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See table of contents

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Oakley, B., Ragowsky, B., & Sejnowski, T. J. (2021). *Uncommon sense teaching: Practical insights in brain science to help students learn.* TarcherPerigee. 336 pages. ISBN-13: 978-0593329733

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Introduction

The science of learning is fascinating, ever-increasing, and wholly misunderstood by educators. In 2002, the Organization for Economic Co-operation and Development (OECD) promoted the use of neuroscience research within pedagogical practice but cautioned the educational community against "neuromyths" (incorrect assumptions of how the human brain learns, often based on misinterpretations of neuroscience and cognitive psychology). Since 2002, increasing evidence suggests that K-12 teachers around the world believe in and use neuromyths in their teaching, including Blanchette Sarrasin et al.'s 2019 survey of Canadian teachers. As Educational Leaders, administrators, and policymakers consider how to best prepare students for an ever-changing workforce, there has been a shift from focusing solely on what students learn to a focus on how students learn to foster a new generation of lifelong learners.

There have been numerous attempts by researchers and academics over the last decades to enhance pedagogy with neuroscience, yet there has been little traction within public education in North America (Dekker et al., 2012; Weinstein, 2018). As stated in *Powerful Teaching,* "The science of learning sits dormant in academic journals, rather than easily accessible in pre-service textbooks and professional development materials" (Agarwal & Bain, 2019, p. 3). Part of the difficulty of incorporating neuroscience within everyday classrooms is that primary research can be inaccessible or incomprehensible to the average educator, and when research does eventually reach educators, it is often out of date and mistranslated by the mainstream media (Tunison, 2020; Williams, 2020).

If anyone can bridge academia and classroom pedagogy, Barbara Oakley, Beth Rogowsky, and Terrence Sejnowski are the trio to succeed. Oakley, an award-winning professor and a best-selling author, and Sejnowski, a neuroscientist, have demonstrated remarkable traction in bridging the academia of learning science within the public sector with their Coursera course, *Learning How to Learn;* sharing evidence-based learning techniques for learners of all ages, across all disciplines. Joining forces with Beth Ragowsky, a former K-12 educator with a neuroscience background, these three create the perfect match of academic rigor and the practicality of a real-world classroom. *Uncommon Sense Teaching: Practical Insights in Brain Science to Help Students Learn* is one of the most easily accessible and academically rigorous texts available to educators and should be required reading for both teachers and learners.

Summary

Uncommon Sense Teaching is written for the K-12 classroom teacher and, while there are some references to postsecondary instructors and parents, this book could function as a teacher user manual that offers "slight but powerful tweaks" to integrate the science of learning in the classroom (Oakley et al., 2021, p. xi). Chapter 1 begins with an all too familiar situation: a student who diligently completes homework and studies hard but performs poorly. Using this common tale, Oakley et al. show the importance of under-

standing how brains encode information to explain why some students perform poorly despite their hard work. The chapter introduces a learning process called "active recall," followed by pedagogical tactics to support active recall within the classroom so students can work hard and smart. Chapter 2 discusses "teaching inclusively" beyond providing diverse representation and accommodations. Oakley et al. introduce the use of working memory to increase inclusivity, arguing that supporting students with both large and limited working memories can ensure the entire class is keeping pace with the lesson. Teaching the diversity of working memories of students within the classroom is posed as a fundamental way of teaching inclusively and is the first of many paradigm shifts that Oakley et al. suggest within pedagogical practice. In chapter 3, Oakley et al. neuro-'myth bust' common conceptions of active learning, introducing yet another paradigm shift: active learning requires rest. While rest might seem counterproductive to active learning, letting the mind rest allows for the necessary time needed for the brain to send information from working memory to long-term memory.

With chapter 4, the pace of the book changes as readers now have enough background terminology for Oakley et al. to address specific issues, like procrastination. Building on knowledge from previous chapters, they introduce two modes of thinking, "focused mode" and "diffuse mode," as an explanation for why procrastination can be so detrimental to deep learning. Oakley et al. then pivot in Chapter 5 to summarize how human brains evolved as a means of explaining how direct instruction works. While lecturing is a passive instruction style, "direct instruction embeds active learning throughout the lesson" (Oakley et al., 2021, p. 113). Direct instruction is a key concept that builds on the knowledge of active retrieval from previous chapters and introduces a new understanding of neural learning pathways that teachers can use to support engaged learning. In introducing these final concepts, one of the most exciting arguments of the book is fully revealed: teaching is not simply putting information into students' brains but is helping students understand how to retrieve this information. This shift from teaching students to retain information to teaching students to learn to retrieve and adapt information is arguably one of the most impactful and persuasive arguments made within *Uncommon Teaching*.

In Chapter 7, there is another marked difference in the flow of the book as the authors move away from the basics of learning science into evidence-based best teaching practices based on previously discussed research. Chapters 7 and 8 discuss the importance of quality collaborative learning and sharing ways of making group work less painful for students and teachers alike (chapter 8 should be required reading for any educator assigning group work and for all group members). Chapter 9 then moves on to discuss best practices in online learning. This chapter is longer than many of the other chapters, but it is packed with detailed, practical guides to delivering synchronous and asynchronous classes. Unlike the strategies in other chapters that apply to all educators, the strategies in this chapter would best suit mature, self-directed learners such as middle school students and older. Finally, the last chapter returns to the K-12 demographic, linking evidence from past chapters to describe best practices for classroom routines, classroom management, designing assessments, and active learning activities.

Critique

The passion and excitement that Oakley at al. share for teaching and learning leaps off the page. The authors 'practice what they teach' throughout the book by modelling the importance of using metaphors, graphic organizers, and stories to support the reader's understanding of complex neural processes. The most useful sections are the "Now You Try" sections at the end of each chapter. These sections include examples of how to use the science of learning within pedagogy; how to share this information with students to help them understand the science of learning; and sample activities that can work across age levels and subjects. Most importantly, all the strategies are followed by alternatives for when strategies may not work for students with differing abilities and preferences. Beyond the text, the footnotes and bibliography share a wealth of academic journals, popular books, and blogs so educators can continue their learning. Reviewing the bibliography alone would provide an abundance of worthwhile resources to educators looking for future reading.

While other books attempt to convince educators to bring learning science into the classroom, Oakley et al. come the closest to getting it right. The conversational style, clear explanations, and practical examples make this an accessible and intriguing introduction for teachers with or without a science background. The only critique for this book is that Oakley et al. may be trying to do too much. Given the palpable enthusiasm within the text, the authors appear to want to share as much as they can; however,

chapters 1-6 could have been a fulsome book with more in-depth and varied practical examples and activities. Similarly, Chapter 11 on online learning could have been expanded to its own book, which would have been a timely and unique addition to the literature, especially during this COVID era. Perhaps the chapter on online learning was a gift inspired by the pandemic pivot, or perhaps it was too exciting for the authors to leave out. While the last 4 chapters could have been promising starts for individual books, the authors do an excellent job of continuing to relate the latter topics in chapters 7-11 to the foundational material covered in chapters 1-6. As a complement to this book, Oakley et al. have launched a new free Coursera course, *Uncommon Sense Teaching*, developed with material from this book. Interestingly, the current curriculum for the online course appears to focus on the information from chapters 1-6 in a 4-part module online, therefore it seems that the foundation of learning science covered in the first 6 chapters is truly the core of what the authors sought to accomplish in this book.

Conclusion and Recommendations

In comparison to other similarly available books, *Uncommon Sense Teaching* is a far more user-friendly manual using helpful diagrams, pdfs, appendices, and templates available in the book and virtually. A classroom teacher could easily read the first chapter and immediately be able to make those "slight but powerful tweaks" to their teaching the next day (Oakley et al., 2021, p. xi). While there has been an increase in the exploration of learning science within the K-12 classroom in Europe and the Middle East, much of the North American research is focused on the incorporation of learning science within the post-secondary landscape (Bean & Flippo, 2018; Glade, 2015; Yildirim et al., 2019). As many Canadian school boards grapple with increasing levels of learning loss after lengthy pandemic lockdowns, the need to focus on inspiring adaptive and flexible learners has never been more apparent. *Uncommon Sense Teaching* has the potential to revolutionize classroom teaching, offers hope for tired teachers and students, and is most certainly a common-sense read.

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