulting in a score of 75. This placed it in the “fairly easy” category according to the Fernandez-Huerta guidelines, where a score of 60 to 70 is considered the “normal range” or a Spanish language reading difficulty level requiring an eighth grade level in Spanish. As in the Flesch Reading Ease Formula, the higher the score, the easier the material to comprehend. Thus the obtained score of 75 would require approximately a fifth-grade level reading ability for native Spanish speakers.

To demonstrate how this sample text compares with Spanish texts for similar populations and similar purposes, the difficulty level of the material from *Que Hacer Cuando Su Niño Se Enferme* was compared to a consent form designed and created by The Hastings Center, and intended for Spanish speakers who are being considered for oncology treatment. It received a score of 64 (equivalent to the level of “normal” or an eighth-grade reading level on the Fernandez-Huerta guidelines). The Hastings Center is a non-partisan organization dedicated to educating the public on issues in bioethics.<sup>3</sup>

### Results

These results suggest providers of health education material for individuals with low-literacy levels should test all texts—whether is presented in traditional print media or electronically. This is particularly important as more health education information is being presented solely via electronic media.

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<sup>3</sup> Shlomo A. Koyfman, Mary S. McCabe, Ezekiel J. Emanuel, and Christine Grady, "A Consent Form Template for Phase I Oncology Trials," *IRB: Ethics & Human Research* 31, no. 4 (2009): 1-8.