Chapter 14
Beyond Knowledge:
Helping Preservice Teachers Apply the Science of Reading Research in Authentic Classroom Contexts

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ABSTRACT

Our nation is experiencing a "student achievement crisis" in literacy. Some of the blame for the current crisis in literacy education has been laid at the feet of teacher education programs and their professors. Many pundits of teacher education and literacy education suggest that the solution to increasing reading achievement is simple: Emphasize and teach science of reading (SOR) principles in teacher education programs. In theory, this approach is reasonable; however, the purpose of this chapter is to examine some of the challenges in making the complex content of the SOR accessible to preservice teachers. The authors will also offer possible solutions to help make the SOR more comprehensible so that preservice teachers can increase their transfer of technical and pedagogical knowledge to authentic classroom contexts.

INTRODUCTION

According to the United States government, the general public, and the media, our nation is experiencing a "student achievement crisis" in literacy (Myracle et al, 2019). The results of the latest National Assessment of Educational Progress (NAEP) reading assessment suggest that only 35% of our nation's fourth grade students performed at or above the proficient level in reading (National Center for Education Statistics, 2019). Average NAEP reading scores in fourth-grade declined in 17 states. Despite attempts to improve the literacy achievement of our students through mandated accountability and high-stakes movements, there has been little progress in advancing the literacy skills of students in the US.

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The low literacy levels of US students have many causes, but some of the blame for the current crisis in literacy education has been laid at the feet of teacher education programs and their professors (Hanford, 2019; Hindman et al., 2020; Spear-Swerling, 2019; Wexler, 2019; Will, 2019). Most teacher education programs (TEP) claim to teach the five essential components of reading (phonemic awareness, phonics, fluency, vocabulary, comprehension) as outlined by the National Reading Panel (National Institute of Child Health and Human Development, 2000); however, a report by Drake and Walsh (2020) found that only 25% of undergraduate and graduate TEPs emphasized all five components of literacy. Even more concerning,18% of the programs covered none of the five components. Not surprisingly, several studies have found gaps in teachers' knowledge of literacy that could be traced back, in part, to the poor preparation in their TEPs (Brady & Moats, 1997; Clark et al., 2019; Cunningham et al., 2004; Pittman et al., 2019; Spear-Swerling et al., 2005).

Literacy instruction is a complex decision-making process, and communicating the multidimensional nature of literacy learning and teaching to preservice teachers is equally challenging (Gelfuso, 2021). There are countless studies that focus on how teacher educators can support preservice teachers' understanding and application of pedagogical practices in general; however, there are very few studies that specifically address how teacher educators can support preservice teachers as they work towards transferring and applying their content knowledge of literacy to the classroom (Kucan & Palinscar, 2018; Pomerantz & Condie, 2017). As Gelfuso (2021) notes, "...an important responsibility of teacher educators is to create a supportive set of circumstances during which preservice teachers can learn about and enact planning for ambitious literacy instruction" (p. 153).

Many pundits of teacher education and literacy education suggest that the solution to ameliorating the gap in teacher knowledge is simple: Emphasize and teach Science of Reading (SOR) principles in teacher education programs and assess their knowledge of these principles on rigorous certification exams. In theory, this approach is reasonable; however, much of the research on SOR suggests that the complexity of research-based literacy instruction makes it difficult to convey in just a few undergraduate courses. Furthermore, it is nearly impossible for preservice teachers to apply their understanding of SOR principles meaningfully without intense training, modeling, rehearsal, and feedback (Hindman et al, 2020).

Moats (2020) asserted that "The most fundamental responsibility of schools is teaching students to read" (p. 4). Given this statement, the purpose of this chapter is to examine the responsibility of teacher educators in helping make the research on SOR accessible to preservice teachers and in providing opportunities to practice and apply this research so that they can teach their students to read. This chapter will also provide possible solutions to make SOR content more comprehensible, to increase transfer of technical and pedagogical knowledge to authentic classroom applications, and to promote situational knowledge.

BACKGROUND

The term *science of reading* is defined and used among researchers across disciplines, classroom teachers, and media with considerable variation and has been used interchangeably with the term, *science of teaching reading*. In this chapter, we will refer to the term, science of reading (SOR) for consistency. As Shanahan (2020) has outlined, the *science of reading* is not a new term. Over centuries, the term has been used in reference to linguistics, then decoding, and has now expanded to include research on numerous elements of reading development and instruction. Advances in technology and a renewed sense of urgency