

The Methodology Used to Assess the Readability of the NNAAP™ Examination

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The National Nurse Aide Assessment Program (NNAAP™) is designed to assess the knowledge, skills and abilities that are crucial for safe and effective work as a certified entry-level nurse aide/nursing assistant. The examination is based upon two components mandated by the Omnibus Budget Reconciliation Act (OBRA) of 1987. The first component is a multiple-choice, four-option, written examination (presented in either English or Spanish) administered in either an oral or paper and pencil form. The second component is a skills demonstration referred to as the Skills Evaluation.

Text Readability and Grade Level

The written NNAAP examination tests nursing knowledge within the nurse aide range of authorized duties. While reading ability is not the main focus of the written examination, reading is required to successfully complete the examination. Readability is the ease with which a person can read and comprehend text. Readability of examination items differs from the typical readability of texts in an examination. According to the Standards for Educational and Psychological Testing, examination readability is explained in the following way:

In testing applications where the level of linguistic or reading ability is not part of the construct of interest, the linguistic or reading demands of the test should be kept to the minimum necessary for the valid assessment of the intended construct (AERA, APA & NCME, 1999, p. 82).

In the other words, only the words that are typically and commonly used in the subject area being examined should be included in the test form.

Readability formulas predict the reading level required to understand a specific text. They are commonly used in education programs. However, readability analysis of

examination items is rarely conducted among certification or licensure testing programs. The reason is probably due to the difficulty of applying the readability formula to multiple-choice items. As a result, not much literature is available on this topic.

It is the goal of NCSBN to ensure that the reading demands of NNAAP and the readability of examination questions/items do not become a barrier to otherwise qualified candidates. To address this concern, NCSBN assesses the readability of each NNAAP test form before it is deployed for use. Most readability formulas currently available can be translated into appropriate U.S. grade levels, making it easier for educators to select and write materials appropriate for the reading levels of their students.

Grade equivalents are based on the performance of students in a test's norming group, and represent the grade level and month of a student's typical (median) score (Homan, Hewitt & Linder, 1994). For example, a student who scores 5.6 on the readability test has a score similar to the 50th percentile of students in the test's norming group who were in their sixth month of fifth-grade at the time they took the readability test.

Flesch-Kincaid Readability Formulas

NCSBN uses the Flesch-Kincaid formula to measure readability of NNAAP test forms, which are at or below the sixth-grade level of readability. The Flesch-Kincaid formula is based on the article, "A New Readability Yardstick," published by Rudolf Flesch in the *Journal of Applied Psychology* in 1948. In 1976, the formula was modified by John P. Kincaid to produce a grade-level score. It has since become the most widely used readability formula in the U.S.

The Flesch-Kincaid formula is based on word and sentence length. This formula counts words, syllables and sentences

in three 100-word passages (Flesch, 1979). The word length is measured in syllables, while the sentence length is measured in words. Those two numbers are put into an equation that gives the Flesch Reading Ease, a number between zero and 100. The text with the readability ease of zero is almost impossible to read, while the text with the score 100 is the easiest. The Flesch Reading Ease formula was later adapted into the Flesch-Kincaid grade-level formula. They both use word and sentence length as the main measures, but have different weighting factors (Allen, McGhee & van Krieken, 2005).

The Flesch Reading Ease result is inversely related to the Flesch-Kincaid grade equivalent result; a text with the high score on the reading ease test has a lower score on the grade-level test. For example, a score of 5.6 means that the text is at the reading level of an average student in fifth-grade and the reading ease of that text is between 90 and 100.

Nursing, like many other disciplines, has specialized vocabulary and terms that are not frequently used in the English language (Allan et al., 2005). This may make it difficult to analyze the readability of certification or licensure examinations using readability tests based on the frequency of words in the English language. The Flesch-Kincaid readability test is appropriate to use for NNAAP test forms since it measures the length of words and sentences, and not the frequency of the use of these words in the English language. The readability of the NNAAP test items is between the 4th and 6th grade levels, but no higher than the 6th grade.

Knowledge of medical and nursing terms is required in the nurse aide curriculum. For example, the two words *urinary catheter* are probably difficult to read for the average sixth-grader, but it should not be difficult for a competent, entry-level nurse aide candidate to understand. Since the purpose of the NNAAP examination is to assess the ability of nurse aides to assist in providing safe and effective nursing care, test forms do not contain any unusual words or words unrelated to care provided by nurse aides. The targeted audience of the NNAAP examination, which is nurse aide/nursing assistant candidates, is familiar with the medical terminology used in the test forms.

In preparation for the Flesch-Kincaid readability analysis, all graphs and pictures are removed from test forms. Examination items are modified to include only words; the rest of the items are not modified. NNAAP subject matter experts (SMEs) are experienced registered nurses that receive training, education and assistance in writing concise items with easily readable words, using only the medical and nursing terminology that are necessary and appropriate for safe and competent, entry-level nurse aide work.

Recommendations and Future Considerations

NCSBN hopes that readability analyses will become a more standard practice among certification and licensure testing programs (Woo, Wendt & Liu, 2009). Based on an extensive literature search, NCSBN recommends that SMEs who write NNAAP examination items should use short words and sentences, whenever possible. Furthermore, the length of each item should be no longer than two sentences, when possible. If the examination item is easy to read, candidates can put more emphasis on the nurse aide knowledge and content being measured in each item. However, nurse aide educators should not feel that they must adhere to these standards when they write questions for their students. It is completely acceptable to write questions that require greater reading ability, insofar as the students are accustomed to reading questions that have higher readability levels. Test developers and item writers should be mindful of the readability requirements of examination items and use readability assessments as an adjunct, not a barrier, to the successful assessment of otherwise competent candidates.

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