**Abstract**

Pedagogically, the term “bottleneck” refers to a moment when students may face barriers to understanding content in the process of learning. As instructors identify “bottlenecks” within their courses, they are faced with the challenge of how to best assist students in overcoming them. Further, most instructors want to know what selected teaching strategies to implement in the classroom to increase student learning. The seven-step process of Decoding the Disciplines (Middendorf & Pace, 2004) provides a platform for helping students learn how to think instead of what to think to successfully progress through identified bottlenecks. The model also allows for instructors to collect evidence-based results of student learning that contribute to the scholarship of teaching and learning, while infusing deeper meaning and learning into the classroom. The model is particularly useful for instructors who face challenges in incorporating alternative pedagogical strategies.

**KEYWORDS:** Pedagogy, bottlenecks, student learning, decoding the disciplines
The notion that history repeats itself often rings true, even in the classroom. Naturally, many instructors teach courses the ways in which they were historically taught. A term used to describe a common teaching method which includes lecture, textbook reading, instructor-led discussion, and test taking has been referred to as coverage (Calder, 2006). The current generation of college students, often termed millennials or generation y, bring to the classroom an entirely different set of values, expectations, and characteristics than their predecessors. Specifically, millennial learners have been characterized as team-oriented, confident, and tech savvy, having a need for immediate feedback and carrying a sense of entitlement (Howe & Strauss, 2000). As the general composition of the traditional college student changes due to technology, historical events, and the economy, instructors are faced with a heightened responsibility and challenge to adapt their teaching styles to accommodate new sets of characteristics, expectations, and ways of learning. Therefore, the goal is now transitioning from “coverage” toward methods of teaching that foster deeper meaning, understanding, and critical thinking.

Twenty years ago, the concept of active learning was first developed and defined as students “doing things and thinking about what they did” (Bonwell & Eison, 1991), which led to deeper learning. Fink (2003) expanded the concept to include experiences and reflection, further initiating research on alternative pedagogical strategies and their impacts on student learning. Consequently, an abundance of research on new and innovative ways of teaching and learning has surfaced in a variety of disciplines. Designing learning experiences that encourage active learning and critical thinking has demonstrated that students retain information longer (Fink, 2003) and perform better on examinations (Yoder & Hochevar, 2005). Empirical evidence further suggests that students learn more when instructors utilize active and collaborative learning experiences while implementing higher-order cognitive activities (Umbach & Wawrzynski, 2005). Critical pedagogies have provided a conceptual foundation for supporting this approach such as using deconstruction to overcome conceptual barriers to learning (Lather, 1998), fostering critical thinking through the use of scaffolding (Browne, Hough, & Schwab, 2009), and using knowledge-mapping for higher order thinking (Myllykangas & Foose, 2007). As instructors search for ways of moving beyond “coverage” to prepare students for life after college, a model that encourages students to make disciplinary moves in their thinking is the Decoding the Disciplines model (Middendorf & Pace, 2004). The Decoding model allows for instructors to implement a variety of techniques that emphasize active learning. By using this model, instructors are in a better position to help students learn how to think versus what to think, with the intention of providing more meaningful learning experiences.

Description of the Decoding the Disciplines Model

Decoding the Disciplines is a model used to help students learn ways of thinking (Middendorf & Pace, 2004). Instructors often overlook the fact that as they become experts in their respective disciplines, the ability to think like a novice often hinders teaching, causing students to face barriers to learning. The aforementioned situation is referred to as a bottleneck (Middendorf & Pace, 2004). To assist students in overcoming bottlenecks, Middendorf and Pace (2004) developed the Decoding the Disciplines model (see Figure 1). The model has been implemented in a variety of disciplines, most notably as part of the History Learning Project (Diaz, Middendorf, Pace,
& Shopkow, 2008). The Decoding model emphasizes the notion of incorporating more collaboration, critical thinking, and authentic assessment while providing evidence-based results of student learning.

The Decoding model includes seven steps to assist instructors in helping students learn disciplinary ways of thinking. They are as follows:

1. Identifying the bottleneck: While instructors can often identify the bottleneck, they may lack adequate investigative abilities for explaining how students can best navigate through the bottleneck.
2. The instructor must first “think about their thinking,” or think about how an expert thinks, in an effort to identify the strategically focused moves made to overcome the bottleneck.
3. The instructor designs ways to model operations for students through educational approaches such as the use of a metaphor.
4. Students practice and get feedback on the operations.

![Figure 1. Decoding the Disciplines: Seven Steps to Overcome Obstacles in Learning. Adapted from “Decoding the Disciplines: A Model for Helping Students Learn Disciplinary Ways of Thinking,” by J. Middendorf & D. Pace, 2004, New Directions for Teaching and Learning, 98, p. 3. Copyright 2004 by John Wiley and Sons. Reprinted with permission.](image)
5. The instructor incorporates motivation principles which can involve a variety of tactics. One motivation principle may include making students’ work public through blogging or displaying work on online learning platforms, poster presentations, or in-class discussions and presentations. Other examples of motivation tactics include having students complete work before class through answering brief questions about assigned readings and providing frequent and timely feedback on assignments.

6. The instructor measures student learning through designing ways of assessing if students have mastered the operations. Examples of measurement may include pre-tests/post-tests or classroom assessment techniques. Classroom assessment techniques might include brief student responses to questions such as, “What did we discuss today that is still unclear?” or “What did you find to be the most important element of today’s class?” These approaches are different from traditional approaches as they put the learner at the center of the experience versus the instructor.

7. The instructor disseminates and shares findings, which are incorporated as strategies for improving teaching. Findings include evidence of student learning and consequently the utility of the teaching techniques.

While research is prevalent in the leisure field on pedagogies that encourage critical thinking (Browne, et al., 2009; Fox & Warren, 1990; Kivel & Yaffee, 1999; Mowatt, 2010), leisure scholarship on teaching and learning has yet to utilize the Decoding the Disciplines framework. The framework can be useful in overcoming chosen or recognized bottlenecks. The concept may be applicable in leisure studies to best ensure that students can apply concepts and theories to real life applications.

**Methods**

The current authors implemented the Decoding the Disciplines model in an introductory undergraduate leisure and recreation course. The instructor of the course identified a specific bottleneck and the researcher implemented steps within the model as part of a lesson to assist students in overcoming the bottleneck. The identified bottleneck within the course section highlighted the question: Are students making deep connections between course content and practical application to their own life experiences? Research questions investigated in the study were:

1. Is it possible for students to make personal applications while seeing the large picture in leisure consumption? Leisure consumption refers to the ways in which individuals spend money on leisure. The question aims to seek if students are able to transfer the concepts of the recession’s impact on leisure consumption to both their personal experiences and the impact on society.

2. Can students recognize the effects of the recession on leisure consumption as a result of implementing the Decoding the Disciplines model?

To begin the Decoding process, the bottleneck was identified through a 30-minute interview with the instructor of the course. As previously stated, bottlenecks can sometimes be difficult to identify because as experts in their respective disciplines,
instructors often forget what it is like to think like a novice (Middendorf & Pace, 2004). The researcher asked the instructor, “What seems to be the most difficult concept for students to understand?” The instructor indicated that students in his class often have difficulty connecting economic issues affecting leisure consumption to their personal experiences and futures. After identifying the bottleneck, the instructor was then asked to think about his thinking by responding to the following question: “How does an expert connect facts to real-life scenarios?”

As a specific example, in the midst of the recent recession the closure of leisure spaces such as State parks became commonplace. The economy shift in recent years has changed the way individuals spend money in their consumption of leisure. While the issues of economic impact and leisure consumption have been covered in an introductory course within leisure studies, whether students made the connection between the recession and the impact upon their personal leisure consumption was questionable. Although budget cuts forced some of the State park closures, the ongoing decrease and lack of visitation equally played a role in their closure. As future professionals, it was felt that is extremely important for students to understand how managing a budget places you in a situation to determine the “fate” of such conservation and recreation opportunities (Davenport, Baker, Leahy, & Anderson, 2010). For park managers, providing quality visitation opportunities is crucial for park management along with the provision of developed and undeveloped features and experiences such as camping, trails, and exploration (Donelley, Vaske, DeRuiter, & Loomis, 1998). There are clear and apparent differences in generational attitudes about economies as consumer debt rises (Nazareth, 2007). However, the preparation of future skilled professionals as leisure resource managers in responding to new economic realities among other realities is paramount (Robinson, Pfister, Shultis, & Safford, 1997). While preparation is necessary it is beyond the scope of learning activities that only teach personal budgetary skills (Stobart, 2002), but may be effectively placed alongside it. The learning activity focusing on the “bottleneck” in this study is a clear example of connecting macro-level and micro-level economic matters related to leisure.

Based upon the results from the interview with the instructor, the authors designed a metaphor to assist students in making connections between the economy, recession, and leisure. The metaphor modeled in class through an interactive lecture-based discussion was a diet metaphor. Students were encouraged to think through the reasons for dieting (to maintain, self-motivation to lose weight, and doctor-ordered dieting) as a way to think about leisure spending and the recession. This metaphor was used because it was anchored in content that was familiar to students, or easy for them to think about and consequently make a connection. Through discussion, students explored personal and professional life applications in which they were able to practice operations (Step four). Students practiced operations through thinking about specific examples that related to favorable economic conditions, cautious conditions in which consumers must exercise some restraint and attentiveness in leisure spending, and catastrophic in which spending must stop related to leisure behavior. The next step involves motivation and the affective side of learning (Step five). In this case, the authors had students pair up and identify examples at each level and then share their examples with the class. The motivation to think beyond the course content and make connections hopefully occurs as students reflect, discuss, and share their experiences and thoughts.
The measurement phase (Step six) is useful for identifying students who successfully made meaningful connections between course content and life application. The authors instructed students to do the following: “Write a one-page reflection on your perspective of leisure consumption as a result of this lesson. You may find it helpful to address levels of the economy (or which ones pertain to you) including favorable, cautious, or catastrophic.” This phase allows students to critically think, write, and apply what they learned, while providing the instructor evidence of their progression through the bottleneck. The authors collected written responses and analyzed the reflections using thematic analysis (Boyatzis, 1998). It was evident that students made personal connections between leisure consumption and the economy as four themes emerged: travel, spending, family, and employment. For example, one student said, “My leisure spending tends to spike when I have money in the bank,” while another said, “Since recent events have led to my father not working, every dollar has a new meaning.” These statements represent a couple ways in which students were able to reflect and personally connect. The identification of the themes from the written reflections were then used for providing the class a synthesis of the lesson application. This reinforced helping students make the intended connections. The above mentioned example is one of many possibilities for instructors across various settings within recreation and leisure courses.

**Recommendations for Use**

Instructors within the leisure field can use the Decoding the Disciplines model to improve critical thinking and deeper learning in the classroom. Equally important is the authors’ belief that application of this model has the potential to improve teaching, while helping guide students in connecting leisure and personal concepts. The model has far-reaching potential for instructors who are interested in evidence-based results of student learning. Furthermore, this model provides guidance for collecting results that can be analyzed quantitatively or qualitatively. For example, instructors can construct surveys and use quantitative methods to analyze the results to help inform their teaching, or they can implement qualitative methods to analyze written work and reflections as demonstrated above. Each step can be modified to meet individual needs while also contributing to the scholarship of teaching and learning through dissemination of findings.

The authors believe that the Decoding the Disciplines model can be applied in any level course, ranging from introductory undergraduate to graduate level courses. The challenge of using this model resides in not only the identification of the bottleneck, but also in instructors’ ability to think about their own thinking. Most importantly, the Decoding model includes critical thinking exercises, classroom assessment techniques, team-based learning, and authentic assessment which all contribute to providing students with opportunities for developing deeper learning and critical thinking.

**References**


