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## Book Review: Overcoming Student Learning Bottlenecks: Decode the Critical Thinking of Your Discipline

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### **Keywords**

decoding the disciplines, pedagogy, bottlenecks, critical thinking

### **Cover Page Footnote**

Emily Ballantyne is the Instructional Designer for the Teaching and Learning Centre and Online Learning at Mount Saint Vincent University in Halifax, N.S. She works as a faculty consultant on all aspects of online learning, pedagogy and course development. She is also in the late stages of a PhD in Canadian literature at Dalhousie University, and an instructor in English literature and academic writing. She can't wait to help support a pilot of the decoding the disciplines approach at her home institution.

*Overcoming Student Learning Bottlenecks: Decode the Critical Thinking of Your Discipline.* Joan Middendorf and Leah Shopkow. Foreword by Dan Bernstein. Stylus Publishing, 2018, 242 pages. \$35.00. Paperback. ISBN 978-1-62036-665-3.

The Centre for Innovative Teaching and Learning at Indiana University has been refining their seven-step approach to teaching critical thinking in the disciplines for almost two decades. Decoding the disciplines came out of the Indiana University Freshman Learning Project and has evolved into a vigorous faculty development program that has been enacted across North America. *Overcoming Student Learning Bottlenecks* is the culmination of hundreds of hours of program/teaching refinement from faculty development workshops, feedback, and application in classrooms. Though the text is an excellent read for any faculty member, it is designed with an eye toward educational developers and other professionals specializing in faculty development. Consider it a how-to guide for leading decoding the discipline workshops at your home institution.

This is the third title in this series. Pace and Middendorf's first edited collection *Decoding the Disciplines* (2004) introduced the seven step decoding approach and offered faculty reflection on using it in the classroom. Pace's *The Decoding the Disciplines Paradigm* (2017), in some ways a companion volume to *Overcoming Student Learning Bottlenecks*, clearly defines the steps in a short handbook format. In comparison to these two other texts, *Overcoming Student Learning Bottlenecks* offers a more thorough description of the methodology and theoretical underpinnings of the approach. Said simply, Pace's text is more targeted toward faculty members, while Middendorf and Shopkow's text is best suited to educational developers.

Each of the text's main body chapters align to a step in the decoding process. First, faculty must identify a bottleneck—often referred to as threshold concepts, tricky topics, or muddy bits—where students struggle with a disciplinary mode of thinking. Second, the faculty works with a partner (ideally from a different discipline) to decode and systematically explain the steps implicit in their mind as they work through this whole approach. Third, the faculty come up with an analogy to explain their thought process and offer a metaexplanation of the steps they take in their thinking with their students. Fourth, faculty give students time to practice the task, and they provide students with feedback. Fifth, the faculty motivate students by identifying emotional bottlenecks that may interfere with student learning and working to overcome them. Sixth, the faculty assess the student's mastery of the concept. Finally, the faculty share what they have learned by participating in scholarship of teaching and learning activities—from adding an agenda item at a department meeting to a full-scale research project on that bottleneck in their field. Each chapter provides a comprehensive description of how to complete the step and faculty supports to help facilitate that work as a part of faculty development.

Those who study the scholarship of teaching and learning will find the final chapter particularly attractive. It clearly positions the decoding the disciplines methodology within the critical literature and theoretical framework of pedagogy, focusing on its relation to cognitive science, troublesome knowledge, epistemology, threshold concepts, and pedagogy training for new instructors. The authors suggest that the decoding process reveals the epistemology of a discipline, or the disciplinary ways of knowing and creating knowledge. Since this is implicit for most practitioners, making this epistemology explicit can be instructive for both students and scholars themselves. The process also has great potential for training, both of new instructors and as a form of faculty development; it provides a straightforward, evidence-based method for identifying gaps between expert and novice thinking.

The final chapter also explains the relationship of the decoding the disciplines approach to threshold concepts. Given the similarities of some of these ideas, it is worth a brief explanation. As the authors explain in this chapter, the concept of a student learning bottleneck is parallel to a threshold concept. Thus, the decoding the disciplines method addresses the threshold concept as a learning problem. The approach moves from identifying a threshold concept (or bottleneck) in the first step, to coming up with a concrete strategy for breaking the concept down, describing how an expert would work through it, and then teaching and assessing student's grasp of that concept. This methodology could be considered as a possible teaching solution that acknowledges and addresses the reality of threshold concepts. It is meant to dovetail with other evidence-based research in this area and adds to this body of work by offering a solution for surmounting the thresholds in student understanding.

The best feature of this volume is its wealth of examples and appendices. The book is designed to show-and-tell how to plan and scale faculty workshops from independent work to large-scale sessions. At the end of each chapter are exercises and reflections that can be used as templates. In addition to the documentation to support workshop development, the book also offers specific examples from many disciplines, including a complete template from the sciences (biology) and the humanities (musicology). To help make these examples easier to find, the text includes an index organized by discipline to allow readers to pinpoint applications unique to their field. As a further supplement, the authors maintain a robust website with more resources and examples at [decodingthedisciplines.org](http://decodingthedisciplines.org).

Given the book's focus on the educational development context, perhaps its main flaw is its failure to fully address the systemic barriers associated with its application. While the text's principles are sound, it does not address one of the main underlying challenges of faculty development: a lack of institutional support. Collective agreement structures, minimal administrative time for faculty development, and underfunding of faculty development, particularly for precarious part-time instructors, all work against the slow, careful thinking proposed in this text. Though the text offers strong suggestions for how an individual or small group of faculty members might enact this method, these strategies are still reliant on the goodwill of faculty to participate on their own time.

To the credit of the authors, this book's emphasis on scale will help educational developers find an application that will suit the conditions of their own context. I look forward to the inclusion of this text in our next faculty book club, and, I am excited about the conversations and possible uptake that will allow these principles to enrich teaching at my home institution.