In this chapter we describe the "Decoding the Disciplines" Faculty Learning Community at Mount Royal University, and how Decoding has been used in new and multidisciplinary ways in the various teaching, curriculum and research projects which are presented in detail in subsequent chapters.

Overview of Decoding Across the Disciplines

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The Decoding the Disciplines Faculty Learning Community (FLC) at Mount Royal University consists of a core group of six faculty members who came together to further understand and investigate how to make disciplinary ways of thinking and knowing more explicit to learners. The group's original goal was to interrogate the Decoding the Disciplines model (Pace and Middendorf 2004) and to consider how this framework might be used within our own contexts. The Decoding model suggests that teachers, operating as experts in their disciplines, hold tacit knowledge and implicit ways of thinking that are not accessible to novices in the discipline. Consequently, teachers and students may notice bottlenecks—areas in the discipline where students get stuck in their learning. A key step towards addressing the bottlenecks is a Decoding interview in which teachers uncover and unpack crucial mental operations. The interview can yield important insights for teachers who want to make their mental processes visible to students in order to help facilitate students' movement through the bottlenecks.

As a learning community, our group began conducting Decoding interviews with one another and analyzing the resulting dialogues. We went beyond cognitive bottlenecks, for which Decoding has typically been used, to include epistemological and

ontological bottlenecks (Miller-Young and Boman, this issue). In doing so, we explored

new lines of questioning and found rich themes about expert disciplinary thinking. These

themes illuminated the complexity of the expert teachers' thinking and helped us

understand why the bottlenecks were so challenging for students. We wanted to share

these insights with colleagues at our institution and, thus, our work expanded over time to

include outreach to increase other faculty members' awareness and use of the Decoding

model. We have also provided support for those using the Decoding process for purposes

such as curriculum revision and individual development of teaching. The following

overview provides a summary of the group's work and sets the context for the articles to

follow.

The Decoding the Disciplines Faculty Learning Community

How does a group of interested faculty members come together for the common purpose

of increasing their understanding of how students learn disciplinary ways of thinking? In

this case, the group emerged organically out of a related faculty development initiative.

Each year the university's teaching support centre offers a series of year long Faculty

Learning Communities (FLCs) on a variety of topics. In 2011-2012, a group of 8 faculty

members and a facilitator (a faculty developer working in the centre) came together to

explore and study theories and practices related to assessment. Part of our conversation

and reading included an in depth exploration of outcomes-based assessment (Driscoll and

Wood 2007). From these discussions, it became apparent to us that in order to make our

assessments more transparent to students, we needed to have a clearer picture of the

mental operations we expected students to learn. In other words, we needed to unpack the

complex skills and outcomes that we were attempting to assess so that we could make

them explicit and visible to students. We grappled with a key question: 'How could we uncover hidden assumptions and tacit thinking in our assessments?'

At the conclusion of the year long FLC on assessment, a core group of four participants decided to continue the conversation about uncovering expert thinking in assessment and teaching using the Decoding the Disciplines model. We invited two additional, interested faculty members to join our group. We began our learning community by reading the Decoding literature as well as other related sources (for example, Making Thinking Visible, Ritchart, Church, and Morrison 2011). Several members of our group also attended the International Society for the Scholarship of Teaching and Learning (ISSOTL) conference to participate in a Decoding workshop (Middendorf, Pace, Shopkow, and Diaz 2012). Throughout these experiences, we were struck by the power of the Decoding interview in revealing basic assumptions about disciplinary thinking.

After the instructor has identified a bottleneck where students get stuck in their learning, the next step in the Decoding process is an interview (Middendorf and Pace 2004). The primary task of the Decoding interview is to identify how the instructor approaches the bottleneck by making explicit what is intuitive, hidden, or automatic for her as an expert. This goal is typically accomplished using two interviewers who are not familiar with the subject matter and can act as novices in the discipline. The central question that they ask with respect to how the instructor addresses the bottleneck is, "How do you do that?" (Middendorf and Rehrey 2008). Middendorf and Pace (2004) describe this process for the interviewee as the "most intellectually demanding of all the steps in the Decoding the Disciplines approach" (5). The interviewee may experience

discomfort as they realize that they cannot readily articulate their thinking and that perhaps they have not provided clear explanations to students. In fact, this "aha" moment or instance where the expert herself struggles to deconstruct her intellectual process is a signal that the interview is on the right track (Middendorf and Rehrey 2008).

Our faculty learning community was intrigued by the role of the Decoding interview in uncovering disciplinary mental operations that were hidden not only from students but also from the expert himself. While there were general guidelines on the types of questions that help prompt the interviewee to reconstruct how he approaches the bottleneck (Middendorf and Rehrey 2008), the literature on the Decoding interviewing process was scarce. We wanted to better understand how the interviews unfolded to reveal expert disciplinary thinking. We decided that the best approach was to "learn by doing" and made a plan to conduct Decoding interviews with one another and to record and transcribe the interviews so that we could examine the resulting dialogues.

The Decoding Interviews

Our group conducted the first Decoding interview as a group; all members of the group interviewed one of our group members. As this interview progressed, we quickly realized the challenge of staying true to the purpose of the interview—that is talking about how the expert accomplishes a particular bottleneck rather than talking about teaching. With practice, we were able to more successfully direct the expert to talk about their own thinking processes and leave the discussions about teaching and how to model these operations for students for follow-up conversations. A second challenge that we encountered as we moved further into our interviews with one another was not that all interviewees presented a cognitive or procedural bottlenecks. Some presented

epistemological or ontological bottlenecks (Miller-Young and Boman, this issue) which, for us, proved to be more difficult to deconstruct.

During the time that we were conducting interviews, we invited David Pace to speak at our campus. The purposes of the visit were twofold. First, we asked him to consult with us and give us feedback about our firsthand experiences conducting Decoding interviews. Second, we invited him to give a keynote presentation and workshops to introduce faculty members at our institution to the Decoding model. Following his visit, we invited any interested participants to engage in a Decoding interview with us as a faculty development initiative. We offered to conduct the interview with them and to follow up with discussions about how to apply what they learned during the interview to their teaching.

Our Decoding learning community continued to meet to discuss what we had learned from engaging in the interviewing process. Despite interviewing participants from different disciplines and who had different kinds of bottlenecks, we began to notice similar themes appearing across several interviews. For example, one idea that we saw in multiple interviews was the idea of withholding or waiting. A characteristic of expert thinking that we observed was that experts held back and paused in their disciplinary thinking. In contrast, the experts described their students as rushing ahead to judgment. While we had learned much about the interviewing process from conducting our interviews, we also realized we had rich dialogues that held a lot of learning about expert disciplinary thinking. We obtained ethical approval to use our data for research and contacted participants to seek permission to include their transcripts in the analysis.

We conducted an in depth qualitative analysis of interviews with seven disciplinary experts from four diverse disciplines. Each instructor chose a unique bottleneck that represented a cognitive, epistemological, or ontological block that their students were encountering. The themes in expert disciplinary thinking arising from these interviews are described in Chapter 2 (Miller-Young and Boman). Three subsequent chapters also present further analyses of these interviews through three different lenses. In Chapter 3, Currie uses phenomenology to interrogate the concept of embodiment in the interviews. In Chapter 4, Yeo presents a hermeneutic analysis of the interviews to describe how some interviewees expressed an understanding of their discipline. Finally, in Chapter 5, MacDonald uses the lens of identity theory to discuss how the interviewees inserted professional identity elements into their narratives.

Decoding in Practice: Applications of the Decoding Model

While the initial goal of our faculty learning community was to investigate how to make our own tacit disciplinary knowledge more explicit to our students, our process expanded over time to support others in the university community who were interested in using the Decoding model. One such example is a multidisciplinary group of faculty teaching with Community Service-Learning pedagogy. The group was about to engage in a collaborative self-study of their experiences in teaching global service-learning courses and were particularly interested in how this experience shaped their understanding and learning about reciprocity. One of the members from our Decoding learning community presented the Decoding framework to them and they subsequently elected to use the Decoding interviews as one method of data collection in their self-study. The Decoding faculty learning community assisted in the interviewing process. Their analysis found that

the Decoding interview played an important role in developing the community and trust necessary for the study to generate new knowledge (Miller-Young et al., 2015); they further explore their multidisciplinary self-study process and its impact on their practice in Chapter 6.

The Decoding the Disciplines framework has also been used in several departments across campus for the purposes of curriculum redesign. Faculty in the Journalism program used it to inform program redesign and the results from Decoding interviews also informed the redesign of a combined Biology and Nursing course. Most recently, the Athletic Therapy program has used Decoding interviews about multiple bottlenecks within a program to provide the Athletic Therapy instructors with information to inform their curriculum change towards a competency-based model. Yeo and colleagues describe their curriculum transformation process and the role of Decoding interviews in Chapter 7.

Looking Forward

McKinney (2013, 3) called for "more resources that offer examples, applications and discussions of critical issues of SoTL in disciplines beyond our own and in interdisciplinary SoTL efforts. Such resources help broaden our horizons and encourage cross-disciplinary collaborations by sharing conceptual frameworks, methodologies, key results and practical applications that may be useful in our own classrooms and SoTL research". In the same collection, Poole (2013) argues that diverse methodologies and theoretical perspectives should be used to study teaching and learning. In this special issue of New Directions for Teaching and Learning, we answer these calls by demonstrating how the Decoding the Disciplines framework holds much potential for

bridging disciplinary thinking and teaching practice across disciplines. The following chapters represent applications of the Decoding model in various scholarly and applied contexts. In addition, in Chapter 8, we synthesize these findings and provide recommendations for how the Decoding framework can be used in other contexts. We hope that these examples will help readers to consider ways in which they might identify and translate the crucial ways of thinking, practicing and being in their own disciplines in order to improve student learning.

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