



Effects of web-based training on Spanish pre-service and in-service teacher knowledge and implicit beliefs on learning to read



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HIGHLIGHTS

- Teaching children how to read demands a high degree of specialization.
- The creation of a Spanish online teacher professional development program has been developed to improve teaching of reading.
- Post-Letra program revealed changes in teachers' beliefs about learning to read.
- Post-Letra program, teachers learned more about the essential components of the reading process.
- The assessment of the training and support website was quite positive by pre-service and in-service teachers.

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ABSTRACT

The main objective of this study was to analyze the effects of web-based training on Spanish pre-service and in-service teacher knowledge and implicit beliefs on learning to read. A sample of pre-service teachers and in-service teachers from Mexico, Guatemala, Ecuador and Spain participated in the on-line course. Findings suggest that teachers may improve their knowledge of phonemic awareness, systematic phonics instruction, fluency, vocabulary, strategies for comprehension as necessary components of quality reading instruction. Upon completion of the training, effects were also found on the teachers' implicit beliefs. Finally, positive ratings were received by both the pre-service and in-service teachers.

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1. Introduction

Results from numerous international assessments have suggested that there are a substantial number of children who are unable to read on grade level. Nowadays, reading literacy levels across countries are assessed by two large scale international surveys, namely PIRLS (Progress in International Reading Literacy Study) and the Organization for Economic Cooperation and Development (OECD) Programme for International Student Assessment (PISA). The *International Association for the Evaluation of Educational Achievement* (IEA), the most recent PIRLS (*Progress in*

International Reading Literacy Study, Martin & Mullis, 2013; Martin, Mullis, & Kennedy, 2007; Mullis, Martin, Foy, & Drucker, 2012; Mullis, Martin, Kennedy, & Foy, 2007), the PISA reports (OECD, 2006, 2009, 2013), and the Third Regional Comparative and Explanatory Study (TERCE) that coordinates the United Nations for Educational, Scientific and Cultural Organization (UNESCO, 2015), which involves a total of fifteen Latin-American countries; all point to the importance of assuring that all children become skilled readers.

The European Union (EU) average score in reading for 15 year-olds and the proportion of struggling readers in this age group remained stable in PISA surveys carried out between 2000 and 2009 (EACEA/Eurydice, 2011). In 2009, approximately one in five 15-year olds in the EU-27 countries had difficulties using reading for learning. In many Spanish-speaking countries, it has also been found that average reading skill levels are lower than those of other

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OECD countries (see, for example, the OECD's PISA report from 2012). In addition, there are also reports on PIRLS-TIMSS focusing extensively on reading performance of 4th graders in Spain (Corral, Zurbano, Blanco, García, & Ramos, 2012). These authors report that language training before entering primary school and the student's reading habits are two of the variables with significant impact on the results. This cumulative effect is particularly relevant in families with low socio-economic status.

Reading is a basic skill for survival and those who have reading difficulties in the early grades continue to struggle in school and in life (Joshi, Binks, Hougen, Dean, et al., 2009). This issue is of critical importance for students with specific learning disabilities because it is estimated that approximately 80% of this population have difficulties in learning to read (Lyon, 1995). Longitudinal studies have found that these reading problems often persist and children who struggle with reading during the early grades of primary school are most likely to continue to have reading difficulties throughout their education (Juel, 1988; Vaughn, Linan-Thompson, Kouzehanami, Bryant, et al., 2003).

Some of the reasons why children fail to learn to read have been described by Vellutino, Scanlon, and Jaccard (2003). These authors mention environmental and instructional factors which may contribute to poor reading outcomes. Environmental factors include poor development of oral language, the number of books available at home, parent attitudes and parental models. As for instructional factors, these include an absence of an appropriate environment for reading and writing in the schools, ineffective instructional methods, and a lack of teacher knowledge regarding language.

Teachers play a key role in helping children to learn to read, particularly for those children who are at-risk for failing to learn to read (Brady & Moats, 1997). In their meta-analysis, Marzano, Pickering, and Pollock (2001) concluded that teacher effectiveness is one of the most important factors when it comes to explaining learner progress, not only in reading, but also in mathematics and other school areas.

Some scientific reports such as the *National Reading Panel* (NRP) (2000) have determined the components necessary in order for children to become solid readers and those needed by teachers in order to more effectively teach reading skills. These reports highlight five essential components that are necessary for reading instruction: (i.e., phonemic awareness, phonics, fluency, vocabulary, and text comprehension strategies) (Lyon & Weiser, 2009). Nevertheless, Goldenberg et al. (2014) suggest caution in applying psycholinguistic and instructional principles across languages without taking into account potentially relevant differences in linguistic and orthographic characteristics, as well as differences in the socio-cultural and socio-linguistic contexts in which learning is taking place.

Despite the transparency of the Spanish language (i.e., the process of translating print to sound is never ambiguous because each letter of the alphabet has a unique pronunciation, except the letters *c*, *g*, and *r* where the pronunciation is different according to the vowel following the consonant), many of the studies with Spanish-speaking children (either monolinguals or Spanish–English bilinguals) have revealed that phonemic awareness (PA) is a strong predictor of word reading in Spanish (Carrillo, 1994; Manrique & Signorini, 1994; Signorini, 1997). PA is the ability to hear and manipulate the individual sounds within words. In addition, the ability to use the grapheme-phoneme correspondences (GPC) to translate printed text into oral language appears to be a key component to improving word reading and reading comprehension in Spanish. Castejón, González-Pumariega, and Cueto (2015) examined the development of word recognition in Spanish, considering accuracy and speed, from a longitudinal

perspective. Results showed that initial gains in reading accuracy occurred very rapidly. However, the growth of reading speed was found to be more difficult and complex, and automatic word recognition remains low at the end of the sixth grade. Students with reading disabilities (RD) in Spanish tend to have a malfunctioning of sublexical processes (i.e., the mechanism that recognizes the relation between graphemes and phonemes). This malfunctioning is expressed in turn by the student's difficulty reading multi-syllabic words automatically (Suárez & Cueto, 2008). Vocabulary plays also a critical role in reading comprehension because understanding a text requires knowing the meaning of the words. Kim and Pallante (2012) investigated predictors of word reading and reading comprehension skills using longitudinal data from Spanish-speaking kindergartners and first grade students in Chile. For first graders' reading comprehension, word reading, nonsense word fluency, and vocabulary were positively and uniquely related. In addition, Cena, Baker, Kame'enui, Baker, et al. (2013) provided evidence of the relevance of explicit and systematic vocabulary instruction in Spanish. Reading comprehension problems in children are related to a lack in the development of a good fluency. Álvarez-Cañizo, Suárez-Coalla, and Cueto (2015) carried out a study to determine which aspects of reading fluency are related to reading comprehension in a sample of Spanish primary school children (third and sixth grade). The results demonstrated that children with less reading comprehension made more inappropriate pauses and also intersentential pauses before comma than good comprehenders and made more mistakes in content words. Nevertheless, sometimes Spanish poor comprehenders are able to decode words fluently but they have a deficit in syntactic and semantic processes. Thus, not all reading comprehension difficulties can be attributed to poor decoding or oral reading fluency but poor comprehension also can derive from processes that are necessary to make sense of sentences within passages.

On the other hand, what does research tell us about teaching reading? Teaching approaches that are appropriate for a language that has an opaque orthographic system are not always appropriate for other languages that are more transparent. For instance, in English language many words have an orthographic pattern that correspond to linguistic units larger than the phoneme, such as in the case of rhyme (e.g., *right*, *sight*, *flight*, etc.). Thus for children who learn how to read in English, an approach based on analogies would be more appropriate. Studies conducted into Spanish, however, have shown that children do not rely on this type of linguistic unit in visual word recognition (Jiménez, Álvarez, Estévez, & Hernández-Valle, 2000). Also, most studies have highlighted the beneficial effects a phonological focus in teaching can have to all students during initial education, given the transparency of Spanish (Alegria, Carrillo, & Sánchez, 2005).

1.1. Teacher knowledge

It is important to properly train teachers who are responsible for the prevention and correction of reading disabilities. However, it has been found across different languages that many teachers lack sufficient knowledge regarding language as well as the good teaching practices needed in order to effectively help their students acquire basic reading skills (Bos, Mather, Dickson, Podhajski, & Chard, 2001; Guzmán, Delia, Nuria, & Abreu, 2015; Joshi, Binks, Hougen, Dahlgren et al., 2009; Lewis, Cuadrado, & Cuadros, 2005). This lack of knowledge often goes hand in hand with incorrect teacher beliefs regarding what they need to know and do in order to help their students learn.

Bos et al. (2001) administered the Teacher Knowledge Assessment: Structure of Language to 252 pre-service teachers and 286 in-service teachers. This questionnaire is a 20-item multiple-choice

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