1 Introduction and Overview

Now More Than Ever

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Learning is an imperative for individuals, organizations, and societies. And while learning is fundamental to human nature, it is also perplexingly sticky. Lessons learned at one point in time, or in one place by one group of people, do not automatically come to mind or move across individuals and teams (see, e.g., Szulanski, 2003). Added to this stickiness is the increased need for learning and transfer of knowledge. The pace of change, and the profound nature of those changes, will render many jobs and even industries obsolete in the years to come. Technological automation and artificial intelligence, in particular, will completely eliminate some jobs and radically transform others. As just one example, what will transportation and shipping look like 20 years from now? What new jobs must forklift drivers, sorters, and truckers learn when their jobs disappear? The answer is, in part, more complex jobs that require displaced workers to gain knowledge of automation and technology (Cassidy, 2016).

The changes that we face will also be social. With increased immigration and political backlashes to it, organizations will have to be able to adjust to swings in the depth, capacity, and diversity of the labor supply. What miscommunications and conflicts will managers deal with 20 years from now, in an organization staffed with people who grew up in different countries, speaking different languages? In short, the capability for people and organizations to adopt is essential for them to thrive.

Viewed against this backdrop, workplace learning and development is a topic of critical importance. How do employees and the teams they comprise learn? What can organizations do to support and guide them? The chapters in this volume address these questions, and more, from a variety of perspectives. The text is organized into four major sections, as described in the following paragraphs.

Fundamentals Issues in Learning and Transfer

The first section covers fundamentals of learning, beginning with neurological and cognitive foundations. The chapters continue to address fundamental concerns about learning and transfer, at both individual and organizational levels of analysis.

The Kraiger and Mattingly chapter begins this section by reviewing cognitive principles that support learning. They go on to discuss how more recent

neurological research fits with what is already known. Research on the brain offers some opportunity to confirm or refute what is already known about learning, but we should recognize that neurological research is heavily dependent on new technologies and new data analytic techniques that are not yet mature. So while there are benefits of studying neurological activity, we should recognize that it is but another perspective and another set of research tools that we should employ.

In the next chapter, Marand and Noe offer a multilevel model of expertise, depicting how expertise, cognition, and other phenomena at lower levels aggregate to create organizational expertise. Because training is often deployed to boost individual-level knowledge, it is critical to understand if, when, and how changes at that level make a difference for organizations. The model offered in this chapter is a great start along that journey.

The chapter by Huang, Ran, and Blume categorizes studies of transfer of training based on whether the changes that occur to the task are anticipated or unforeseen. This review helps connect research on training transfer to an emerging literature on adaptive performance. They conclude with specific suggestions for future research based on this connection.

Howardson, Orvis, Fisher, and Wasserman address the fundamental phenomena of control with learning environments. They develop a multilevel model that details dimensions or components of learner control. Drawing on the distinction between individual and situational forces, the model examines use of control, reactions, learning, and transfer.

Understanding the Learner

The second section is the most psychological in orientation because it focuses on individual differences. Individual difference effects on learning and training outcomes are one of the most studied topics within the training subfield in industrial-organizational psychology since the publication of Noe (1986). Consequently, each of the chapters in this section offers a substantial literature reviews.

Beier, Villado, and Randall's chapter begins this section by discussing cognitive abilities. Although some may consider the central role of abilities in training settled and uninteresting, Beier and her colleagues reveal that the issues on this topic are far from settled. They discuss domain knowledge alongside general and specific abilities, and consider the implications for training design. In addition, this chapter raises the concept of team ability and connects it with research on team skills and performance.

The next chapter, Donovan and Nicklin, addresses the topic of motivation through the perspective of self-regulation. Through a series of figures, the chapter reviews key concepts in this domain, and continues to recommend several directions for future research.

Given the increased diversity of most organizations, the McCausland and King chapter is an important contribution to this volume. This chapter notes

that both actual and perceived demographic differences are important constructs to study. Their review discusses diversity along several dimensions, including gender, race, age, disability, religion, parental status, and obesity. The influence of stereotypes is also reviewed, and then three specific research programs are proposed.

Designing the Intervention

In this section, we move to thinking about how trainers and organizations design and deliver effective programs. Included in this section are discussion of formal job-focused training programs, new training methods and media, and leadership development programs.

Tews and Burke-Smalley offer a theoretically based yet practical look at how to maximize transfer under different conditions. The chapter uses a stakeholder accountability matrix that depicts what trainers, trainees, and supervisors should do to create the best possible conditions for transfer.

Ford, Webb, and Showler examine two different types of expertise – routine and adaptive – and examine both training and work experiences that foster their development. This chapter builds on the same foundational literature as Huang, Ran, and Blume, but offers a different set of directions for future research.

Marlow, Lacarenza, Reyes, and Salas discuss theory and practice of simulation-based training. As technology becomes less expensive and more portable, technology-based training is becoming mainstream. No longer just the domain of the airline pilot, simulations are being deployed in health care and management education settings. The chapter offers best practices for building simulation-based training along with suggestions for future research.

The Keebler, Patzer, Wiltshire, and Fiore chapter explores an exciting new technological development – the integration of real and simulated worldviews, which we call *augmented reality*. Although the technology has many possible applications, the chapter reviews research and practice in medicine. The technology has a great deal of promise, and suggestions for future research are presented.

Continuing the technology theme, Wasserman and Fisher's chapter looks at mobile learning. These scholars begin by examining definitional challenges and end with suggestions for future research. Key concerns across phases of the instructional design cycle are noted in ways that are at once thought provoking and useful for those designing mobile learning interventions.

Yeo and Parker examine multiple thinking processes that are facilitated by the availability of free or slack time. The pressure for efficiency is ubiquitous, and it is important to recognize that there are real financial and psychological costs to constantly working. One of these costs, as noted by the authors, is reductions in creative thinking, mind wandering, mindfulness, self-reflection, and perspective taking that benefit personal growth and learning. This chapter suggests that one way to design learning environments is to design work environments that allow for free time.

The Quiñones chapter addresses two major issues at the same time – the need to serve a growing but still underserved demographic population in the United States (Latinos) and the need to create theoretically grounded leadership development programs. Quiñones provides details of a program at the Cox School of Business, and provides preliminary results.

Special Topics

The fourth section addresses an array of important topics including different skill sets that can be trained or different contexts within which such training might occur.

As Cardon and Valentin note, the majority of businesses around the world are small and medium-sized enterprises, rather than the large corporations that so often occupy our attention. Their chapter examines training practices based on the size of the firm and the type of ownership (family firms often show different patterns of practices than other small firms). Although there is both U.S. and international research on the type and effectiveness of training in these firms, which is reviewed in detail, more research is needed.

Dierdorff and Ellington review research on team training. This type of training has been the focus of considerable research over the last two decades, resulting in several meta-analyses. The chapter presents examples of team training outcomes and an extensive set of future research directions in three categories: linking different training tactics to different team outcomes, working beyond the intervention environment, and meeting the new reality of teams.

Raver and Van Dyne present an analysis of empirical studies on the development of cultural intelligence. Cultural intelligence (CQ), the capability to function effectively in intercultural contexts, becomes increasingly central in a world of global trade and diverse labor forces. This chapter reviews in detail 28 empirical studies on the development of CQ, and concludes with the statement that "positive changes in CQ occur as a function of systematic interventions."

Saks and Gruman provide insight into another construct that has emerged in the organizational sciences recently – Psychological Capital or PsyCap. PsyCap is a constellation of individual differences that support positive psychological development. Saks and Gruman both review prior research and provide concrete suggestions for intervention strategies to increase PsyCap; strategies that could be used in stand-alone interventions or in combination with another training program.

The Dysvik, Carlsen, and Škerlavaj chapter examines the concept of systems thinking, and explores how training can have impact along three dimensions – beneficiary, business, and society. The authors extend prior discussion of the systems-wide impact of training by providing this three-part conceptualization. They conclude both that it is possible for training to have broad impacts beyond

just on the training participant, and that organizations can and should be thinking about addressing systems thinking in training programs.

Most of the chapters in this section deal with the training of particular content. Heslin, Mortimore, and Keating expose another issue that is important in all training programs – the beliefs and actions of the instructor! Their chapter focuses specifically on two possible roles that instructors may take teaching management in business schools, but the ideas presented are relevant to the work of any trainer or instructor. It is our collective hope that this chapter inspires further research on trainer characteristics and behavior, which we believe to be central to training effectiveness but still understudied.

Workplace Learning from Other Lenses

The final section includes contributions from people who do not constrain themselves to psychological literature, and in fact many would not even describe their work in psychological terms. Authors in this section draw from educational, economic, operations, and sociological perspectives.

Werner examines the field of training across industrial-organizational psychology and human resource development, the latter of which is a field more commonly situated in education. He notes similarities and differences and, in that vein, points to ways in which the psychological study of training might expand and grow.

McFarland and Ployhart adopt a strategic human resource management lens, drawing on strategic management and economic theories to describe the ways by which training programs create competitive advantage. To anyone who has not read economic or strategic management literature, there will be many new terms presented. Understanding this language and the concepts that underlie them are critical for interfacing with strategic decision makers in organizations that determine what is and is not worth paying for.

Tracey is a distinguished scholar in a hospitality school. A parallel human resource literature has developed in these schools, and many large sample studies have appeared in that literature. Tracey summarizes these studies and discusses the connection the industrial-organizational psychology literature.

Like Werner, Carliner writes from an educational perspective. In Carliner's case, the topic is informal learning. The vast majority of what is learned in organizations is learned not through formal programs but through various resources, relationships, and experiences on the job. Carliner provides frameworks and reviews research in this area, and offers insight into yet another way of thinking about learning in organizational settings.

Thomas, Hewitt, and Grasman summarize the operations management perspective on training, which focuses on the connections among people, skills, and production. The mathematical orientation of their perspective, strengthened by their backgrounds in industrial engineering, is what makes this perspective so distinct from the industrial-organizational psychology tradition. As more

psychologists embrace mathematical modeling, training researchers may find that the optimization approach of operations scholars, noted in this chapter, is a useful approach.

The final chapter is by Bills and van de Werfhorst, sociologists who examine training-related trends both in the United States and rest of the world, with an emphasis on Europe. These authors help us understand organizational and country-level differences in training practices, putting an exclamation point on the multilevel nature of this volume.

Concluding Thoughts

The chapters work together to provide a broad snapshot of research. I also hope they offer several paths forward, avenues that future research could take to further advance our understanding of learning, training, and employee development.

To the future research directions noted in the chapters, I'd like to add a few meta-themes in the form of recommendation for training scholars: (1) increase interdisciplinary collaborations, (2) adopt explicitly multilevel framework, and (3) conduct research that matters to practitioners.

As these chapters reveal, the study of training is not limited to industrial-organizational psychology. Because scholars from other disciplines have studied who is trained, who learns, and to what effect, research in psychology can be strengthened by drawing on their insights. As just one example, the operations management perspective, explained by Thomas and his colleagues in Chapter 26, suggests that optimization equations may be helpful in making decisions about who to train and when. Many studies in industrial-organizational psychology reveal who learns and whether people learn more from one type of training than another, but do not connect the associated management decision, and other related decisions such as staffing, to profit. When profit is considered in the training field, it is typically done with return-on-investment calculations that indicate whether an investment was worthwhile after costs and benefits are known. Optimization methods provide a concrete tool for modeling what might happen under different circumstances and, in that way, the results could be used to help guide training decisions and integrate more traditional human resource management approaches with the world of operations management.

The world is inherently multilevel. Employees are influenced every day by the organization and teams in which they work, and yet at times we excise those entities from thinking or scholarship because it makes our work easier. I have done this in my own work. Certainly it is not necessary for every study to be explicitly multilevel, but it is important to acknowledge contextual effects in our studies, and to have theoretical models that allow us to understand when and how those effects are likely to occur. Considerable progress has been made in this domain, thanks in part to reviews such as Aguinis and Kraiger (2009) and edited books including Kozlowski and Klein (2000), and we should continue to build

on what is known to ensure that our models capture that inherent interconnectedness among levels.

I asked each chapter author to consider the practical implications of the literature reviewed, and where applicable the conceptual model proposed, for decisions made by trainers and managers. The connection between research and practice is not always obvious, and it is certainly not simple. Nevertheless, in an applied discipline like ours, it is incumbent on scholars to consider the practical implications of their work. And, looking at the volume in its entirety, there are many specific recommendations that could be adopted by professionals involved in designing and managing training and employee development programs. So, while the book is not explicitly designed for practitioners, our field is working to create knowledge that is useful, and we should continue to do so.

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