



Decoding the Disciplines Conference 2023

Welcome at FH Aachen

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1 | Representations in the decoding process

Miriam Barnat & Britta Foltz,
FH Aachen, University of Applied Sciences, Germany

Different representation of knowledge are an important aspect of knowledge creation and acquisition, and there is some evidence that the media format impacts social structures and identity formation by changing memory and reception modalities. For example: Orality has different qualities than written language e.g. with regard to sequentiality. Pictures and diagrams play a vital part in many scientific disciplines. Each representation is related to a different information quality and density, as it entails a different translation process of knowledge (Latour, 1999).

In the field of decoding we find hints on different uses of media in different phases of the decoding process: Some scholars of teaching and learning provides decoding writing guidelines (Kaduk & Lahm, 2018), others work with commentaries on the transcripts and code transcripts (Miller-Young et al. 2015, Petit et al. 2017; Yeo et al. 2017).

In our session we would like to provide an insight in our experiences with collaborative decoding and innovating. We conducted decoding interviews with different scientists after each other to the same bottleneck. In a joint session we presented our findings to them in a flow chart. Afterwards, we conducted interviews to identify the effects of the different representation in the Decoding process.

We would like to discuss with the participants their use of audio, video, transcription and the transformation of those artefacts in different phases of decoding. The goal of the session is, to further develop a systematic representation of different media and their effects in the decoding process. Based on this systematic categorization we can formulate research questions as to how to evaluate the different options in an ongoing process of decoding. How do different media utilization scenarios enhance the innovative capacity of Decoding the Disciplines?

2 | A „Wissenschaftsdidaktik“ perspective on Decoding the Disciplines: Theoretical reflections opening up potentials for teaching and research

Alexa Brase, & Eileen Lübcke,
University of Hamburg , Germany

The current German-language discussion on “Wissenschaftsdidaktik” (translated literally as “didactics of research”, but with a continental European understanding of didactics in the background) is based on demands from the 1970s and is nevertheless fruitful for a contemporary understanding of teaching and learning in universities. Essential ideas are that research is a special teaching-learning subject, that good teaching is the responsibility of the disciplines and their communities rather than an add-on task, and that there is reflective potential for research in teaching (Hentig, 1970; Reinmann & Rhein, 2022). From the perspective of “Wissenschaftsdidaktik”, Decoding the Disciplines can be perceived as related (Reinmann, 2022), as a framework offering practical approaches to work on the connection between research and teaching.

The proposed contribution aims to make the German-language discussion on “Wissenschaftsdidaktik” accessible for the international discourse on Decoding the Disciplines and to examine what potential this theoretical perspective on Decoding opens up for teaching and research. The original framework, but also younger developments within Decoding practice, e. g. the expansion of the focus from cognitive procedures to other practices, the involvement of students or the lifting of the process to a higher institutional level (Pace, 2021) will be reconsidered theoretically and suggestions for a broader use of the Decoding framework will be developed.

- › Hentig, H. von (1970). Wissenschaftsdidaktik. In H. von Hentig, L. Huber & P. Müller (Hrsg.), Wissenschaftsdidaktik: Referate und Berichte von einer Tagung des Zentrums für interdisziplinäre Forschung der Universität Bielefeld (pp. 13–40). Vandenhoeck Ruprecht.
- › Pace, D. (2021). Beyond Decoding the Disciplines 1.0. Teaching & Learning Inquiry: The ISSOTL Journal, 9(2). <https://doi.org/10.20343/teachlearninq.9.2.3>
- › Reinmann, G. (2022). Wissenschaftsdidaktik und ihre Verwandten im internationalen Diskurs zur Hochschulbildung. In G.
- › Reinmann & R. Rhein (Hrsg.), Wissenschaftsdidaktik. Wissenschaftsdidaktik I (pp. 267–286). transcript Verlag.
- › Reinmann, G. & Rhein, R. (Eds.). (2022). Wissenschaftsdidaktik. Wissenschaftsdidaktik I. transcript Verlag.



3 | Decoding Everyday Experts

Christian Briggs, Digital Product Designer, Bloomington, USA

The Decoding process usually begins by interviewing or observing an expert—here defined as a person who has a demonstrated level of ability within a discipline. The process is based on three core premises: 1. Every discipline presents everyone—novices, experts, etc—with identifiable cognitive and emotional bottlenecks that can hinder development. 2. Experts have developed—often tacitly—mental and physical operations that allow them to overcome those bottlenecks. 3. Identifying and modeling an expert’s operations can improve the instruction experts provide, the learning of non-experts and the ability of experts to reflect on their own practice.

University disciplines were a natural focus and origin for Decoding. The disciplines—History, Biology, Math, Engineering—are reasonably well-defined and the experts—faculty, scientists, instructors—are expected to develop their expertise, demonstrate it and teach it to others. In 2016, a group of researchers wondered what would happen if the focus of Decoding was turned to practices that develop emergently such as social inclusion, dramatic performance, sketching or digital fluency and began the process with everyday experts—teenagers, entrepreneurs and parents whose expert status was determined by peers who had observed them excelling in those areas. The resulting series of 40+ video-recorded Decoding interviews suggest the existence of identifiable bottlenecks and operations even in emergent practices and the reflective value of Decoding for everyday experts. The interviews also reveal the power of Decoding outside of its original context.

In this session, I will share how we carefully adapted the Decoding interview process for the goals of the project and the experts we interviewed. I will include a discussion of the bottlenecks and operations we uncovered with many types of everyday experts. I will also share lessons learned and considerations for those who are also expanding the use of Decoding.

4 | Using Decoding to make visual data (pictures) worth a thousand words.

E. Leslie Cameron, Carthage College;
Kari L. Duffy, Archdioceses of Chicago;
Temple Burling, Carthage College USA

A goal of many undergraduate majors is to improve quantitative literacy. One significant aspect of quantitative literacy is the interpretation of visual data. Visual data are pictures, rich with meaning to experts and are to them, as the saying goes, “worth a thousand words”. Being able to glean information from visual data is a skill that is fundamental to student success in many disciplines. Using the Decoding the Disciplines approach, we have identified the difficulty that students have in interpreting visual data as a bottleneck to their learning. In our initial investigation we completed decoding interviews to make explicit the implicit mental processes that faculty engage in when they interpret graphical data. We have conducted three such interviews with faculty and have uncovered several steps in interpreting graphical, scientific data. Moreover, the interviews revealed that graph-reading is not a linear, but rather an iterative process. The results of our interviews led to creating a lesson plan that explicitly describes these processes to students, highlighting some of the hidden mental work involved. We are currently providing psychology students with opportunities for practice and are assessing their learning, which we will share in our presentation. In a related investigation we are exploring this bottleneck in interpreting visual data within the context of graphical representations of proteins in a structural biology course. Ideally students would be able to use various abstract three-dimensional protein representations to gauge the genetic and functional similarity or lack thereof between two or more proteins. We will discuss the outcome of a decoding interview and an attempt to help students overcome this bottleneck. In our presentation we will encourage the audience to consider bottlenecks in visual data interpretation in their own disciplines. We are interested in exploring whether similar principles can be applied to other types of visual data.

5 | A Strategy for Spreading Decoding in a ‘SoTL-Structured’ New to Teaching Programme

Peter D’Sena, University of Hertfordshire, UK



An increasing number of UK universities now make gaining a postgraduate qualification in teaching and learning a condition of permanent employment. This has led to a proliferation of master's level programmes designed to support those new to teaching in higher education in the use of a range of pedagogic theories and technological tools to improve their practice.

At the University of Hertfordshire, almost eighty academic staff study Linking Pedagogic Theory to Practice each year as part of this programme. The module's format enshrines, in terms of activities and outcomes, Felten's five principles of SoTL. Content is themed around four 'pillars' of SoTL, one of which is Decoding the Disciplines. Students are exposed to the paradigm in the second of eight sessions (early enough to inform their research proposal), delivered within a conceptual triumvirate - in conjunction with theories about threshold concepts and liminality (Meyer and Land) and backward design (Wiggins and McTighe). We then ask them to reflect on bottlenecks in their own disciplines, though when we later address Decolonising the Curriculum, we introduce the disruptive decoding interview as a tool for often emotive reflection on 'what upholds racism in your field of enquiry and teaching' (Middendorf).

This interactive session will explore the module's structure, present examples of students' work, and invite delegates to consider ways in which decoding and SoTL can be built into their own provision.

- › Felten, P. 'Principles of Good Practice in SoTL', Teaching & Learning Inquiry: The ISSOTL Journal, Vol. 1, No. 1 (2013), pp. 121-125.
- › Meyer, J., and Land, R. Overcoming Barriers to Student Understanding: Threshold Concepts and Troublesome Knowledge (2006).
- › Wiggins, G. and McTighe, J. Understanding by Design (2005)
- › Middendorf, J. [Video] Decoding the Disciplines. The Disruptive Interview for Uncovering Racism in Our Discipline - identifying the bottleneck: <https://www.youtube.com/watch?v=L52Z1agbs0&list=PLCFU09hxlsmR20CXRb9gelKPHZwW2NDS7&index=4>

6 | Application of the Decoding the Disciplines Paradigm to Enhance Graphical Interpretation by First-Year Biology Students

Tara L. Darcy, Indiana University, USA

In summer 2022 at Indiana University, the Decoding the Disciplines: High School to College Bridge Project brought together instructors from both institutions to collaboratively identify bottlenecks in student learning that could interfere with the transition from high school to university. I focused on a common bottleneck experienced by first-year university students: i.e., the ability to adequately and quantitatively interpret graphs. Through my decoding interview, I identified at least 11 steps necessary to comprehensively interpret a graph of intermediate complexity.

Mirroring the steps identified during my interview, I developed a graphing checklist that provided a step-wise strategy for interacting with a new graph and its relevant biological context. The three primary sections of the checklist involved **orientation** (identifying independent and dependent variables), **pattern recognition** (describing the shape of the function [linear/non-linear; increasing/decreasing]), and **interpretation** (why the function was changing in this way; identifying intercepts or equilibria; and connecting to relevant biological concepts).

During fall 2022 in an introductory course for biology majors, the checklist was provided whenever a new graph was presented (e.g., reaction norms, exponential/logistic growth). Students were guided through the checklist during class to ensure that everyone would ultimately have record of the correct interpretation and relevance to course content. Blank checklists were always available electronically for use in class or elsewhere. Students were surveyed about the usefulness of the checklists in ways such as understanding graphs in class or interpreting graphs on quizzes or in scientific papers. 78.5% of all students surveyed (297) found the checklists helpful in at least one of the eight ways provided. This work provides a tangible example of the power of decoding and its translation into concrete methods for enhancing students' higher-level learning.

7 | Connecting with Psychological Statistics

Lisa Jo Elliott, Pennsylvania State University &
Joan Middendorf, Indiana University Bloomington, USA

Coursework in statistics cannot be avoided in psychological science, yet students express trepidation towards such courses (Salkind, 2017) and report that they finish them feeling as if they do not understand the topic deeply. The twin goals of this project was to improve student learning and to help them feel better about the learning in the course. We present this evidence to the canon of Decoding research, which is lacking in statistical significance. "Statistical significance merely provides evidence that an event did not happen by chance and in small-sample studies ... significance testing provides meaningful protection from random results (McLean & Ernest, 1998, p. 15, 21)".

In an introductory psychological statistics class, we used Decoding the Disciplines to identify the underpinning bottlenecks that students repeatedly struggle with throughout the course: probability, variability, central limit theorem, independent and dependent variables, and



degrees of freedom. We designed lessons, including lectures, practice exercises and assessments to measure changes in student learning (Shopkow & Middendorf, 2020). Instead of embedding the core concepts in the analysis section of the course (Gurung & Christopher, 2020), the core concepts were taught separately in the first six weeks of the course using the decoding lessons.

The Decoding the Disciplines method resulted in lessons that significantly improved student learning on the five core concepts [$t = 14.3$, $df = 18$, $p < .001$, $d = 0.10$]. Informal feedback suggested that students felt the course was more enjoyable and that they felt confident in their ability to perform statistical analyses.

Half the session will consist of presenting our results, including providing an example lesson. The second half will consist of an interactive discussion of application of this research to other fields and open questions

8 | Decoding as pedagogy: A systemic application of a disciplinary approach

Rebecca C. Itow & Michael Beam

Indiana University High School Online (IUHS), has built a Responsive Online Pedagogical Model that is the foundation of our courses, as well as the guide for our teacher professional development programs. This pedagogical model blends:

- (1) online-centered pedagogy
- (2) the Decoding the Disciplines sequence
- (3) standards-based curriculum
- (4) responsive practices to students' needs

Decoding the Disciplines is the foundation of the pedagogical model, guiding both the initial development and continuous revision of the ROP. Online education requires fundamentally different pedagogical moves than those used in our brick-and-mortar classrooms, which can make even our basic conceptions of what teaching and learning look & feel like seem overwhelming, cause frustration, and elicit that "stuck" feeling. Therefore, at IUHS we treat each challenge as a kind of bottleneck – something that, at some point, a teacher or student cannot do or say.

In this presentation, we will walk through our innovative use of Decoding to build the Responsive Online Pedagogical Model. Rather than use the approach to examine a single challenge in a discipline-specific course context, we are using Decoding to address a systemic challenge: how to teach any content in any discipline in a brand-new type of learning environment. We will share how building and implementing a pedagogical model specifically for online learning in a secondary school context helped us respond to rapidly shifting student and family needs in the COVID-19 Pandemic, and how we continue to do so as society and technology evolve.

Our goal in presenting our work to this Community is to (a) share how Decoding has facilitated curricular efficiency that helps teachers and students alike learn in online environments, (b) the way Decoding has guided pedagogical refinement within our school, and (b) elicit feedback from the Community on our innovative way of using Decoding.

9 | How Institutional Structure can promote Disciplinary Expertise Preliminary Decoding Experience at a Private University in Chile

Thomas Keller, Universidad de las Américas, Chile

In this talk, I want to share the experience of a private Chilean university that has looked to the Decoding Model to improve its teaching practice. This initiative benefits from the fact that the university includes three internal institutes that permit the development of a disciplinary focus. The justification for such a setup is not obvious for a university that aims at a career-oriented education. Students are ultimately measured at how well they can draw together the different disciplines and so muster competences that present a conglomerate of disciplines that will lead to professional success. Engaging in the decoding exercise allows teachers and students alike to bring to the forefront cognitive strategies and thought patterns that reveal a discipline's distinctive epistemology. Researchers have pointed out that the mastery of this disciplinary understanding should precede and inform subsequent interdisciplinary work. I will also reflect on the difficulty of implementing a novel approach across language and cultural barriers and raise questions as to what might be promising ways to present the decoding practice to other institutions of higher education in Chile and South America.



10 | How can Decoding the Disciplines be best used for lesson planning in technology- or skill-heavy courses?

Erika Lee, Indiana University

Jen Kramer, Freelance Instructional Designer; Boston, USA

We'd like to discuss how Decoding the Disciplines (Middendorf & Shopkow, 2018) can be successfully used in technology-heavy courses for creating lessons. When first designing a course, beginning with Backwards Course design (Wiggins, & McTighe, 2005) provides structure. To create lessons and modules, we have been successful in then applying Decoding to the course creation process.

With tech skill courses, there is a duality in the learning objectives because students often must master both a technology and a concept. While Decoding's Step 3 Modeling and Step 4 Practice can help an instructor guide students through a skills-based bottleneck, the conceptual bottleneck often becomes lost in the technology.

Technology skills often fall heavily under APPLY and CREATE on Bloom's Taxonomy (Bloom & Krathwohl, 1984) because students can just follow the recipe or mimic at the APPLY or CREATE levels without truly understanding a long chain of logic or reasoning for a piece of code (Khomokhoana and Nel, 2020). More effort may be required to reason through logic, but by separating the technology (and devices) from the mental actions, and creating active learning exercises tailored to address the EVALUATE and ANALYZE portions of the thought process, leading students through conceptual bottlenecks is much more successful.

We will demonstrate this method being applied to a variety of technology-based lessons from both current courses and recent courses, and plan to continue to share the process through a series of talks and articles with the web education world and wider university community.

- › Bloom, B. S., & Krathwohl, D. R. (1984). Taxonomy of educational objectives: The classification of educational goals: Handbook 1. Cognitive domain. Boston, MA: Addison Wesley Publishing Company.
- › Khomokhoana, P. J. & Nel, L. (2020). Decoding source code comprehension: Bottlenecks experienced by senior computer science students. In B. Tait, J. Kroeze & S. Gruner (Eds.), ICT Education. SACLA 2019. Communications in Computer and Information Science (pp. 17–32). https://doi.org/10.1007/978-3-030-35629-3_2
- › Middendorf, J., & Shopkow, L. (2018). Overcoming Student Learning Bottlenecks: Decode the Critical Thinking of Your Discipline. Stylus: Sterling, VA.
- › Wiggins, G. P., & McTighe, J. (2005). Understanding by design. Alexandria, VA: Association for Supervision and Curriculum Development.

11 | Overcoming Bottlenecks for Preservice Elementary Teachers

Sue McMillen & Jody Magner, Buffalo State University, USA

Join us to learn about our experiences with helping preservice elementary teachers overcome disciplinary bottlenecks. Too often students display a lack of relational understanding (Skemp, 1976) about mathematical concepts. Preservice elementary teachers at Buffalo State University take a two-course sequence in mathematics to prepare them to teach elementary mathematics. These prospective teachers often struggle with developing the disciplinary thinking necessary to understand both the mathematics content itself and how to teach the content effectively. For example, students in these courses may not be able to find the correct answers, may use a memorized procedure that they cannot explain to someone else or connect to a model, or may get a correct answer but be unable to understand the work of a classmate whose solution method differs from their own.

To address the initial questions of the Decoding the Disciplines Model (Middendorf and Pace, 2004; Diaz and Shopkow, 2017), we used a "critical friends" self-study methodology (Loughran, 2004) for data from informal student interviews, students' math autobiographies, and student work from prior semesters. After identifying a key bottleneck, lack of relational understanding, we used multiple versions of a graphic organizer to help students overcome the bottleneck in each course.

Participants will analyze and discuss student work samples to understand the impact these activities had on student learning. Students' feedback on the graphic organizers, challenges and benefits in using them, and how they impacted their learning of mathematics will be presented and discussed. In addition, participants will complete a graphic organizer about bottlenecks and will have the opportunity to reflect on and discuss the possibility of using this approach in their own courses.



12 | Evaluating the Decoding the Disciplines paradigm that is used for developing disciplinary habits of mind: A systematic review of the literature

Shehaamah Mohamed, University of the Western Cape, South Africa

This paper reports on a systematic review (conducted in 2020) of the literature to evaluate the *Decoding the Disciplines* paradigm (henceforth "DtD") in the development of expert disciplinary habits of mind in student learning. A search was conducted utilising various databases (EBSCOhost, DOAJ, JSTOR, SAGE Journals Online, Scopus, Wiley Online and uKwazi) (Library Search Engine) for the period 2004 to 2020. More than

500 papers, retrieved from nine scholarly databases, were screened, based on title and abstract, resulting in 33 shortlisted papers for analysis. The researcher and one independent reviewer assessed the methodological quality of the shortlisted articles. Five countries are represented in this study. The results of this review highlighted the impact that the DtD has on the development of expert ways of thinking in learners. The case studies identify several capabilities that the DtD process could cultivate in student learning to overcome complex bottlenecks.

This study was done using a systematic review process with clear, prescribed guidelines. The steps which were implemented served to find the most suitable body of articles which were selected and appraised. A thorough data extraction was conducted from each study. Only relevant and significant studies were included in the review. We conclude that our findings may be valuable for researchers who may want to use our study as a springboard for future investigation into the application of the decoding paradigm in student learning.

13 | Applying the Decoding Paradigm to Learning Game Design

Victoria (Tori) Mondelli, University of Missouri, USA

Instructional design meets game design in the ALLURE of Play method, which was developed by Professors Tori Mondelli (University of Missouri) and Joe Bisz (City University of New York). In their new book, *The Educator's Guide to Designing Games and Creative Active-Learning Exercises: The Allure of Play* (Teachers College Press, 2023), educators interested to infuse playfulness into the learning environment will find a straightforward six-step backward design method inspired by the Decoding the Disciplines Paradigm.

In this presentation, Dr. Mondelli will provide an overview to the method, and discuss highlights of the process to ensure that the learning games and playful activities created are aligned to learning objectives and maximally inclusive for all learners.

The acronym ALLURE guides individuals or groups in the game design process.

- A: Ask where to apply the play
- L: List the mental moves
- L: Link the mental moves to the play
- U: Understand how the learning principles operate
- R: Run the activity-game
- E: Evaluate the learner experience

Steps A (Ask) and L (List) are inspired by the Decoding Paradigm, and kick off a new approach to learning game design. It is an approach that develops faculty and other educators to design their own playful creations by keeping their eyes on the skills and content that students must grapple with, practice, and, ultimately, master.

Additionally, ALLURE draws on educational principles for engagement, deep learning, assessment of learning, and access (in the sense of Universal Design for Learning). By following the ALLURE method, practitioners learn which simple and complex mechanics to use in order to meet the educational purposes of the activity-game. Learning always takes effort, but when the process is embedded in a fun and collaborative context, that effort is its own reward.



14 | Disciplinary Dream-Drawing: An innovative methodology to uncover students' emotional bottlenecks

Liezel Nel, University of the Free State, South Africa

While most Decoding studies focus on aspects related to cognitive bottlenecks, limited work has been done on the identification of and response to emotional bottlenecks. Emotional bottlenecks can arise when students' preconceived ideas about the procedural aspects of a field of study or their pre-existing world views clash with what is presented to them. This can cause strong emotions amongst students, which may negatively affect their motivation to learn. While instructors may not be aware of the presence of such emotional bottlenecks (or may choose to ignore such instances), students are unlikely to understand why they are experiencing these emotions. To promote successful learning, both the disciplinary ways of thinking and the students' unique perspectives should be made explicit, particularly in a culturally diverse learning environment. Mersky's (2013) Social Dream-Drawing technique combines both visual and narrative data (informed by participants' selected dream drawings and explanations of their drawings) to gain deeper access to unconscious material. It assumes that dreams are expressions of the collective unconscious, enabling the drawer to express underlying emotions and ways of thinking that they might not be aware of. This presentation reports on a pilot project (conducted in a Computer Science education context) to investigate the potential of Disciplinary Dream-Drawing (DDD) as an innovative methodology to uncover the nature of students' emotional bottlenecks. As an extension of Step 1 of the Decoding framework, DDD could be used to identify emotional bottlenecks early, helping instructors anticipate emotional resistance during modelling (Step 3) and devise appropriate strategies to create a motivational learning environment (as part of Step 5) that exudes inclusion, positive attitudes, meaning, and competence.

- › Mersky, R.R. (2013). Social Dream-Drawing: "Drawing brings the inside out". In: Long, S., ed., *Socioanalytic Methods: Discovering the Hidden in Organisations and Social Systems*. London: Karnac, pp. 153-178.

15 | Decoding the Transition to College: Opening the Paradigm to a K-16 Context

Mike Beam, Indiana University; Derek Chastain, Indiana;
Tara Darcy, Indiana University;
Rebecca Itow, Indiana University High School; David Pace, Indiana University, USA

Since its beginnings, Decoding the Disciplines has focused overwhelmingly on increasing learning in university courses. While, it has been used to prepare future high school teachers (Diaz and Shopkow; McBrady), a great chasm has been left between learning at the high-school level and that in colleges and universities, as has been the case with the scholarship of teaching and learning in general.

The Indiana University Decoding Transitions to College Project has sought to move beyond that limitation. We recruited sixteen biology and Spanish teachers, half at the college level and half in high school, and led them through a summer program that introduced them to Decoding. Drawing on the work at Mount Royal University (Miller-Young and Boman), we used the Decoding interview as a tool, not only for making explicit various ways to help students overcome specific bottlenecks that impede the transition to college, but also for creating communities of teachers who could develop shared strategies that transcended the K12/college frontier.

In this session we will share the strategies that we used in the Decoding Transitions Project and present videos of students in introductory college courses describing their experiences as well as high school and college teachers participating in Decoding interviews. It is hoped that this session will contribute to a broader understanding of the potential of Decoding.

- › Diaz, Arlene, and Leah Shopkow. 2017. "A Tale of Two Thresholds," *Practice and Evidence of Scholarship of Teaching and Learning in Higher Education*, Special Issue: Threshold Concepts and Conceptual Difficulty, Vol. 12, No.2 April 2017, pp. 229-248
- › McBrady, Jared. 2022. "Decoding the Disciplines as a Pedagogy of Teacher Education". *Teaching and Learning Inquiry* 10 (March). <https://doi.org/10.20343/teachlearninqu.10.11>.
- › Miller-Young, Janice, and Jennifer Boman, eds. 2017. *Using the Decoding the Disciplines Framework for Learning Across Disciplines*, *New Directions for Teaching and Learning*, 150. San Francisco: Jossey-Bass



16 | Decoding and Reflective Dialogue

Niall Palfreyman & Christine Niebler,
TH Nürnberg, Germany

60-minute workshop in which participants practise the approach described below.

Context: Decoding the Disciplines represents an empowering shift from *problem-* to *solution-*oriented coaching in higher education, offering lay groups the tools to reflect on, co-coach and promote effective teaching. Decoding starts from what we term *Decoding dialogue*, in which three roles (*Expert*, *Facilitator* and *Coach*) reflect on the teachable structure of some expertise possessed by the Expert.

Problem: While practitioners highly value the time invested in Decoding, *content-*focussed dialogue can become protracted, unproductive and demoralising. In this workshop, we therefore practise techniques for streamlining the *process* of Decoding dialogue.

Method: We draw upon the *semiotic* premise¹ that effective communication functions not to transmit information, but to construct shared understanding through three meaning-making skills: First, *attending to signs*; Second, *modelling relational structures*; Third, *engaging in lived narratives*. Decoding dialogue deploys these skills on two levels: (a) promoting solution-oriented dialogue and (b) deconstructing the Expert's expertise at making sense of discipline-specific situations.

Implications: This semiotic perspective generates specific guidelines and linguistic tools that we find of immense practical value when conducting Decoding dialogues:

- (5) All three semiotic skills promote respect between Decoding dialogue participants: we mirror visual, verbal and bodily *sign-cues*, share relational *models* and engage with shared *narratives* that surround these models.
- (6) Teachers often interpret bottlenecks as a sign of 'stuckness': *failure* to attain some intended learning outcome. Decoding reframes them as a sign of *expertise*: the *specific, positive, engaged* competence underlying that intended learning outcome.
- (7) We use three question-forms to access the semiotic skills of this expertise: "To which sensory data are you attending?", "What model relations help you recognise and negotiate tricky situations?" and "In your imagination, how do you engage with this model?"

Preparation: Please bring your own simple, *everyday* cognitive expertise to decode in the workshop, for example, redecorating, learning a song, solving puzzles, planning party/shopping-list, playing cards/saxophone.



17 | Joys and Challenges of Decoding in a Community of Practice

Peter Riegler,
Bavarian Center for Innovative Teaching, Munich &
Britta Foltz,
University of Applied Sciences Aachen, Germany

The Decoding the Disciplines Working Group at the Bavarian Center for Innovative Teaching brings together faculty and faculty developers (and occasionally some students) from all over Germany. Originally established to provide opportunities and resources for Decoding interviews today the group serves multiple interests and needs of its participants. Among these are training in Decoding, practicing SoTL, faculty development, discussing and reflecting individual teaching challenges, and interacting with like-minded people. Decoding has thus become the anchor point of a transregional community of practice.

With this contribution, the Decoding Working Group intends to share insights gained, joyful and hurtful experiences, and strategies to cope with the latter. The group also wishes to learn about related insights and experiences of other delegates. To this end, the session will be highly interactive.

Hitherto insights and experiences can be grouped into these categories:

- Decoding the Decoding process (leading to e.g. workshop formats for introducing Decoding, materials to support the interview process, and connections to other fields like quality management).
- Allowing the intellectually and emotionally involved audience to express their thoughts and questions or to serve as a resource for the interviewers without disturbing the interview. The Working Group has adapted, modified, and tested various formats to achieve this.
- Organization of the Working Group and onboarding of new members.

In the workshop we will focus on the second of these topics.

18 | Transformational Decoding: Blending Decoding and Transfer Frameworks to Support Lifelong and Lifewide Learning

Kara Taczak, University of Denver;
Matthew Davis, University of Massachusetts;
Jessie L. Moore, Elon University, USA

Decoding the Disciplines and Writing Transfer share similar histories. Both developed substantially around the same time period, the 1990s and 2000s, (for Decoding, for transfer: Salomon & Perkins; *How People Learn*, e.g.), and both developed from research on student learning to become wider paradigms for understanding how students accomplish learning goals—and how those efforts can improve (e.g. Beaufort; McCarthy; Middendorf & Shopkow; Miller-Young & Boman; Moore & Bass; Pace, etc.). In addition, both share aims—helping students/writers work through difficulty toward writing goals—and methods (e.g. interviews), which have resulted in curricular frameworks for goal-oriented problem solving for learners (e.g. Middendorf & Shopkow; Yancey, Robertson & Taczak). Even more specifically, both have found success explaining cross- and interdisciplinary differences with respect to writing as a means to help students/writers encounter transitional moments in writing education (Anson & Moore; Chistolini; Miller-Young & Boman; Pace & Middendorf, etc.). In our contemporary moment, both Decoding and transfer frameworks continue to expand to additional international efforts (e.g. Bleakney, Moore & Rosinski; Riegler).

Despite these similarities, very little has been done to put these two scholarly frameworks in extended dialogue with one another. To cite the conference theme directly: this session proposes to connect and expand these two robust areas of scholarship and teaching by attending to three specific and crucial areas of overlap for Decoding and transfer frameworks: reflection, knowledge, and context. These three areas express not only the similarities of Decoding and transfer research, but the ways each can be informative for the other in supporting students' lifelong and lifewide learning. Audience members will have opportunities to brainstorm and workshop how these overlaps could inform lifelong and lifewide learning practices and research in their own institutional contexts.



19 | Decoding the disciplines in a technology-enhanced learning program

Dominique Verpoorten + Technology-enhanced learning advisers,
University of Liège, Belgium

Since 2016, IFRES, the Teaching & Learning Center of the University of Liège (Belgium) has been offering decoding interviews to interested teachers (Verpoorten et al., 2017). The paper focuses on the most up-to-date variations of this offer: the recently hired pedagogical advisers of several faculties were informed about the Pace cycle (2017) and trained to the decoding interview technique. The presentation will report on their exposure to the approach, the commitment and reluctance of the teachers involved, the spotted bottlenecks (cognitive, emotional, attitudinal...), and the technological (or not) solutions that appeared (or not) in the following stages of the cycle. Besides practical aspects, new theoretical issues stemmed from the discussions with teachers and pedagogical advisors. They relate to the notions of “Desirable difficulties” (Bjork & Bjork, 2020) and “Productive failure” (Kapur, 2016). The presentation will explore to what extent these notions question or challenge the very idea of curbing obstacles (Bachelard, 1938), “inefficiencies” or... bottlenecks in the learning process.

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20 | Students as Partners: Rethinking the Decoding Cycle

Gesine Wegner, M.A. Dresden University of Technology, Germany

Following up on the groundbreaking research by Mary Rouse et al. on “Decoding and Disclosure in Students-as-Partners Research,” this presentation will offer a critical reflection on Decoding and introduce some new avenues its practitioners may take. My analysis sheds light on some of the missed potentials that a teacher-centered approach to DtD brings with it. Taking these potential pitfalls as my point of departure, I will discuss two ways of introducing the student perspective to the Decoding cycle. First, I will elaborate on what it means to extend step two of the Decoding cycle by interviewing students. What resources do students use or lack when they perform a task? Where do students rely on the help of others, on knowledge specific to their generation(s), or their individual experiences? Secondly, I propose that we reflect more critically on the idea of “lessening resistance” that is central to step five of the Decoding cycle. I want to highlight the potential of resistance and disruption as a shared learning opportunity, an epistemological tool that allows us to rethink our own discipline, reveal some of its exclusionary mechanisms, and reconsider the usefulness of established methods and theories. I argue that to truly decode a discipline we need to think of students as partners and create a learning environment in which “all participants have the opportunity to contribute equally, although not necessarily in the same ways.” (Cook-Sather et al. 6).

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21 | Productive Paradigms: Pursing the Potential Between Decoding the Disciplines and Threshold Concepts

Stacy Wilson & Alex Arreguin, Mesa Community College (Mesa, AZ, USA)

Presenters will reflect back on their implementation of the Literacy Partners Project (LPP), a multidisciplinary, multi-institution professional development initiative implemented in the Maricopa County Community College District (Arizona, USA). Summer of 2022, 17 participants from two colleges attended the workshop; summer of 2023, 52 participants from ten colleges took part. Disciplinary teams collaborated within and across disciplines and programs, to identify and articulate the foundational ways of thinking and practicing in their field, to recognize expert blindspots that might impede student learning, and, ultimately, to work to make this tacit knowledge explicit. Drawing from and highlighting empirical examples from the LPP, presenters will describe the evolution of their attempts at putting a Threshold Concept (TC) framework and Decoding the Disciplines (DtD)



paradigm in productive alignment. Reflecting specifically on this endeavor, presenters will describe two important insights that resulted from the definitional work they undertook in order to more effectively leverage the productive potential of these two paradigms. First, they will discuss the need to more intentionally examine, define, and articulate the underlying telos of each paradigm. Second, presenters will add scale of strategic implementation (classroom, course sequence, program/discipline) as a mediating factor that can potentially inform Timmermans and Meyer's (2017) and others (Shopkow 2010; Shopkow and Middendorf 2019) existing work on bringing TCs and DtD paradigms together. Finally, presenters will discuss the faculty development implications for others interested in using TC and DtD as frameworks that work best when they are in strategic, complementary alignment.

22 | Hermeneutic Explorations in Decoding

Michelle Yeo, Mount Royal University, Canada;
Odd Rune Stalheim, Inland Norway University of Applied Sciences,
Norway

Decoding the Disciplines is a pragmatic approach, aimed at improving teaching and learning in classrooms. It does this through a deep questioning of disciplinary understandings (Middendorf & Pace, 2004). As described in the work done by a team at Mount Royal University in Canada (Boman et al., 2017), many of us who have conducted Decoding interviews have experienced how the process of the interview frequently uncovers unexpected elements beyond the learning bottleneck, into the affective experience of the expert and their identity: uncovering ways of thinking, practicing, and being (Miller-Young & Boman, 2017). In many cases, these identities seem to have formed around the expert's discipline in a way that becomes inextricable from who they see themselves to be (MacDonald, 2017) and how they interact with the world in embodied ways (Currie, 2017).

In the present work, we are two SoTL researchers and faculty developers from different national contexts who have a background in hermeneutics as a research methodology. Hermeneutics as a philosophy "is the art of interpretation" and "always signifies an ongoing, never completable process of understanding" (Moran, 2002, p. 248). Hermeneutics recognizes our own situatedness within the inquiry. Building on the work done by Yeo (2017) on Decoding as a hermeneutic process, we are now further exploring this aspect and potential of Decoding, particularly as it applies in the context of teacher education and faculty development. We are at early stages of a study where teacher educators at a Norwegian university are introduced to Decoding the Disciplines, and we are conducting hermeneutically-oriented interviews and prompting written reflections on the process to help explore and deepen their teacher education practice. In this presentation we will explore the intersection between hermeneutics as an interpretive process and the Decoding interview, and how taking this approach might influence the questions asked and insights gained.

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23 | Disrupting the Disciplines— Expanding the Decoding Paradigm

Gabrielle Weasel Head-Lindstrom, Michelle Yeo, Lee Easton, Mount
Royal University;
Joan Middendorf, Indiana University Bloomington

At the institutional level, North American universities often define and enact the processes of Indigenization, decolonization, reconciliation, and anti-racism (Bopp et al., 2017; Gaudry & Lorenz, 2018) through strategic plans, but this macro level effort is not enough. Institutions and individuals must address colonialism at all levels, not only the macro. As a research group, we have been building on Decoding the Disciplines (Middendorf & Pace, 2004) and its interview protocol as a potential decolonization strategy, since it uncovers a teacher's learning process through self-reflection and questioning so that the teacher's tacit knowledge can be surfaced and recovered. We have re-written and re-purposed this process to something we call the Disrupting interview - at the heart of the Disrupting interview is the conceptual and epistemological struggle with difficult knowledge that is necessary in envisioning deeper and more authentic relational possibilities (Lindstrom et al., 2022). The Disrupting interview, in deliberately centering a decolonizing and relational approach, offers a reflexive vantage point from which to unsettle (Regan, 2014) disciplinary complicity in colonialism. Instead of reifying



the discipline, Disrupting extends the Decoding paradigm in order to explore the ways the discipline upholds enduring colonialism, racism, and assimilates diverse identities.

For us, the willingness to be disrupted is central to encouraging an awareness of participants' complicity in all of these elements, as both teachers and researchers in the discipline. As a tool for decolonization, we argue that the Disrupting interview provides a conceptual bridge between the macro, meso, and micro levels at which education operates. By creating opportunity for critical self-reflexivity, the Disrupting interview can shift interviewees' thinking from a 'problem-focus' to a mindset of imaginative possibilities where participants illuminate hidden assumptions and colonial and racist practices and consider alternative ways of knowing/doing/being in their discipline. In this presentation, we will share our experiences and theorization of Disrupting interviews - a research project in process.

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