

The Cambridge Handbook of Instructional Feedback

This book brings together leading scholars from around the world to provide their most influential thinking on instructional feedback. The chapters range from academic, in-depth reviews of the research on instructional feedback to a case study on how feedback altered the life-course of one author. Furthermore, it features critical subject areas – including mathematics, science, music, and even animal training – and focuses on working at various developmental levels of learners.

The affective, noncognitive aspects of feedback are also targeted, such as how learners react emotionally to receiving feedback. The exploration of the theoretical underpinnings of how feedback changes the course of instruction leads to practical advice on how to give such feedback effectively in a variety of diverse contexts. Anyone interested in researching instructional feedback, or providing it in their class or course, will discover why, when, and where instructional feedback is effective and how best to provide it.

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Foreword

“Feedback, like rain, should be gentle enough to nourish a person’s growth without destroying the roots.” This quote (modified from the original by Frank A. Clark) is a simple reminder that feedback can be helpful or not, assume a variety of forms, be provided at different times, and have diverse effects on different people. But what if there were a drought (no rain, no feedback)? Consider the following two questions: If a tree falls in the woods and nobody’s around to hear it – does it make a noise? If a teacher instructs some content or skill and doesn’t assess and support learning – can students deeply learn? In both cases, the answer is no.

So feedback is really important – not just for learning new things, but pretty much across all of life. There are countless examples of feedback in nature – with both positive and negative functions. For example, our hypothalamus reacts to changes in temperature and responds appropriately. If the temperature drops, we shiver to bring up the temperature, and if it’s too hot, we sweat to cool down via evaporation. Predator–prey relations in nature are also well-known examples of feedback loops, as is climate change. The key difference between positive and negative feedback is their response to change – positive feedback accelerates change while negative feedback delays change.

What does all this have to do with the book that you’re about to dive into? We’re all giving and getting feedback throughout our lives – in the classroom, on the job, as part of family life, and so on. How can we ensure that the feedback we give and get is effective and constructive? That’s covered in the book. For example, as a teacher, I want my students to excel and grow so I provide lots of feedback (and they similarly return the favor, with the goal to improve my teaching skills). As an employee, I need valid feedback to perform my best, and as an employer, I need to give constructive feedback to those who work for me. Finally, as a parent, I want my kids to grow into awesome adults, and I’m fairly certain they want me to be a good parent. Can one book possibly cover the wide range of feedback contexts and types? This one comes close.

I suspect that I was asked to write this foreword because of the literature review I published a decade ago in the *Review of Educational Research* titled “Focus on Formative Feedback.” That particular project was something I’d been longing to do for years – to wrap my head around the slippery, often conflicting feedback findings in the literature, then provide a things-to-do (and things-to-avoid) set of tables at the end for practitioners. Since then, there has

been considerably more work in the feedback arena. This book – *The Cambridge Handbook of Instructional Feedback*, edited by Anastasiya A. Lipnevich and Jeffrey K. Smith – is an excellent convergence of the most current feedback work in a wonderful one-stop book. The chapters comprise a delicious smorgasbord of feedback-related topics ranging from theoretical to empirical research, qualitative to quantitative work, in the contexts of K-12 classrooms to higher education and the workplace, and spanning different countries for cross-cultural perspectives (e.g., Singapore, the United States, South Africa, Japan, Spain, Sweden). Feedback is examined relative to who is giving it (e.g., a computer or game vs. teachers vs. self vs. peer), who is receiving it, and the content areas in which the feedback is employed (e.g., math, science, writing, medicine, and music). Cognitive as well as affective states can benefit from feedback too – which is also covered. The twenty-seven chapters are not only diverse, but they’re written by luminaries in the field. I close as I started, with a quote: “Feedback may be a gift, but constructive feedback is an investment” (Brad Boyson).

Valerie Shute
Florida State University

Preface

The focus of *The Cambridge Handbook on Instructional Feedback* is on feedback as it manifests itself across various instructional settings and contexts. Learners at all levels receive a wealth of feedback messages on a daily – or even hourly – basis. Teachers, coaches, parents, peers – all have suggestions and advice on how to improve or sustain a certain level of performance. In a classroom context, sharing learning intentions, clarifying criteria for success, providing information that moves learners forward, and activating students as the owners of their learning are essential functions of feedback (Black & Wiliam, 2009). Inarguably, feedback is a key element of successful instructional practices – those that lead to best improvement (see, e.g., Hattie and Timperley, 2007). Researchers agree that feedback is essential for improved performance, but we also know that learners often dread feedback and dismiss it and that the effectiveness of feedback varies depending on specific characteristics of feedback messages that learners receive (see, e.g., Lipnevich & Smith, 2008). This volume brings together extant literature on feedback across multiple academic domains, contexts, and levels of schooling, and attempts to clarify a range of questions that relate to various aspects of feedback, including its type, level of specificity, frequency, context, and timing. The book paints an expansive picture of the current state of research on instructional feedback, discussing both the theory and areas of application. The volume focuses specifically on the most important constituents and components of feedback:

1. Those who provide feedback
2. Those who receive feedback
3. Characteristics of feedback
4. The context of feedback.

The volume comprises five parts. Part I focuses on existing theory, presenting definitions, characteristics, methodological issues, and a general conceptual framework of instructional feedback, and describing existing taxonomies of instructional feedback (see Table 0.1 for a brief description of chapters included in this volume). The contributors situate feedback within the framework of formative assessment. Wiliam (Chapter 1) opens this part with a discussion of feedback in the larger historical context. Wiliam discusses whether feedback works, the magnitude of the impact on learning, and what kinds of feedback work best. One of the key points of this chapter is that feedback interventions

need to take greater account of the crucial difference between learning and performance that has been a fundamental concept in memory research for decades. In Chapter 2, Stobart argues that feedback has to be carefully related to the proficiency of the learner and cannot be treated as a generic template to be applied mechanically. He discusses different types of feedback and how they should be matched to different levels of student performance. In Chapter 3, Brookhart juxtaposes feedback in summative and formative contexts and emphasizes the importance of student agency, whereas in Chapter 4, Murray, Gasson, and Smith propose a taxonomy of written feedback messages, allowing for a more systematic look at how feedback influences achievement. Brown and Harris (Chapter 5) conclude this part with a survey of the different methods currently being used to investigate feedback in empirical studies.

Part II covers research on feedback at different levels and areas of schooling, discussing specifics of cognitive, emotional, and psychosocial development of learners as well as best approaches to feedback delivery at different developmental levels. The contributors explain the specifics of feedback delivery across subject domains and other instructional settings. Tan and Wong (Chapter 6) attempt to answer the question of whether feedback in primary schools can enhance students' "independent" learning and at the same time aid students in achieving necessary learning outcomes for high-stakes examinations. The discussion is situated in the context of schooling in Singapore. Chapters 7 through 10 describe specifics of presenting feedback in the domains of writing, math, science, and music. Graham (Chapter 7) summarizes research on feedback effectiveness in the domain of writing and discusses challenges of providing good quality feedback on students' written assignments. Small and Lin (Chapter 8) explore various aspects of offering feedback to students who are learning mathematics. This chapter includes examples at a variety of grade levels of how to connect feedback to learning objectives, including attention to assumptions students do or do not make. In Chapter 9, Ruiz-Primo and Kroog present results of a study in which they closely examined assessment artifacts, focusing on feedback presented to students in math and science classrooms. Music represents yet another academic domain with unique characteristics of teacher–student relationships and consequently the characteristics of assessment and feedback. Parkes (Chapter 10) explores three broad areas of feedback in music instruction that include teacher behaviors, peer and student feedback, and sensory feedback in the performance of music.

The importance of noncognitive (or psychosocial) skills in education is no longer disputed; researchers and practitioners are pondering these issues as they relate to feedback that may help students to enhance such skills. What kind of information should be provided to students that will help them to become more conscientious, motivated, or resilient? In Chapter 11, Murano, Martin, Burrus, and Roberts try to formulate answers to these questions and discuss the role of feedback in the development of noncognitive skills. The researchers present various approaches to feedback for cognitive skills and argue that feedback recommendations for cognitive skills transfer to noncognitive skills as well.

Chapter 12, by van der Meer and Dawson, and Chapter 13, by Sargeant and Watling, discuss challenges and specific characteristics in the context of higher education and medical education, respectively. The authors argue that effective feedback should go beyond its corrective purpose and should contribute to students' developing dispositions, perspectives, and skills for life beyond academia. Chapter 14, by Athota and Malik, concludes this section and discusses 360-degree feedback in a workplace. The authors describe a multi-rater approach and possible issues that might arise when providing feedback in a workplace context.

In Part III the researchers discuss various modes of feedback delivery and the diversity of contexts for feedback presentation. Munshi and Deneen (Chapter 15) explore issues and make suggestions on technology-enhanced feedback in a systematic review of literature. Key points include the implications of who is driving the dialog around technology-enhanced feedback, what works well in technology-enhanced feedback, and where there seem to be persistent and significant gaps in research and practice. In Chapter 16, Homer, Ober, and Plass examine the ways in which digital games can be used to authentically evaluate learners' knowledge and skills. Challenges are examined, including lack of general acceptance of games as assessment tools, potential for extraneous cognitive load caused by the gaming environment, and a culture of exploration and "cheats/hacks" in games. The researchers conclude with some examples of current "best practices" in game-based assessment and recommendations for next steps in the field. In Chapter 17, Andrade focuses on self-assessment, defined as the act of monitoring one's processes and products in order to make adjustments that deepen learning and enhance performance. Andrade suggests that self-assessment is most beneficial, in terms of both achievement and self-regulated learning, when it is used formatively. Panadero, Jonsson, and Alqassab (Chapter 18) examine the concept of peer feedback, discussing the key empirical themes that have been investigated. Issues related to trust, relationships between peers, and the nature of the task are discussed, along with recommendations and specific conditions that influence the effectiveness of peer feedback. In Chapter 19, Guskey discusses feedback in the context of Bloom's mastery learning theory, exploring the concept of "pre-assessment" and how it plays into instructional practice. Kanjee (Chapter 20) and Arimoto and Clark (Chapter 21) explicate feedback in international contexts of South Africa and Japan, respectively. Kanjee explores primary school teachers' written feedback practices in South Africa, and how they expect their learners to respond to this feedback. Arimoto and Clark extend the cross-cultural exploration and contrast the Western perspective of the child as a "student" or "pupil" with the Japanese practice of "zenjin education," translating most closely to "whole-child education." This part concludes with Kaufman and Pagel's (Chapter 22) discussion of feedback presented in the context of animal training. The authors draw parallels with situations in which one person's language or understanding thereof is not the same as another's.

In Part IV the contributors focus on characteristics of learners and discuss variables that relate to students’ receptivity and active use of feedback. Stiggins (Chapter 23) examines the effectiveness of feedback from the student’s (information recipient’s) perspective. In Chapter 24, Jonsson and Panadero discuss ways that help to facilitate students’ engagement with their feedback, whereas Goetz, Lipnevich, Krannich, and Gogol (Chapter 25) focus on students’ emotional reactions to feedback. Holinger and Kaufman in Chapter 26 explicate the relationship between creativity and feedback (and the related construct of evaluation) from several different research perspectives: the motivational approach, the cognitive approach, and the individual differences/personality approach.

In Part V, the editors (Smith and Lipnevich, Chapter 27) join forces in an attempt to integrate these various elements into a coherent whole. In the process, we make a series of recommendations for future research, policy, and practice.

All in all, this book provides a comprehensive summary and evaluation of current research and can serve as a resource for scholars and practitioners to make informed decisions about the inner workings of instructional feedback in their respective educational programs. Humbly, we hope that researchers, students, policymakers, and practitioners alike will find this volume to be of value.

Table 0.1 *Summary of chapters that appear in this volume*

Title	Authors	Country	Feedback Context	Brief Summary
1. Feedback: At the Heart of – But Definitely Not All of – Formative Assessment	Dylan Wiliam	UK	General academic context	Discusses whether feedback works, the magnitude of the impact on learning, and what kinds of feedback work best
2. Becoming Proficient: An Alternative Perspective on the Role of Feedback	Gordon Stobart	UK	General academic context	Argues that feedback has to be carefully related to the proficiency of the learner and cannot be treated as a generic template to be applied mechanically
3. Summative and Formative Feedback	Susan M. Brookhart	US	General academic context	Juxtaposes feedback in summative and formative contexts and emphasizes the importance of student agency
4. Toward a Taxonomy of Written Feedback Messages	Jacqui Murray, N. Ruth Gasson, and Jeffrey K. Smith	New Zealand	University	Discusses an approach to categorizing feedback
5. Methods in Feedback Research	Gavin T. L. Brown and Lois R. Harris	New Zealand	General academic context	Surveys the different methods currently being used to investigate feedback in empirical studies that examine real-world processes in the design, delivery, and impact of feedback
6. Assessment Feedback in Primary Schools in Singapore and Beyond	Kelvin H. K. Tan and Hwei Ming Wong	Singapore	Elementary schools in Singapore	Attempts to answer the question: Can feedback in primary schools enhance students’

Table 0.1 (cont.)

Title	Authors	Country	Feedback Context	Brief Summary
7. Instructional Feedback in Writing	Steve Graham	US	Writing assignments	“independent” learning, and at the same time assist students to achieve requisite learning outcomes for high-stakes examinations? Summarizes research on feedback effectiveness in the domain of writing and discusses challenges of providing good quality feedback on students’ written assignments
8. Instructional Feedback in Mathematics	Marian Small and Amy Lin	Canada	Math	Explores various aspects of offering feedback to students who are learning mathematics
9. Looking Closely at Mathematics and Science Classroom Feedback Practices: Examining Artifacts, Students’ Products, and Teachers’ Communications	Maria Araceli Ruiz-Primo and Heidi Kroog	US	Math and Science	Presents results of a study in which researchers examined feedback presented to students in math and science classrooms
10. Instructional Feedback in Music	Kelly A. Parkes	US	Music	Explores three areas of feedback in music instruction: (1) teacher behaviors, (2) peer and student feedback (assessment), and (3) sensory feedback in the

Table 0.1 (cont.)

Title	Authors	Country	Feedback Context	Brief Summary
11. Feedback and Noncognitive Skills: From Working Hypotheses to Theory-Driven Recommendations for Practice	Dana Murano, Jonathan E. Martin, Jeremy Burrus, and Richard D. Roberts	US	General academic context, non-cognitive skills	performance of music Discusses the role of feedback in the development of noncognitive skills
12. Feedback in Tertiary Education: Challenges and Opportunities for Enhancing Current Practices	Jacques van der Meer and Phillip Dawson	New Zealand and Australia	University	Focuses on the questions of what the particular purposes and the specific challenges and opportunities of feedback processes are in higher education Discusses challenges and specific characteristics in the context of medical education
13. Instructional Feedback in Medical Education	Joan Sargeant and Christopher Watling	Canada	Medical schools	Describes a multi-rater approach and possible issues that might arise when providing feedback in a workplace context
14. 360-Degree Feedback at the Workplace: A Transformative Learning Perspective	Vidya S. Athota and Ashish Malik	Australia	Work settings	Explores issues and makes suggestions on technology-enhanced feedback
15. Technology-Enhanced Feedback	Cassim Munshi and Christopher C. Deneen	Singapore and Australia	General academic context, technology	Examines the ways in which digital games can be used to authentically evaluate learners' knowledge and skills
16. Digital Games as Tools for Embedded Assessment	Bruce D. Homer, Teresa M. Ober, and Jan L. Plass	US	Technology	

Table 0.1 (cont.)

Title	Authors	Country	Feedback Context	Brief Summary
17. Feedback in the Context of Self-Assessment	Heidi L. Andrade	US	Self-assessment across academic contexts	Explores the process of self-assessment and suggests that self-assessment is most beneficial, in terms of both achievement and self-regulated learning, when it is used formatively
18. Providing Formative Peer Feedback: What Do We Know?	Ernesto Panadero, Anders Jonsson, and Maryam Alqassab	Spain, Sweden, Germany	Peer-assessment in general academic context	Explores the complexity of peer feedback and discusses issues related to trust and relationships between peers
19. Feedback, Correctives, and the Use of Pre-Assessments	Thomas R. Guskey	US	General academic context	Discusses feedback in the context of Bloom’s “mastery learning”
20. Teacher Expectations and Feedback Practices in South African Schools	Anil Kanjee	South Africa	Elementary/primary schools	Explores primary school teachers’ written feedback practices in South Africa, and how they expected their learners to respond to this feedback
21. Interactive Assessment: Cultural Perspectives and Practices in the Nexus of “Heart or Mind”	Masahiro Arimoto and Ian Clark	Japan	General academic context in Japan and Western Countries	Contrasts the Western perspective of the child as a “student” or “pupil” with the Japanese practice of “zenjin-education,” translating most closely to “whole-child education”
22. Instructional Feedback in Animals	Allison B. Kaufman and	US	Animal training	Discusses feedback in situations in which a person’s language (or one’s

Table 0.1 (cont.)

Title	Authors	Country	Feedback Context	Brief Summary
	Michele M. Pagel			personal understanding of it) is not the same as another’s, using animal training as a context but drawing parallels with humans
23. The Emotional Dynamics of Feedback from the Student’s Point of View	Rick Stiggins	UK	General academic context	Examines the effectiveness of feedback from the student’s (information recipient’s) perspective
24. Facilitating Students’ Active Engagement with Feedback	Anders Jonsson and Ernesto Panadero	Sweden and Spain	General academic context	Discusses ways that help to facilitate students’ engagement with their feedback
25. Performance Feedback and Emotions	Thomas Goetz, Anastasiya A. Lipnevich, Maïke Krannich, and Katarzyna Gogol	Germany and US	General academic context	Presents an overview of student emotional responses to feedback
26. The Relationship between Creativity and Feedback	Molly Holinger and James C. Kaufman	US	General academic context	Discusses the relationship between creativity and feedback (and the related construct of evaluation) from several different research perspectives
27. Instructional Feedback: Analysis, Synthesis, and Extrapolation	Jeffrey K. Smith and Anastasiya A. Lipnevich	New Zealand and US	General academic context	Brings the discussion together

Acknowledgments

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