

## Book Review

**Lay Hoon Seah, Rita Elaine Silver & Mark Charles Baildon (eds.).** 2022. *The role of language in content pedagogy: A framework for teachers' knowledge*, xii+243 pp. ISBN: 978-981-19-5350-7 (hbk).

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<https://doi.org/10.1515/jwl-2023-0013>

With the spread of Content and Language Integrated Learning (CLIL) programs around the world, increasing attention is given to the role of language in content pedagogy and the nature of the knowledge base that is required for content teachers to successfully integrate content teaching and language teaching. While there is no dearth of books written primarily by applied and educational linguists (e.g. Fang 2008; Lin 2016; Llinares and Morton 2017; Rose and Martin 2012), there have been relatively fewer books focusing on developing a systematic and comprehensive framework to chart out the different kinds of knowledge needed for content pedagogy that also attends to the development of discipline-specific language. The editors of *The role of language in content pedagogy: A framework for teachers' knowledge* have successfully integrated existing theories and frameworks in this growing area of research to develop a comprehensive and teacher-accessible metalanguage and framework to describe and elaborate the language-related knowledge base for content teachers. They call this the Language-Related Knowledge Base for Content Teachers (LRKCT), which is seen as “a specialized body of knowledge unique to content teachers” (p. 5) and presented as equally relevant for teaching in monolingual and multilingual classrooms. After reading through the chapters, we found that the LRKCT constitutes a comprehensive and overarching concept utilized within the educational sphere, encompassing a diverse array of frameworks specifically tailored to address various pedagogical contexts. This inclusive term encompasses frameworks derived from disparate academic traditions, notably but not limited to the Teacher Language Awareness (TLA) and Disciplinary Linguistic Knowledge (DLK) frameworks. By acknowledging the multifaceted nature of instructional scenarios, the LRKCT framework empowers educators with a flexible toolkit, facilitating effective communication and pedagogical strategies across diverse content areas.

Structurally, this book consists of 12 chapters. The first chapter delineates and establishes this framework, and subsequent chapters (Chapters 2–12) build on and

illuminate this framework with practical classroom examples and helpful pedagogical suggestions for science, history, and social science teachers.

In Chapter 1, the authors discuss the LRKCT framework as four interdependent knowledge components (knowledge of language, knowledge about language, knowledge of students, and pedagogical knowledge) that are crucial for content teachers. The purpose of the framework is to support the learning of general academic discourse and disciplinary-specific language and literacy practices. After defining the framework, this introductory chapter provides the context to illustrate the connections between content and language in learning, including a discussion of the teacher's array of duties in relation to classroom language use. After explaining how the book's big ideas are based on the existing research literature, this introduction gives a short summary of each chapter to help the readers understand the overall structure of the book. While the theories are integrated systematically into the LRKCT framework, readers who are content teachers would benefit from a clearer explanation of some of the linguistic and academic jargon, abbreviations, and visuals.

Chapter 2 of the book explores the nature of the linguistic knowledge required by content teachers to leverage current research on ways in which the language demands of science learning can be addressed in classrooms. Using the LRKCT framework, the authors conducted empirical research to test the framework's main theoretical ideas in science education. The data came from a study that tested the assumption that raising science teachers' language awareness improves their capacity to address the language demands in science lessons. A total of six teachers (in primary and secondary schools) took part in the project. To raise their TLA, a series of inquiry cycles based on their students' writing were conducted. The authors found that the most important aspects to consider are the language demands in science classrooms and how students can show that they understand the science concepts taught. This chapter provides a good illustration of how the LRKCT framework can be applied in a science classroom by raising teachers' language awareness. However, we think that the authors can make more direct connections back to the framework so that the relationship between the example and the framework is clearer to the readers, as for now some of the readers might be confused by the terminology in the first chapter and thus require concrete examples to help them understand the framework in use.

Chapter 3 describes an experiment carried out at a secondary school in Singapore in which researchers collaborated with five science teachers at various stages over two years to test a functional literacy approach to teaching lower secondary science. The functional literacy method was guided by systemic functional linguistics and drew on the work of Rose and Martin (2012) and Rose (2015) on language development in the context of science. This chapter focuses on the change

in teacher language awareness for teaching science based on the teacher reflections collected. The teachers' reflections revealed a transition from early doubts to the ultimate realization of the worth of how awareness of and attention to language may promote students' understanding of scientific concepts, foster communication, and make the knowledge-making process visible. We think this study would have benefited from a more in-depth description of the strategies employed in the classes and more discussion of some aspects of the study, such as its participants. For instance, despite having participated in the research for twice as long as some of the other participants, Teacher 2 does not appear to have been referenced at all in the discussion. Co-teaching and mentoring may also have affected one of the teachers' responses (Teacher 4). It is conceivable that this is not a serious methodological problem, yet there is opportunity for more discussion of the findings.

Chapter 4 presents the experiences of seven high school (in Florida, USA) science teachers in a professional development (PD) program aimed at strengthening their skills in teaching science reading through a functional focus on language. Participants were interviewed, PD sessions were recorded, and classroom observations were documented using field notes. The authors noticed that personal and environmental factors affected how student teachers learned and used what they had learned. We think that this chapter will assist science, technology, engineering, and mathematics (STEM) and non-STEM educators in comprehending the linguistic complexity of scientific instruction. Adding some visuals would aided readers in understanding the language scaffolding necessary for various genres. The chapter is fairly easy to understand, but a better link could be made to the proposed LRKCT framework, such as how the personal factors mentioned in the study fit the overall framework. Overall, the functional approach illustrated in this chapter has obvious potential benefits for both STEM and non-STEM teachers, as developing the ability to recognize language complexity in disciplinary-specific registers and genres is useful in a variety of courses.

Chapter 5 examines the creation of DLK by one high school science teacher to accommodate multilingual students in an English-dominant classroom. This six-year-long research (conducted in Massachusetts, USA) provides informative insights into the changes documented as well as discussions of the enduring changes resulting from the research process. We recognize the value and usefulness of the work in this chapter; however, we feel that the chapter would have been improved by providing a comprehensive and critical analysis of the topics addressed in this chapter. In the absence of this information, it may be difficult for the readers to comprehend the larger context and purpose of this chapter. If the social justice connection (for example, the physical separation of English language learners [ELLs] into substandard programs within the school) is the main focus of the chapter, then

the issue must be explored in greater depth as the teacher builds his DLK to help solve the problem instead of just being mentioned at the beginning and end of the chapter.

Chapter 6 covers attempts to promote the transformative use of multimodal materials in science classrooms. The researchers came up with an image-to-writing strategy to help teachers think of ways to take advantage of multimodal materials to promote and develop science language proficiency among students. This chapter is very useful and can be easily implemented in the classroom. For example, the repeated use of the pollination example helps both STEM and non-STEM teachers understand the language, conceptual, and pedagogical barriers to teaching science.

Chapter 7 presents two case studies of secondary school scientific themes employing the Representation Construction Approach (RCA) to address the issue of how to enable students to develop, discuss, criticize, and revise representations of phenomena relevant to the target ideas in science instruction. The RCA approach emphasizes our understanding of the world is not a reflection of objective reality, but rather a construction based on our subjective interpretation through various lenses, such as our prior experiences. The authors discuss how LRKCT (the four knowledge components) is required to implement the RCA pedagogy and argue that more research should be done at different levels and in different contexts to find out what knowledge science teachers need to help their students learn more about science. Due to the excessive use of academic jargon in the introductory portions, this chapter can be rather difficult to comprehend for the general readers. However, the case study portions give a more concrete illustration for the readers to visualize the context and the approach. This chapter makes clear references to the LRKCT framework in the text, which we think is important for making a direct connection with the readers because this is less clear in some of the other STEM-related chapters. Additionally, the chapter presents insightful thoughts on the LRKCT model as a whole as well as clear connections to the RCA method that the teachers employed in their classrooms. By focusing on two specific classroom activities, readers may successfully assess, replicate, adapt, and incorporate the lesson concepts and LRKCT framework in their own practice.

The focus of Chapter 8 shifts from science education to social science and the humanities in the USA. Adopting the systemic functional linguistics (SFL) framework, the authors discuss three high-frequency causal constructions – cause circumstantial (something happens because of certain circumstances), causative (something that has the ability to bring about an outcome), and causal asyndetic (when causal relationships are not stated explicitly using conjunctions) – to illustrate the significance of teachers' disciplinary knowledge supporting instruction and students' development of linguistic knowledge to engage in sophisticated disciplinary reading and writing. This chapter also talks about what social studies teachers can do to improve their students' language skills (e.g. using texts that are already in use in the

mainstream classroom). This chapter is highly helpful to history teachers since it identifies one of the most common problems students may have while studying history: they usually fail to think critically about sources and instead search for signal phrases. The chapter includes concise explanations of the issues as well as why and how students need to be able to comprehend the subtext of the source; it also discusses components of the LRKCT framework, such as knowledge about language. The table in the appendix of this chapter is extremely useful in illustrating the application of the language framework by exemplifying the language analysis for history textbooks. This practice of language analysis is easily adaptable to any multilingual or monolingual EFL classroom. Combining this chart with a set of guiding questions to elicit students' responses would enhance students' capacity to recognize, analyze, and discuss diverse historical texts. The second table describes a helpful cross-curricular resource for teachers. Students and teachers are able to discern causal language and its intended meaning with the use of this chart. Teachers who are driven by what they can do today to aid their pupils and reduce the strain of preparation in a fast-paced job may find these tools especially appealing.

Chapter 9 presents an action research project based in US elementary schools exploring the implementation of read-aloud lessons by pre-service teachers. Using data documented over two semesters, the researcher describes the instructional techniques that led to various outcomes as preservice teachers acquired and exhibited language competence. Overall, this chapter is quite beneficial for teachers, particularly those who struggle with generating thoughtful questions for class discussion, as it provides specific examples. For instance, the inclusion of examples of language analysis in the tables provides pre-service and in-service teachers with workable material and a model of how action research using the LRKCT framework can be carried out. The chapter adopts a critical sociological perspective on data analysis as there is rich information about the context, participants, and researcher positionality. The LRKCT framework is mentioned and discussed, but the connection could be made clearer, such as by mapping the analysis with the four components of the LRKCT framework.

Chapter 10 continues the discussion of the pedagogical language knowledge (PLK) component in the social studies classroom. The authors analyze the teacher's mismanagement of the teaching of abstract ideas in a linguistically heterogeneous fifth-grade classroom. They suggest that the creation of a PLK-noticing apparatus that strengthens teacher PLK and the corresponding instructional actions can help students grasp abstract topics in the social studies classroom. The methods outlined at the conclusion of the chapter (detect figurative language, investigate form-function meanings in the language, and summarize this research using student-friendly language) are three useful actions that teachers may perform. By emphasizing the issue of metaphorical language (which is prevalent in social studies classrooms), this

chapter is illuminating. However, we do want to argue for caution about the expectations they place on teachers, especially considering that the prior chapter discussed how it is normal to make errors in order to improve, and yet this chapter refers to these as “missed linguistic opportunities” (p. 204). Table 1 in this chapter is noteworthy because it gives an essential breakdown of instructional language knowledge. This table, or a modified or extended version of it, would be valuable to readers as a method to refresh and revisit the many ideas integrated into the evolving framework.

Chapter 11 is based on research Singapore that evaluates geography teachers’ language expertise for instruction by utilizing dialogic conversation to promote multimodal data analysis, interpretation, and knowledge production in geography. The authors provide examples of teachers’ knowledge application in the classroom and recommend how geography teachers might assist students in making sense of geographical data by paying more attention to language use. The authors also emphasize the need to investigate the qualitative aspect of employing dialogic discussion as a pedagogical method, which fills a vacuum in geography education and contributes to the expanding body of research on disciplinary literacy (DL). This chapter is very well-written, and we believe readers will be able to see practical applications and ways in which to employ the TLA method in classrooms. At the beginning of the chapter, the TLA framework is set up, but the relationship should have been restated at the end to reinforce the readers’ knowledge.

Chapter 12 is a well-written conclusion on the need for content and subject teachers to understand more about language, language education, and language teaching and learning. The author emphasizes that moving the focus from academic language to academic communication (which also emphasizes content knowledge) will not diminish the significance of teachers’ mastery of language for comprehending, developing, and conveying disciplinary information. According to the research on content-language integrated learning, it may be important to help teachers place language in the context of a broader range of resources that are important for disciplinary practice and go beyond a limited set of predetermined linguistic features that are assumed to make up disciplinary language. This chapter reviews the previous chapters and then articulates how the LRKCT framework is applied in each case more clearly than was done in each individual chapter, as it locates the cases in each chapter in the overall framework of LRKCT. This chapter helps the readers understand how each chapter connects to the framework and is written in an easy-to-understand way. In short, the chapter contributes considerably to helping non-linguists, pre-service teachers, and in-service teachers understand the direct applications and benefits of the LRKCT framework.

In conclusion, this book is an outstanding addition to the current literature on CLIL that emphasizes the significance of language-related knowledge for content teachers. It focuses particularly on the ways in which CLIL approaches may be

contextualized, localized, and adapted for the training of pre-service and in-service teachers by analyzing and enhancing existing approaches to scientific education that frequently disregard the language domain. One of the main strengths of the book is that it provides a variety of examples and cases that demonstrate the interdisciplinary potential of the framework and how it can be applied in both multilingual and monolingual teaching contexts. The book also offers views on the transformation of history and social science teaching at various educational levels. The majority of the chapters are well organized and illustrate well how the LRKCT framework can be used with some additions, alterations, and fine-tuning of the framework itself.

We believe that a wide variety of readers, including CLIL researchers, language teachers, and most importantly, content teachers of different subjects, as well as school administrators, policymakers, and student teachers who want to learn more about the role of language in content teaching, will find this book extremely interesting and helpful. The review that we are offering here focuses primarily on the ways in which the authors of the chapter apply and connect various teaching approaches, as well as the overarching LRKCT framework that the book presents. Yet, we also feel that our review highlights the tension that practically all researchers and educators experience, namely the process of integrating the framework in their local contexts, which can be simpler at times and more challenging at others. This tension will compel the readers to consider more deeply how they can harness the power of interdisciplinary research and engage in critical, collaborative dialog with colleagues from different disciplines about how best to meet the challenges in their own teaching. Specifically, this tension will encourage readers to consider how they can realize the value of interdisciplinary collaborative research between language experts and content experts working closely together for the benefit of teachers and students.

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