



Readability of the Center for Early Literacy Learning Practice Guides with Adaptations

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The readability of the *Center for Early Literacy Learning* practice guides with adaptations was analyzed using nine readability formulae. Results showed that the practice guides are written at a 5th to 6th grade level, and that they would be easy to read by most adults who have completed that much formal education. The readability results, together with the fact that the practice guides have been found to be socially valid, indicate that they are both user-friendly and easy to understand.

Staff at the *Center for Early Literacy Learning (CELL)* have developed practice guides for both parents and practitioners and practice guides with adaptations to make it easier for young children with disabilities to participate in and benefit from early literacy learning activities. There are 15 practice guides with adaptations, five each for infants, toddlers, and preschoolers. Methods and procedures described by Campbell and her colleagues (Campbell, Milbourne, & Wilcox, 2008; Milbourne & Campbell, 2007) were used to develop the adaptations. The practice guides include adaptations for promoting vocal and verbal behavior, child engagement in book reading and storytelling, sound awareness and rhyming, symbol and letter recognition, and drawing and writing. The *CELL* practices, both with and without adaptations, are formatted in the same manner to promote familiarity with their organization which is one factor facilitating document understanding (Cohen & Snowden, 2008).

The practice guides with adaptations can be used by either practitioners or parents, or by parents in collaboration with practitioners. To ensure their understanding and use, the practice guides were written, revised, and rewritten to

ensure their readability (DuBay, 2004). The most read material worldwide is written at a 9th grade level (Impact Information, 2005). The purpose of the analyses reported in this *CELLpaper* was to ascertain the reading levels of the practice guides. Findings on the social validity of the practice guides are described in Trivette, Dunst, and Hamby (2010).

METHOD

Procedure

Each of the practice guides was analyzed using nine readability formulae that use word familiarity and different syllable, word, and sentence counts for determining the reading level of a document (Anderson, 1981; Bjornsson, 1983; Bormuth, 1969; Carver, 1985; Chall & Dale, 1995; Fry, 1977; Harris & Jacobson, 1982; Kincaid, Fishburne, Rogers, & Chissom, 1975; Raygor, 1977). The different readability formulae produce a grade level, reader age, or reading ease index, or a combination of these three measures. The readability formulae and measures are listed in Table 1. The readability measures that were used are ones most applicable to documents similar to the practice guides. The analyses were performed using the Oleander (2009) *ReadabilityStudio* software package.

The readability formulae yielding grade levels do so using the metrics indicated on Table 1. For example, the *New Dale-Chall Test* (Chall & Dale, 1995) uses word familiarity and sentence length to determine the grade level of a document. The same is the case for calculating reader ages. The formulae for computing reading ease indices each calculate a score that is interpreted using tables provided by the software. *The Flesch Reading Ease Test* (Flesch, 1979), for exam-

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Table 1

Formulae and Measures for Evaluating the Readability of the CELL Practice Guides with Adaptations

Readability Formula	Readability Metric					Readability Measure		
	Syllable Count	Sentence Length	Sentence Count	Word Familiarity	Word Length	Grade Level	Reader Age	Reading Ease
<i>Flesch-Kincaid</i>	X	X				X	X	
<i>Flesch Reading Ease Test</i>	X	X						X
<i>Fry Test</i>	X		X			X	X	
<i>LIX Test</i>		X			X	X	X	X
<i>New Dale-Chall Test</i>		X		X		X	X	
<i>Raygor Estimate</i>			X		X	X	X	
<i>Reading Power Test</i>		X		X	X	X	X	X
<i>RIX Test</i>			X		X	X	X	X
<i>Wide Range Readability Test</i>		X		X		X	X	

ple, computes a score ranging from zero to 100, where the higher the score, the easier the readability of a document. A score between 60 and 69 is considered average, and a score between 70 and 79 indicates that a document is *fairly easy* to read.

Analysis

An average grade level and reader age, and the 95% confidence intervals for the averages, were used for determining the readability of the practice guides. Average grade levels and reader ages were computed for each set of practice guides (infant, toddler, preschooler) and for all 15 practice guides together. The average reading ease indices and their 95% confidence intervals were computed separately since each measure is scored differently. The main focus of analysis was the extent to which the grade levels of the practice guides were at or below a 9th grade level. The main analysis was supplemented by the results from the reader ages and reading ease indices analyses.

RESULTS

Grade Level

Table 2 shows the results from the readability analyses. The practice guides, on average, are written between a 5th to 6th grade level. The 95% confidence intervals show that the practice guides with the highest grade levels are written two grades below the grade level (9th) for the most widely read material worldwide (Impact Information, 2005). These results indicate that most parents and practitioners would find the practice guides easy to read and understand.

Examination of the results from the individual readabil-

ity tests showed that all the formulae produced grade levels between 4 and 7. For example, the results from the *New Dale-Chall Test* (Chall & Dale, 1995), one of the most frequently used readability measures, yielded an average grade level of 4.07 (95% CI = 3.69 – 4.42) for all 15 practice guides combined.

Reader Age

The results from the reader age analyses showed, on average, that an 11-year-old would be able to read the practice guides with little difficulty. The average reader ages for the infant, toddler, and preschooler practice guides ranged between 10.35 and 11.37. The *New Dale-Chall Test* (Chall & Dale, 1995) results showed that the reader ages were between 9 and 10 for the three sets of practice guides. Most adult readers would therefore be able to read the practice guides.

Reading Ease

Table 3 shows the results from the reading ease analyses. Findings from the *Flesch Reading Ease Test* (Flesch, 1979) indicated that for all the practice guides together, and for the infant, toddler, and preschooler practice guides separately, readers would find the documents *fairly easy* to read. An average *New Dale-Chall Test* (Chall & Dale, 1995) reading ease index is between 60 and 69. (The higher the score, the easier it is to read a document.) The results from the *LIX Test* (Bjornsson, 1983) showed that the practice guides were all judged *easy to very easy* to read. An average score on the *LIX Test* ranges between 40 and 49. (The lower the score, the easier a document is to read.)

Both the *RIX Test* (Anderson, 1981) and *Degree of Reading Power Test* (Bormuth, 1969) produce scores which

Table 2

Readability Grade and Reader Age Results for the CELL Practice Guides with Adaptations

Measure	Infant		Toddler		Preschool		All Ages Combined	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
<i>Grade Level</i>	6.04	5.60-6.48	5.70	5.26-6.13	5.00	4.57-5.44	5.58	5.33-5.83
<i>Reader Age (Years)</i>	11.37	10.92-11.83	11.04	10.58-11.49	10.35	9.90-10.80	10.92	10.66-11.18

Table 3

Readability Analysis Results for the Reading Ease Indices

Measure	Infant		Toddler		Preschool		All Ages Combined	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
<i>Flesch Reading Ease</i>	74.20	71.66-76.74	78.40	75.16-81.64	80.40	76.61-84.19	77.67	75.67-79.66
<i>Degree of Reading Level</i>	55.80	54.76-56.84	55.00	53.78-56.24	53.00	49.96-56.04	54.60	53.54-55.66
<i>LIX Test</i>	31.20	28.51-33.89	30.60	27.13-34.07	26.80	24.26-29.34	29.53	27.89-31.18
<i>RIX Test</i>	2.42	1.97-2.87	2.34	1.86-2.82	1.80	1.51-2.09	2.19	1.95-2.42

are then converted to grade levels. The *RIX Test* results indicated that the practice guides are written at a 6th to 7th grade level, and the *Degree of Reading Power Test* results showed that the practice guides are written at a 3rd to 6th grade level.

DISCUSSION

Findings from the readability analyses showed that the *CELL* practice guides with adaptations are all written at a 5th to 6th grade level which is at least three grade levels below the most widely read material (Impact Information, 2005). These results, together with the fact that the practice guides are judged as socially valid (Trivette, Dunst, & Hamby, 2010), indicate that they are easy to read and are considered both important and acceptable by end-users. The results show that the practice guides will be understandable to most readers (DuBay, 2007).

Readability is one factor influencing the use and understanding of written material (DuBay, 2004). The extent to which the content of that material is considered important and acceptable is another factor influencing use and understanding (Trivette, Dunst, & Hamby, 2010). The way in which written material is organized is yet another factor affecting use and understanding (Cohen & Snowden, 2008). The *CELL* practice guides with adaptations are characterized by all three factors. Therefore it is reasonable to conclude that the practice guides constituting the focus of this *CELL* paper are prepared and written in a manner that end-users will find easy to read and use.

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