

Learning in the Twenty-First-Century Workplace

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Abstract

Human capital resources are key for organizations to gain a competitive advantage. Learning based on formal training and development programs, informal learning, and knowledge sharing influences the development of human capital resources. This article provides a selective review of research on learning that occurs in many different forms and at the individual, team, and organizational levels. It is organized around five themes—thinking differently about learning, reconsidering the form and design of learning, facilitating learning in the workplace, expanding the scope of learning outcomes, and improving methodology in learning research. These themes provide a framework for understanding how learning can contribute to the development of human capital resources and organizations' competitive advantage. For each theme, relevant research is reviewed, and limitations and future research directions are provided.

Competitiveness: an organization's ability to maintain and gain market share in the industry in which it operates

Competitive advantage: an organization's ability to generate above-normal returns as compared with its competitors

Strategy: the way an organization positions itself against its competitors and uses its resources to gain a competitive advantage

INTRODUCTION

Today, organizations face economic, global, technological, and labor market challenges to their competitiveness. Economic challenges include uncertainty about growth and how to position themselves in a global and services-dominated economy and the necessity of satisfying multiple stakeholders (shareholders, employees, community, and environment) (Meister & Willyerd 2010). Technological challenges include deciding whether and how to use mobile computing and social media, which provide unprecedented access, connectivity, and immediacy to communications for employees, managers, customers, and suppliers.

Labor market and workforce characteristics pose another set of challenges. Organizations are having difficulties finding employees with suitable skill sets for open positions and are uncertain about how to best manage and capitalize on the talents of a workforce that is increasingly diverse in terms of age, race, and national origin (Galagan 2010, SHRM Found. 2010, Toossi 2009). Employees' expectations about work are also changing. They value feedback about their job performance, opportunities to develop their skills, and work that is challenging and personally fulfilling yet contributes to their organizations' goals. However, they also want flexibility to decide when and where to work to effectively balance work and life demands (Butts et al. 2013).

An important way that an organization attempts to turn competitive challenges into competitive advantage is through its business strategy. According to resource-based theory, a resource is anything that can potentially provide an organization with a competitive advantage (Barney 1991). Resources include tangible assets, such as financial capital (e.g., monetary assets and cash) and physical capital (equipment, technology, delivery systems), and intangible assets or human capital. A meta-analysis by Crook et al. (2011) found that human capital resources are significantly related to firm performance. Although most research has shown that firm-specific human capital has a stronger relationship to firm performance than general human capital does, the findings of Campbell et al. (2010) suggest that general human capital may also be a source of competitive advantage under certain circumstances. Human capital resources contribute to competitive advantage when they are valuable (i.e., wield influence on firm's strategic goals), unique (i.e., are not commonly held by competitors), inimitable (i.e., are difficult to imitate), and nonsubstitutable (i.e., an alternative resource cannot be substituted to achieve the same strategy) (Acedo et al. 2006, Barney & Wright 1998).

Human capital resources are unit-level resources that emerge through the interaction of employees' knowledge, skills, abilities, and other resources (KSAOs) (Ployhart & Moliterno 2011). Employees' explicit and implicit knowledge may be the most important source of competitive advantage (Grant 1991, Kogut & Zander 1992). Explicit knowledge is knowledge that is well documented and easily articulated. Tacit knowledge, which is arguably more important, is knowledge that is subconsciously understood based on experience (Nonaka & Takeuchi 1995). For example, policies and procedures can be taught, but learning through experience plays a critical role in determining when and how to apply, adopt, or abandon those practices. It is important to emphasize that human capital resources are likely not simply the aggregation of individual characteristics to the organizational level, but rather are emergent, that is, they are influenced by interactions among individual characteristics and team- and organizational-level factors (Barney & Felin 2013, Ployhart & Moliterno 2011). This means that organizations' human resource policies and talent management practices, including training and development initiatives, as well as the organizational context (e.g., structure, culture, and work design) play an important role in the utilization and development of human capital resources.

Goal and Scope of This Review

The goal of this review is to increase our understanding of how learning contributes to the strategic development of human capital resources for organizations to gain a competitive advantage. It focuses on practically relevant and academically important microlevel learning, training, and development research, as well as emerging work on human capital and how learning contributes to its development. This review is selective and illustrative. It complements several recent, excellent, exhaustive, and comprehensive reviews of learning, training, and development published in the *Annual Review of Psychology* and elsewhere (see Aguinis & Kraiger 2009, Brown & Sitzmann 2011, Salas et al. 2012). We build on these reviews by focusing on research conducted in the fields of education, industrial and organizational psychology, strategic management, and organizational behavior as well as related disciplines that furthers our understanding of how learning is evolving in today's workplace, with a specific emphasis on the strategic role of learning. Although we focus on research conducted since Aguinis & Kraiger (2009), we also include older research that either may not have been cited in previous reviews or deserves repeating because it is relevant to our organizing themes. These themes include thinking differently about learning, reconsidering the form and design of learning, facilitating learning in the workplace, expanding the scope of learning outcomes, and improving methodology in learning research. Below we describe each theme, related research, and recommendations for future research.

THINKING DIFFERENTLY ABOUT LEARNING

Traditionally, organizations have relied upon, and researchers focused on, learning that occurs through formal training and development programs. US organizations spent approximately \$164.2 billion on formal training and development in 2012 (Miller 2013). Participation in these programs is often mandatory. Development may include some forms of training but typically refers to formal education, job experiences, relationships, and personality and skill assessments that help employees prepare for future jobs or positions. Increasingly, the majority of formal training and development initiatives are, and should be, strategic in the sense that they emphasize acquiring the KSAOs necessary to help organizations increase their ability to detect change, adapt, and anticipate trends (Kraiger & Ford 2006).

However, time and workload demands, budget constraints, and a geographically dispersed workforce make it hard for organizations to offer, and employees to attend, formal programs. Even when employees do attend formal programs, it is difficult for them, owing to the demands of their roles, to bring the level of energy and attention needed to learn. One way that organizations are attempting to overcome the difficulties of learning in today's workplace is through providing formal training and development programs using online delivery and instructional methods. In 2012, technology-based learning, which includes e-learning, online learning, and mobile learning, was used on average in 39% of organizations' formal learning hours (Miller 2013).

Continuous learning, which occurs outside the realm of formal training and development, may be more important for the development of human capital resources (Sessa & London 2006). Continuous learning includes informal learning (Marsick & Watkins 1990), deliberate practice (Ericsson et al. 1993), incidental learning (Marsick et al. 1999), workplace learning (Raelin 1997), and self-development (Orvis & Leffler 2011). It is estimated that informal learning accounts for up to 75% of learning within organizations (Bear et al. 2008). Informal learning includes both cognitive activities and behaviors, including learning from oneself through self-reflection; learning from others such as peers, supervisors, and mentors; and learning from noninterpersonal sources,

Learning: the process of employees enhancing their human capital through acquiring knowledge, skills, abilities, and other characteristics

Formal training and development: training and development programs, courses, and events that are developed and organized by an organization to help its employees acquire KSAOs

Continuous learning: the process of employees' changing their behavior based on a deepening and broadening of their skills, knowledge, and worldviews

Informal learning: learning that may be intentional or incidental, is not highly structured, and is a volitional behavior

Knowledge sharing:
the provision of task information and know-how to collaborate and help others to solve problems, develop new ideas, or implement policies

such as reading print or online material (Doornbos et al. 2008, Lohman 2005). Informal learning enables individuals to acquire knowledge and skills on the job, providing the potential for more meaningful learning experiences than formal training and development allow (Benson 1997, Tannenbaum et al. 2010).

The development of human capital also requires consideration of how to transfer expertise and knowledge from experts who have it to novices who need it (Connelly et al. 2012, Hinds et al. 2001). One way to do so is through knowledge sharing. Knowledge sharing can occur directly through face-to-face or technology-aided interactions with experts, or it can occur indirectly through documenting, organizing, and capturing knowledge for others (Cummings 2004, Pulakos et al. 2003). Knowledge sharing between employees and across teams allows an organization to exploit existing knowledge-based resources (Cabrera & Cabrera 2002, 2005; Damodaran & Olphert 2000). Knowledge sharing can contribute to an organization's competitive advantage in a number of ways, including cost reduction, faster completion of new product development, increases in innovation capabilities, and enhanced sales growth and revenue from new products and services (e.g., Mesmer-Magnus & DeChurch 2009). Studies in the information systems and organizational behavior literatures have examined knowledge sharing at different levels of analysis (Wang & Noe 2010). **Table 1** summarizes the trends in thinking differently about learning and their implications for research and practice.

RECONSIDERING THE FORM AND DESIGN OF LEARNING

The traditional form and design of learning have tended to emphasize employees as passive agents acquiring knowledge and skills deemed appropriate by the organization for direct transfer to their jobs. However, learning is becoming more learner controlled, socially affected, and recognized as naturally occurring in the workplace.

Table 1 Workplace trends and their implications for research and practice

Trends	Research questions	Implications for practice
The realities of the workplace constrain the use and effectiveness of formal training and development programs.	What antecedents and conditions facilitate continuous learning, especially informal learning, and knowledge sharing? What aspects of human capital resources are influenced by continuous learning and knowledge sharing?	Organizations should develop human capital resources using a broader perspective of learning, including continuous learning, informal learning, and knowledge sharing.
Although investment in formal training and development continues, there is increased use of online delivery and instructional methods and mobile learning that provide learners more control over what, where, and when they learn.	How do cognitive, emotional, and interpersonal job demands and interruptions influence the effectiveness of online delivery and instructional methods and mobile learning?	Organizations should pay more attention to facilitating learning and transfer both inside and outside a training and/or development event or program.
Face-to-face or technology-aided knowledge sharing is necessary for transferring expertise and knowledge.	What contributes to knowledge hoarding rather than sharing? How can human resource practices facilitate knowledge sharing?	Organizations should facilitate knowledge sharing among individuals, teams, departments, and divisions to capitalize on existing knowledge-based resources.

Evolution of Learning Design

The most prevalent instructional system design (ISD) model takes a systematic approach for designing learning, including conducting a needs assessment, identifying training objectives and evaluation criteria, creating a learning environment, and insuring transfer of training and evaluation (Gagne 1992). The ISD model has been invaluable for both practitioners and academics by serving as an organizing framework for identifying gaps in training and development research and stimulating the study of academically and practically significant research questions (Salas & Cannon-Bowers 2001). However, the ISD model needs to be adapted to fit the emerging emphasis on person-centered rather than instructor-centered learning, particularly for technology-based learning methods. For example, the active-learning model is composed of three primary design elements—exploratory learning, error-encouragement framing, and emotional control—that along with several individual differences (cognitive ability, trait learning goal orientation, and trait anxiety) influence the cognitive, motivational, and emotional processes during learning and thus the transfer of trained skills (Bell & Kozlowski 2008). The third-generation learning model incorporates the components of the active-learning model yet places an emphasis on social interaction, particularly as it occurs in an online learning environment (Kraiger 2008a,b). Inherent in the third-generation model is the assumption that knowledge is socially constructed with shared meaning based on instructor–learner interactions and learner–learner interactions. The implications of active-learning and third-generation models are that learning design needs to (a) focus on creating conditions in which the learner is both actively participating and socially embedded with other learners and the instructor, (b) define broad content areas to allow the learner choice in what to learn, and (c) create instructional strategies to facilitate collaborative learning. The principles of active-learning and third-generation instructional design have stimulated research on the learning processes and learning methods, as discussed below. **Table 2** highlights current trends in the form and design of learning and their implications for research and practice.

Instructional system design (ISD):

a systematic step-by-step approach for designing training and development programs

Transfer of training:

the use of learned knowledge, skills, and abilities on the job

Self-directed learning:

learners' active and volitional approach to conceptualize, design, conduct, and evaluate a learning project

Self-Regulation and Self-Directed Learning

Self-regulated learning is the amalgamation of affective, cognitive, and behavioral processes during learning, in an effort to reach a desired goal (Sitzmann & Ely 2011). Regulatory mechanisms used during self-regulated learning include planning, monitoring, metacognition, attention, persistence, and time management. Alignment of learner goals with learning objectives, learner perceptions that goals are attainable, and maintenance of learner motivation are important for both self-regulation of goals and self-directed learning. Self-regulation failure in the form of either goal abandonment or goal switching may result if goals are misaligned or deemed unattainable or if learner motivation is low (Schunk & Zimmerman 2012). Goal abandonment has been investigated as a cause of attrition from voluntary online training. Sitzmann (2012) found that the self-regulatory process fully mediated the relationship between conscientiousness and attrition from training. Conscientiousness moderated the effects of commitment and self-efficacy on attrition. That is, a high level of conscientiousness seemed to serve as a buffer against learners dropping out of training, especially for those who were less committed or less confident. Interventions in which learners are reminded of self-regulation appear to help them effectively manage their time during training and to counteract attrition, a common disadvantage of volitional online learning (Sitzmann et al. 2009, Sitzmann & Ely 2010).

Self-directed learning may occur formally or informally, online, or in the context of social learning. Self-directed learning has been discussed in the literature for decades, but research on its

Communities of practice: groups of people with a shared interest who frequently interact to learn, share knowledge, and practice skills

antecedents and consequences has been anecdotal or based on case studies. Gureckis & Markant (2012) suggest that the benefit of self-directed learning may result from enhanced encoding and retention of information by learners because they are active in the learning process.

Social Learning and Communities of Practice

It is well established that social learning occurs through observation, imitation, and reinforcement (Bandura 1962). Social learning remains relevant, but the social context for learning has drastically changed with advancements such as social media providing access to a greater number of models or social others to learn from. This suggests that our traditional model of social learning should be revisited. One emerging area of research focuses on the effectiveness of learning from others from an evolutionary perspective. Using a computer-simulated tournament, Rendell et al. (2010) showed that social learning was the most effective mode of learning when compared with asocial forms of learning (trial and error learning, a combination of social and asocial learning) because it is an adaptive process. Adaptation during social learning may occur through the adoption of either explicit behavioral innovations or new behavior having resulted from error. To the extent that these errors are imitated and passed on, they may remain in the population. Although this study focused only on individual adoption and adaptation of behavior, the evolutionary perspective may be useful for understanding how human capital emerges from the individual level to the team, organization, and industry levels.

Social learning has also recently been studied in the context of communities of practice (Lave & Wenger 1991, Wenger 1998). Communities of practice have been used by organizations in an attempt to facilitate informal learning specifically relevant to a desired area of expertise (Li et al. 2009). Research on communities of practice has been criticized for its lack of theoretical grounding and the use of the construct to describe many kinds of social learning (Storberg-Walker 2008, Li et al. 2009).

Recent work by Kirkman et al. (2011) is illustrative of the theory-driven approach needed for understanding communities of practice. The authors showed how organizational communities of practice (OCoP) are important for development of human capital resources through knowledge sharing at the organizational level. Their model included leadership, empowerment, the structure of tasks, and OCoP relevance for organizational effectiveness. They found that external community leaders play an important role in enhancing OCoP empowerment, particularly to the extent that task interdependence was high. Empowerment, in turn, was positively related to OCoP effectiveness. OCoP designated as core by the organization, that is, working on critical issues, were more effective than those that were noncore.

E-learning: Gaming, Simulations, Massive Open Online Courses, and Social Media

The use of technology for delivering and facilitating learning is becoming increasingly popular because traditional face-to-face learning methods are expensive and difficult to bring to geographically dispersed employees. Although e-learning has high development costs, organizations can potentially reduce their overall learning costs compared with face-to-face instruction through reduced travel and lodging costs, recurring instructional costs, and lost wages by learners. These cost savings come from learners' ability to access e-learning anywhere and anytime from a personal computer, tablet, or smartphone, thus eliminating the need for an instructor (Bedwell & Salas 2010). However, e-learning is not inherently more effective than other instructional methods. Emerging research suggests that for organizations to develop human capital from e-learning, they must insure that it facilitates learning and transfer of training through the use of practice, feedback,

Table 2 Advances in the form and design of learning and their implications for research and practice

Advances	Research questions	Implications for practice
The social embeddedness of learning has increased and is recognized as naturally occurring in the workplace.	What role does social learning play in human capital development, and what are the implications for human capital of adaptation during learning? In what ways is social learning different from other modes of learning in terms of what is learned and when and how learning transfers? What types of knowledge and skills are learned most effectively in the various forms of social learning (social networks, OCoP, MOOC forums, etc.)? Do learner characteristics such as self-efficacy and openness to experience influence the extent of learning that occurs from MOOCs, OCoP, and social networks?	Organizations should acknowledge the importance of social learning in the workplace and consider how to best manage or facilitate it so that it contributes to human capital resource development aligned with strategic goals.
Learning has become increasingly controlled by the learner and frequently occurs outside of a formal classroom, and its effectiveness depends on the active involvement of the learner.	Do individual differences explain variations in the learning of individuals engaging in self-regulated learning or blended learning? Can self-regulation of learning strategies be cultivated? What role should the instructor have to maximize the effectiveness of blended learning? For example, do enthusiastic, participation-oriented instructors combined with meaningful and engaging online learning facilitate better learning outcomes? Are there certain circumstances or learning experiences that may be more effective using instructor-led training, compared with self-regulated or blended learning? How does self-regulated learning differ in both formal and informal contexts? What are the antecedents and consequences of informal learning? Does it influence organizational outcomes, and if so, what are the mechanisms through which this occurs? Is informal learning an incidental or deliberate process? What are its starting and ending points?	Organizations should encourage learners to engage in self-regulation during online learning. Simulation games are most effective as a supplement to another instructional method. Effective simulation games actively engage the learner with the content and allow unlimited learner access.

(Continued)

Table 2 (Continued)

Advances	Research questions	Implications for practice
Learning is leveraging advances in technology and social media.	How do the characteristics of various technologies used for learning delivery and instruction influence what is learned, the time spent learning, learning difficulty, and transfer of training? What are the mechanisms through which simulations, games, and social media contribute to learning? How should social media tools be designed to maximize learning? What learning outcomes are influenced by social media?	The use of online and mobile technology for learning delivery and instruction can reduce training costs for geographically dispersed employees. However, to realize benefits, designers and managers must focus on how to maximize learning and transfer of training considering the learning objectives.
Prelearning interventions and design elements can facilitate learning and transfer of training.	What are the appropriate timing and intensity of transfer of training interventions? How does the structure of after action reviews (AARs) influence their effectiveness, especially with respect to knowledge acquisition?	Organizations should adopt prelearning interventions and AARs to facilitate learning and transfer of training.

meaningful content, engagement of multiple senses, action planning, follow-up, and manager and organizational support.

Learning through gaming and simulation can be done on- or off line, with single or multiple players (Castranova 2005, Malaby 2006). It deeply engages the learner while providing a fun and stimulating way to learn from meaningful scenarios that approximate reality (Kriz 2009). Recent taxonomies of game attributes can help researchers investigate the characteristics of effective gaming and simulations. Wilson et al. (2008) proposed varying relationships between game attributes (adaptation; assessment; challenge; conflict; control; fantasy; equipment, interpersonal, or social interaction; language/communication; location; mystery; pieces or players; progress and surprise; representation; rules/goals; safety; sensory stimuli) and learning outcomes (cognitive, skill-based, or affective learning). Based on the judgments of subject matter experts who were serious gamers, Bedwell et al. (2012) developed a more parsimonious taxonomy of gaming attributes including action language, assessment, conflict/challenge, control, environment, game fiction, human interaction, immersion, and rules/goals.

In a meta-analysis of computer-based simulation games, Sitzmann (2011) found that learners' self-efficacy and knowledge were higher for those trained using simulation games compared with those trained using other methods. Simulation games were most effective when the learners were actively engaged with the content, they could access the simulation as many times as they wanted, and the simulation was supplemental rather than the primary instruction method.

Social media, including Twitter, Facebook, and LinkedIn, has merged online context with a social element, providing a potential catalyst for learning through opportunities to network, meet new people, and interact with consumers. Individuals who have grown up in the social media revolution may actually learn in a different way than do those from previous generations (Dabbagh & Kitsantas 2012). The heightened interest in how learning can occur through social media has been augmented by the increased availability of smartphones and tablet computers. Lewis et al. (2010) argue that it is not just faster technology, offering continuously accessible social

information, but rather the social media tools themselves that allow individuals to participate in the conversation and to share with each other. Dabbagh & Kitsantas (2012) suggest that we may be able to gain insight about self-regulation of learning in both formal and informal contexts through the integration of social media and personal learning environments—that is, online media where information can be created, organized, or shared and learners can regulate the content and speed of learning.

Although some companies have banned the use of social media by their employees, arguing that it diminishes productivity, others have encouraged its use and attempted to leverage it to manage social and professional connections internal to the firm (Robert Half Technol. 2011). Ravenscroft et al. (2012) provide insight into how to design social media for learning. They suggest that the design of social learning should be an iterative process that considers the knowledge maturation process and the goal of linking individual informal learning, organizational learning, and knowledge management. Knowledge maturation is how knowledge becomes less contextualized and more explicit, and as a result becomes easier to communicate.

The knowledge maturing process includes expression of ideas, distribution in communities, formalization, ad hoc learning, and standardization. Wodzicki et al. (2012) investigated using StudiVZ, an educational social media tool in Germany. They found that students used the tool to discuss scholastically relevant material, but the tool was most often used as a means for social integration. It would be beneficial to conduct similar research in the workplace. Because the social context is often an important factor for other types of learning (Jarvis 2012), we may gain insight from evaluating social learning as a possible antecedent or enabler of other types of learning that occur in organizations.

Massive open online courses (MOOCs) have been lauded in the media as revolutionizing online learning and as the “door to the Ivy League for the masses” (Ripley 2012). MOOCs use traditional teaching tools, such as readings, problems, videos, and lectures, but also have an interactive forum in which students and professors can ask and answer questions, start discussions, and share ideas. MOOCs’ most attractive features include their flexible structure and collaborative environment. Students can choose their level of participation, schedule their course time at their will, and interact through social media to further their peer-to-peer and social learning. MOOCs are also almost universally affordable. As of early 2013, 325 MOOCs were offered with class sizes of up to 300,000 people (Waldrop & *Nature* 2013). It should also be noted that there are other forms of online education that have contributed to the enthusiasm and demand for online learning, including ALISON, Khan Academy, Coursera, Peer to Peer University, Udacity, edX, and Udemy. There is limited published research on the effectiveness and impact of MOOCs. Some reports show low course-completion rates, ranging from 20% to less than 10%, suggesting that the effectiveness of MOOCs may be limited (Jordan 2013).

Massive open online courses (MOOCs):
open enrollment courses that integrate social and online learning

Blended learning:
learning that includes instructor-led learning and technology-aided learning methods such as online learning

Instructor-Led Learning, Blended Learning, and the Role of the Instructor

Despite the increased interest in and use of technology-based instructional methods, instructor-led training remains the most frequently used method of instruction (Miller 2013). Although much of the previous discussion focuses on a movement toward informal and self-directed learning, the formal training context, both in pure and blended forms, remains a relevant field of study. Blended forms of learning were created to extract the best of both worlds: the face-to-face social context of classroom learning and the cost-effectiveness and flexibility of online learning (Bonk & Graham 2012). However, blended forms of learning may still be susceptible to negative factors associated with both types of learning, including disengagement due to self-regulation, failure in the online portion of learning, or a lack of interest in lecture or other passive forms of learning.

Experiential learning:
learning that occurs
through engaging in
challenging
experiences, reflecting
on those experiences,
and through subjective
reasoning
extrapolating new
knowledge

A number of important questions about blended learning need to be investigated, including the optimal mix of face-to-face and online instruction, the role of the instructor, and the types of knowledge, skills, or competencies best learned online, face-to-face, or with a blended approach. Researchers have only started to address these questions. Beaudoin (2013) reflects on the role of the instructor in the context of growing blended and online forms of learning, acknowledging that owing to increasing reliance on technology, instructors have in some cases assumed a more ancillary role, serving as a contact for questions and clarifications and less often as a facilitator of knowledge. Although some individuals welcome the self-directed nature of such learning, others find it overwhelming and an impediment to their development. For example, those who have higher self-efficacy and who experience higher loci of control will persist in the face of challenge and may be better equipped to engage in online and self-directed learning than those who do not (Beaudoin 2013, Sitzmann & Ely 2011). These individuals (those with less self-efficacy and loci of control) may find additional value in classroom-based learning where the instructor can provide coaching should the individual get off track.

Informal Learning

Research has illustrated that informal learning can occur through employees' voluntary participation in formal training activities and through being a team member (Kukenberger et al. 2012, Milia & Birdi 2010). Some studies have investigated how individual differences and the context affect informal learning. Choi & Jacobs (2011) found that personal learning orientation and participation in formal training positively influenced informal learning. Noe et al. (2013) found that zest was the only significant predictor of informal learning when considered along with the Big Five traits and generalized self-efficacy. Based in positive psychology, zest is a character strength defined as one's approaching life with eagerness, energy, and anticipation (Peterson & Seligman 2004). Furthermore, Doornbos et al. (2008), Ellinger (2005), and Kyndt et al. (2009) found that informal learning was influenced by contextual factors including commitment of management to learning, an internal culture committed to learning, work tools and resources, and access to people to form webs of relationships. Informal learning at the team level is influenced by members' shared beliefs of psychological safety (Edmondson 1999, 2002). Studies focused on outcomes of informal learning have provided initial evidence that it is positively related to contentment, overall job satisfaction, and self-rated measures of job performance (Bear et al. 2008, Rowden & Conine 2005).

Finally, informal learning may be equally important to or even more important than other forms of learning for the development of human capital resources (Birdi et al. 1997, Roy 2010). Van der Heijden et al. (2009) found that employability was highest in the presence of both formal and informal learning. Their findings suggest that organizations should consider not only whether or not to facilitate formal or informal learning but also how to determine an optimal mix. Also, their results suggest that there may be an interactive effect between forms of formal and informal learning such that informal learning experiences may be leveraged or enhanced by formal training opportunities.

Experiential Learning

Experiential learning is valuable for acquiring both tacit and explicit knowledge (Armstrong & Mahmud 2008, Willingham et al. 1989). Experiential learning has several distinguishing features, including challenging the learner and providing a deeper, more engaging learning experience that provides contextualization and nuanced learning (Moon 2004, Nonaka 1994). How learners

appraise and cope with challenging experiences determines whether or not learning occurs (LePine et al. 2004, Webster et al. 2011). Experiential learning may also be beneficial for teams, resulting in higher levels of creativity (Gino et al. 2010).

Some types of experiential learning emphasize learning from errors. Research that has investigated the influence of individual differences such as emotionality on error learning is inconclusive (Beier & Kanfer 2010, Zhao 2011).

After action reviews (AARs): learning experiences in which learners analyze their behavior and review their performance on tasks and events that occur during training

Prelearning Interventions and Transfer of Training

Researchers have considered interventions to facilitate learning or to insure that learning is transferred or applied in the work setting. Mesmer-Magnus & Viswesvaran (2010) found that attentional advice and goal orientation that direct learners' attention, set expectancies, inform training goals and objectives, activate memory, and stimulate recall of prior knowledge were most effective for learning gains. The voluminous body of research on transfer of training has focused on three areas beyond the design of the formal learning experience to promote transfer: individual differences, organizational climate and culture, and specific transfer enhancement interventions. Blume et al.'s (2010) meta-analysis of this literature supported relationships between transfer and predictors such as cognitive ability ($\rho = .37$), conscientiousness ($\rho = .28$), motivation ($\rho = .29$), and a supportive work environment ($\rho = .36$). Interestingly, most predictor variables had stronger relationships with transfer when the focus of training was on open skills, or those needed to respond to variable stimuli with a number of acceptable responses (e.g., leadership development), compared with closed skills, or those needed to provide correct defined responses to predictable stimuli (e.g., computer software skills).

After-action reviews (AARs) are a design element that can facilitate learning and transfer of training. AARs have traditionally been part of military training and operations but are frequently used in training and leadership development programs as well. AARs have been found to increase leadership behavior following a leadership development program, especially for learners who have had challenging work experiences and are high in conscientiousness, openness to experience, and emotional stability (DeRue et al. 2012b). Villado & Arthur (2013) found that student teams who used AARs, compared with those who did not, had enhanced team performance, team efficacy, openness of communication, and cohesion, but not team declarative knowledge. AARs were equally effective regardless of whether the feedback given was subjective or objective.

FACILITATING LEARNING IN THE WORKPLACE

Individual differences and situational factors influence employees' motivation and opportunity to participate in learning. Although we discuss individual differences and situational factors separately, adopting a person-in-situation perspective can help us better understand learning because such a perspective emphasizes how situational factors (such as developmental challenges, learning design characteristics, or organizational support) work as moderators by amplifying or constraining the influence of individual differences on learning outcomes (Tett & Burnett 2003). Many studies focused on learning have supported the person-in-situation perspective (e.g., Gully & Chen 2010, Kraimer et al. 2011).

Below we discuss the roles of the work environment, social exchanges, and individual differences in facilitating learning. Research questions and implications for practice for each facilitating factor are presented in **Table 3**.

Table 3 Factors facilitating learning and their implications for research and practice

Facilitating factor	Research questions	Implications for practice
Work–family climate	How does an organization’s support for work–life balance influence learning?	Meeting work–family balance needs allows employees to better identify and take advantage of discretionary learning opportunities.
Teams	What team characteristics have the greatest impact on social and self-directed learning? How can learning be better facilitated among team members that are not colocated? How can the different types of learning required by different types of team-based knowledge work best be supported?	A team work structure can facilitate learning of team members through member interactions.
Task characteristics	Are there key boundary conditions or moderators of the relationships between autonomy and accountability on informal learning?	Providing greater accountability and autonomy helps facilitate informal and self-directed learning. Providing employees in demanding jobs with learning opportunities may help reduce strain. Providing feedback is important for developing leadership skills, especially in highly challenging developmental assignments.
Job crafting	How do job characteristics influence job crafting behaviors and learning intentions?	Job crafting can create a push for learning if it expands the job to stretch an employee, but it can also impede learning if it restricts the job to previously mastered tasks.
Social networks	What factors best help facilitate learning from relationships?	Leaders need to be architects and orchestrators of social interaction and communication, providing the context and culture to support social learning, without intruding into the actual exchange process.
Mentoring	Is learning an important outcome of development networks, or does it serve as a mediator between such networks and career outcomes?	Organization should use mentoring relationships to facilitate informal and personal learning.
Personality traits	What situational factors can prime, activate, or help compensate for traits shown to predispose individuals to engage in learning? Are personality traits related to some learning and transfer of training outcomes but not others?	Organizations should prime a learning goal orientation state and provide support and opportunity for learning and self-development.
Emotions	How do learning methods evoke different emotions among learners? How do learner emotions impact different learning outcomes? How do emotional states impact decisions to engage in learning activities?	Instructors and learning methods can influence learners’ emotions toward learning and thus subsequent knowledge and skill acquisition.

Work Environment

Beginning with contextual factors, we specifically review recent evidence regarding the impact of culture and climate, team structures, job characteristics, and job crafting in facilitating workplace learning.

Engagement: full involvement in one's work and commitment to the job and organization

Culture/climate. Several studies have demonstrated the importance of a supportive learning culture in facilitating engagement in learning and knowledge-sharing behaviors. Choi & Jacobs (2011) found that a supportive learning environment had a significant positive indirect effect on informal learning through its influence on employees' participation in formal learning courses and programs. A supportive learning culture also has a positive and direct influence on team outcomes such as creativity and collaborative knowledge creation practices as well as an indirect effect on team performance (Yoon et al. 2010).

Research has also focused on the role of psychological safety for facilitating learning. Establishing a safe climate is important for learners' willingness to try new things, take risks, or otherwise step out of their comfort zones without fear of negative repercussions for errors (Noe et al. 2010). Kostopoulos & Bozionelos (2011) found psychological safety to be linearly and non-linearly related to team exploitative and exploratory learning, respectively; exploratory and exploitative learning were additively related to team performance and mediated the relationship between psychological safety and performance.

Only one study has examined the effects of climate on work–family balance, specifically the moderating role of work–family conciliation, the degree to which an organization creates conditions for employees to reconcile their work and family lives, on the relationship between opportunities for learning and development and well-being (Rego & Cunha 2009). The study's results showed that when work–family conciliation was low, opportunities for learning and development did not lead to greater well-being. Studies based on conservation of resources theory, which addresses the balance between one's resources and the demands that require those resources (Hobfoll 1989), may be a useful starting point for future research in this area.

Teams. A team work structure can facilitate learning simply through member–member interactions. Kostopoulos et al. (2013) developed and tested a model in which learning originated in individual intuitions, was amplified through interpretation and integration, and manifested itself at the team level via the codification of collective cognition and action to affect team performance. Erhardt (2011) provided a typology of team-based knowledge work (TBKW) to describe specific processes of working with knowledge: teamwork that requires knowledge sharing (Gilson & Shalley 2004), knowledge creation (Jordan et al. 2009), and ongoing learning (Raelin 2001). Four types of TBKW were delineated—standardized, modular, integrative, and collaborative—based on the structure of the team's tasks or problems (ill- versus well-structured) and knowledge composition (heterogeneous versus homogeneous) within the team. These different types of TBKW require different types of knowledge processing and sharing within the team.

Fang et al. (2010) examined structure as a mechanism for balancing the trade-off between exploration and exploitation. They concluded that moderate levels of cross-team linking lead to the highest equilibrium performance by enabling superior ideas to diffuse across teams without reducing organizational diversity. Andres (2011) found face-to-face collaboration to be superior to technology-mediated collaboration in facilitating team-level cognitive functions such as team learning, team reflexivity, and shared mental model development.

Task characteristics. The design of jobs performed individually or in teams can also facilitate learning. Task characteristics such as accountability, autonomy, and the amount of challenge or demands appear to be important for facilitating learning. A lack of accountability has been identified as one of the most frequent barriers to managerial learning (Longenecker 2010). This is likely because when managers are not held accountable for their own growth and do not receive support in their efforts to learn and improve, their development is stifled.

Research on autonomy has shown that it can have both a direct and an indirect influence on learning. Providing more team structure (specialization, hierarchy, and formalization) was positively related to learning, and more organizational-level structure had an adverse influence on learning (Bresman & Zellmer-Bruhn 2013). Psychological safety mediated the positive relationship between team structure and learning, and task autonomy constraints mediated the negative relationship between organizational structure and learning. Liu & Fu (2011) showed that an autonomy-supportive team climate, mentors' autonomy support, and protégés' autonomy orientation were all positively related to protégé learning. In addition, an autonomy-supportive team climate augmented the effects of the mentors' autonomy support and protégés' autonomy orientation. Fagerlind et al. (2013) found that active jobs, low-strain jobs, high degrees of social capital, and innovative learning climates all increased the likelihood of experiencing work-related flow. For employees in jobs with high decision latitude, regardless of demands, there was an increased likelihood they would benefit from social capital and an innovative learning climate. These results emphasize the importance of autonomy and skill utilization to enable employees to use additional job resources in order to promote engagement and well-being.

A number of studies have investigated how job demands influence learning. Weststar (2009) provided a more nuanced picture of the role of job demands in formal, informal, and nontaught learning. Job demands were positively associated with all three learning activities, social control was associated with both informal and nontaught learning, and technical control was associated with only nontaught learning. Panari et al. (2010) found that the job demands–strain relationship was stronger when learning opportunities and development were low.

Several studies have enhanced our understanding of the conditions needed for challenging assignments, which are often part of employee development efforts, to result in learning and other positive outcomes. Preenen et al. (2011) found that challenging assignments were negatively related to turnover intentions and job search behaviors and that these relationships were mediated by on-the-job learning. Van Ruysseveldt & Van Dijke (2011) found that the positive relationship between workload and workplace learning opportunities occurred only at moderate levels of autonomy, whereas at both low and high levels of autonomy, the relationship was negative. DeRue & Wellman (2009) found that the relationship between developmental challenge and leadership skill development exhibited a pattern of diminishing returns, which could be offset by access to feedback. Access to feedback likely offsets the diminishing returns in leadership skill development by enhancing self-awareness, reducing individuals' uncertainties regarding performance and success, and helping reduce the stress associated with challenging work experiences. A similar pattern of results was observed for individuals high in learning goal orientation.

Job crafting. Job crafting, which emphasizes the active role employees play in the design of their jobs by shaping the physical, emotional, relational, and/or cognitive aspects of their job tasks (Grant & Parker 2009, Wrzesniewski & Dutton 2001), may motivate learning. To meet their needs, individuals may job craft in a variety of ways, but through increasing structural job resources, social resources, and challenging job demands, individuals are likely to learn both informally, through social interactions, and formally, through participation in formal training and development programs (Daniels et al. 2009, Tims & Bakker 2010).

Job crafting behaviors may differ based on individual perceptions of challenge or hindrance. Whereas one individual may find a work stressor to be a hindrance, another may appraise the same work stressor as a challenge (Webster et al. 2011). This differential appraisal may influence the relationships between job crafting, learning, and well-being and engagement (Tims et al. 2012, 2013). Petrou et al. (2012) found that jobs that are perceived as both highly demanding and providing high job control provide opportunities for learning through facilitating mastery feelings that help employees cope with job demands. In turn, mastery feelings enhance employees' capacity to learn and develop. Increasing job control in high-demand jobs may be an effective way to create an active-learning environment to foster personal initiative, but only to the extent that jobs are perceived as intended.

Social Exchange

Employees often learn through interacting with others (e.g., peers, mentors, supervisors, and customers). Below we discuss research on the role of social networks, development networks and mentoring, supervisor support, and trust and fairness perceptions in facilitating learning.

Social networks. Recent research emphasizes that learning and the transfer of training occur through social networks. Korte (2009) concluded that relationship building was the primary driver of socialization for new hires and that the work group, not the organization, was the primary context for socialization. Van den Bossche et al. (2010) found that transfer of training was positively associated with the number of ties in trainees' social networks. Researchers have also begun to examine ways to facilitate the building of relationships as well as the factors that foster learning from those relationships. Lawson et al. (2009) investigated cross-organizational relationship building with supplier organizations. They found that informal socialization mechanisms (e.g., communication guidelines, social events) played an important role in facilitating interorganizational knowledge sharing, whereas formal socialization mechanisms (e.g., cross-functional teams, matrix reporting structures) acted indirectly through informal socialization to influence knowledge sharing.

Climate, structure, leadership, resources, and experience have also been shown to facilitate learning from relationships. Carmeli et al. (2009) demonstrated that high-quality relationships contributed to perceptions of psychological safety, which in turn related to learning behavior. Hannah & Lester (2009) suggest that dense and well-defined learning networks are needed to facilitate the diffusion of knowledge but that to promote creativity, innovation, and exploration, network clusters should be kept semiautonomous from other clusters. Larsson et al. (2011) found knowledge brokering (i.e., connecting various knowledge sources) was a primary function of informal leaders who gained authority from expert knowledge and access to important information. Finally, Gardner et al. (2012) examined a team's relational and experiential resources and found that the distribution of both resources aided in the development of the team's knowledge integration capability for simpler tasks, but it created dysfunctional assumptions with more dynamic uncertain tasks.

Development networks and mentoring. Prior research has demonstrated that learning occurs from mentoring relationships. Recent research has examined factors that directly or indirectly influence learning from mentoring relationships and the role of nontraditional forms of mentoring on learning. Pan et al. (2011) found that self-efficacy moderated the mediated effects of supervisory mentoring on job performance and career satisfaction through personal learning. The mediating effects on performance were strongest when self-efficacy was high, and the effects on satisfaction

were highest when self-efficacy was low. Kraimer et al. (2011) demonstrated that providing career mentoring facilitated perceptions of organizational support for development. Williams et al. (2009) found that leader–member exchange (LMX) and the amount of peer mentoring in a team influenced the amount of career mentoring the leader provided to team members. Team leader mentoring had a positive relationship with informal learning that occurred among team members. Mentoring research has also broadened from its traditional dyadic focus to examine the support provided by development networks, that is, a constellation of people from different life domains (Dobrow et al. 2012).

Supervisor support. Social support from supervisors has long been recognized as important for both learning and transfer of training. Research has incorporated the use of leadership theories including transformational leadership and LMX to further our understanding of the role of social support in informal learning and knowledge sharing (Ouweneel et al. 2009, Zhang et al. 2011). Employees with high-quality LMX relationships with their supervisors engaged in more voluntary learning behaviors (Walumbwa et al. 2009) and perceived greater organizational support for development (Kraimer et al. 2011). Sluss & Thompson (2012) showed that the relationships between supervisory socialization tactics (i.e., supervisory job–focused advice, guidance, and role modeling), newcomer occupational identification, and perceived person–organization fit were mediated by perceptions of LMX.

Trust and fairness. Trust is a necessary condition for creating psychological safety and in turn enhancing learner engagement (Noe et al. 2010). In a study examining top management team member trust, Carmeli et al. (2012) found that trust was related to team learning from failures. Swift & Hwang (2013) found that affective trust was more important than cognitive trust in sharing interpersonal knowledge but that cognitive trust was more important in creating an organizational learning environment. Fairness and justice perceptions have been shown to be important in understanding organizational behavior but have received little research attention in the learning literature. In one of the few studies investigating justice perceptions in learning contexts, Zoogah (2010) found that they were related to intentions to participate in development activities but not to actual participation.

Individual Differences

Recent research has focused on better understanding the role of several traits in facilitating learning, notably, the Big Five traits, goal orientation, proactive personality, and learning agility. In addition, we also note some recent work on affective states and emotions.

Big Five traits and proactive personality. Blume et al.'s (2010) meta-analysis shows that conscientiousness had a moderate relationship with transfer of training ($\rho = .28$). Neuroticism ($\rho = .19$), learning goal orientation ($\rho = .14$), agreeableness ($\rho = -.03$), extraversion ($\rho = .04$), and openness to experience ($\rho = .08$) had weaker relationships with transfer of training. Komarraju et al. (2011) demonstrated that a reflective learning style partially mediated the relationship between openness and learning. Based on a meta-analysis of research examining the proactive personality–career success relationship, Fuller & Marler (2009) concluded that proactive personality was related to a variety of factors that contribute to career success, including psychological empowerment ($\rho = .45$), networking ($\rho = .31$), career initiative (an aspect of career planning) ($\rho = .35$), career self-efficacy ($\rho = .56$), organizational knowledge ($\rho = .31$), political knowledge ($\rho = .27$), and job performance ($\rho = .38$). This suggests that individuals with proactive personalities may be more likely to engage in broad problem-solving and improvement-related activities such as informal

learning than more passive individuals are. More proactive employees are also likely to engage in greater information exchange, which facilitates the building of trust relationships (Gong et al. 2012).

Goal orientation. Research on the role of goal orientation has broadened its focus by considering different types of learning-related cognition and behaviors. For example, Wong et al. (2012) suggest that individuals with a high learning goal orientation should be more likely to reflect on experiences (a key activity in informal learning) in a useful manner and learn more from them. Matzler & Mueller (2011) found that a learning orientation positively influenced knowledge sharing, whereas a performance orientation negatively influenced it.

Also, recent studies have added to our understanding of how goal orientation influences learning by adopting a person-in-situation perspective. Orvis & Leffler (2011) found three significant person–situation interactions were related to self-development participation. Specifically, workplace support for self-development interacted with learning goal orientation, openness to experience, and conscientiousness. Individuals with high levels of these traits also had high levels of self-development regardless of support. When dispositions were low, however, support compensated for low levels of these traits. Hirst et al. (2009) found that creativity was related to the interaction between learning goal orientation and team learning behavior (i.e., collective problem solving and reflection). For individuals with high levels of learning goal orientation, team learning behavior appeared to activate their creative dispositions.

Affect and emotion. Aguinis & Kraiger (2009) highlight that research has focused on the relationship between training reactions (such as satisfaction with the instructor) and learning outcomes but has paid less attention to relationships between the affective states learners experience during training and learning outcomes. Since Aguinis and Kraiger’s review, a few studies have begun to examine the role of affective states, emotions, and learning. Daniels et al. (2009) indeed found learning to be associated with pleasant affect but not anxious affect. Gondim & Mutti (2011) looked at the affective states experienced by course participants using time sampling. In general, the course generated affective states such as joy, excitement, pleasure, and pride. The authors also found that training activities that were more direct and realistic generated greater emotional impact and that team-based activities were associated with lower levels of anxiety than individual training activities were.

EXPANDING THE SCOPE OF LEARNING OUTCOMES

By examining the effectiveness of organizations’ human capital resource development demands, we expand focus beyond program- or individual-level outcomes to include organizational-level outcomes that are considered critical for competitive advantage. Recent research and practice have begun, and need to continue, to examine a broader set of outcomes, including multilevel performance, employment branding and social responsibility, employee engagement, and well-being.

Multilevel Performance

Performance as a learning outcome needs to be examined from a multilevel perspective, including unit and firm performance. In addition, the performance domain needs to be expanded to include innovation and financial outcomes.

Cross-level perspective. Research on learning outcomes has typically been conducted at either a micro, group or team, or macro level of analysis. However, because the development of human

capital resources depends on the linkages between learning at the micro (individual), group or team, and macro levels, human capital development must also be examined from a cross-level or mesolevel perspective. Typically, strategy research focuses on identifying organizational-level phenomena that generate above-normal returns. However, strategy research is beginning to recognize that microlevel phenomena, including individual knowledge, preferences, and beliefs, can also have important influences on firm performance (e.g., Foss 2011, Mollick 2012). Concurrently, there has been a push for industrial and organizational psychology research to study the psychological basis for a firm's competitive advantage, including the development of multilevel theory to understand how microlevel and macrolevel phenomena and their interaction contribute to competitive advantage (Ployhart 2012).

Strategic learning and financial performance. Training for the sake of training is not aligned with today's business reality (Aguinis & Kraiger 2009). Learning initiatives need to be designed, delivered, and evaluated, and their benefits clearly documented relative to strategic priorities. Learning must be evaluated in terms of the resulting economic gains relative to costs, recognizing that such relationships may not be linear, as there may well be points of diminishing returns (e.g., Bunderson & Sutcliffe 2003). There are a number of different ways learning can impact an organization's financial performance by improving revenue or reducing costs, some more direct than others, including improved efficiency, innovation, motivation, retention, and reputation. For example, Van Iddekinge et al. (2009) examined how training procedures impacted different aspects of unit or organizational performance over time. Using a sample of units of a fast-food organization, they found that variation in the use of training was related to unit performance and that changes in the use of training over time was related to change in unit performance over time including service performance, unit retention, and unit financial performance.

The field could benefit from more macrolevel research investigating questions that relate to the strategic role of learning, such as how to best structure the learning function (e.g., university model, business-embedded model), how training activities should vary by employees' strategic value, and learning's relative importance for firm performance compared with other human resource management (HRM) practices such as selection and compensation. Tannenbaum's (2002) model of the strategic training and development process could be a useful framework for such research. Tannenbaum's model suggests that effective learning practices are based on the linkages between the business strategy and metrics, strategic training and development goals, and specific training and development activities. Strategic HRM scholars provide another potentially useful perspective for macrolevel research. They suggest that because the strategic impact of human resources is contingent on its contribution to the effectiveness of strategic business processes, the value of this impact can be best realized by focusing on strategic jobs or the strategic core of the workforce related to critical business processes (e.g., Becker & Huselid 2006). A number of questions need to be addressed to understand the development of human capital as a strategic resource. We need to identify and examine those knowledge-related factors that contribute to the strategic nature of certain jobs. Also, research is needed to identify the types of learning that facilitate the acquisition of tacit and other types of knowledge necessary for effectiveness in strategic roles.

Creativity and innovation. Lopez-Cabrales et al. (2009) demonstrated that collaborative HRM practices increased the uniqueness of knowledge. Uniqueness of knowledge mediated the relationship between collaborative HRM practices and innovative activity, with innovation in turn contributing positively to firm performance. In contrast, knowledge-based HRM practices contributed to the value of knowledge (the extent to which employee knowledge can improve the

efficiency and effectiveness of the firm, exploit market opportunities, and/or neutralize potential threats) (Lepak & Snell 2002). However, the value of knowledge, that is, the degree to which the human capital lowers costs or provides increased services or product features that matter to customers, had no influence on innovation. Maurer et al. (2011) showed that knowledge transfer (conceptualized as the mobilization, assimilation, and use of knowledge resources) mediated the relationship between organization members' intraorganizational social capital and organizational performance outcomes of growth and innovation performance. Finally, Sung & Choi (2012) found that efforts by team members to effectively utilize their knowledge base stimulated proactive learning. Team knowledge utilization, but not team knowledge stock, was positively related to team creativity, which in turn predicted team financial performance. In addition, these results were stronger for teams facing high environmental uncertainty.

Employment Branding and Social Responsibility

One way that learning can contribute to creating a valuable, rare, and hard-to-imitate workforce is through employment branding, which influences the types of employees (skill sets, motivation, personalities) who are attracted to join and stay with the organization. Research to date on employment brands has largely focused on talent acquisition issues (e.g., job seekers' reactions and attraction based on recruitment practices; Collins 2007). Yet, organizations do have distinct images and reputations related to learning policies and practices as well. For example, General Electric's reputation and image as an employer are partly based on its \$1 billion investment in employee training and education and its management development center in Crotonville, New York (see http://www.ge.com/company/culture/leadership_learning.html). Research needs to investigate how image, reputation, and familiarity with learning practices and policies influence an organization's ability to attract, motivate, and retain employees who contribute to competitive advantage.

Corporate social responsibility (CSR) is an important part of both the employment and consumer brand image for many organizations. CSR represents an organization's actions and policies that impact not just economic performance, but also performance with respect to social and environmental impact (Aguinis & Glavas 2012). Garavan & McGuire (2010) concluded that there is a pressing need to examine the ways in which knowledge and expertise can be developed for the benefit of individuals, groups, organizations, communities, and humanity as a whole. Many organizations, including IBM, United Parcel Service, PwC, and General Mills, seek to enhance their brands through CSR by providing opportunities for employees to work on projects that help underdeveloped, underserved, and impoverished local and global communities and, at the same time, broaden employees' skill sets (for example, see <http://www.community.ups.com/Community/Community+Internship+Program>). Pless et al. (2012) found that a leadership development program that incorporated international service-learning assignments helped managers to develop the knowledge, skills, and mind-set to support the firm's global sustainability and CSR efforts. Additional research is needed to better understand the benefits of development programs that have a CSR focus, how to maximize those benefits, and the role that learning can play in motivating employees to initiate or participate in such CSR efforts (Aguinis & Glavas 2012).

Engagement

Learning enhances knowledge and skills, but it can also lead to important individual and organizational outcomes by enhancing motivation, engagement, and commitment through enhanced job confidence and the desire to reciprocate for the investment and opportunities provided. Several studies have demonstrated positive associations between learning opportunities and work

engagement (e.g., Albrecht 2010, Bakker 2011), but more are needed. For example, Minhas (2010) found that having employees focus on developing their strengths led to increases in work engagement as well as in psychological well-being, life satisfaction, and self-esteem. The relationship between learning and engagement also appears to be reciprocal. Bakker and colleagues (Bakker 2011, Bakker et al. 2012) found that engaged workers, particularly those with high levels of conscientiousness, were more open to new information and more likely to engage in active learning.

Well-Being

Developing human capital resources can improve organizational effectiveness and the well-being of organizational members. This protects human capital investments and lowers health-care costs related to stress, dissatisfaction, and an unsafe work environment. Training programs or learning initiatives that build efficacy and/or increase perceived control could have a positive impact on employee well-being. Researchers have indirectly addressed growth and well-being by studying the role of stress on learning and by examining learning outcomes such as self-efficacy, learners' reactions, and satisfaction (LePine et al. 2004, Sitzmann et al. 2008). There has, however, been limited examination of employee growth and well-being from a learning and development perspective. Thomas & Lankau (2009) found that high-LMX supervisors and nonsupervisory mentors served as resources that minimized emotional exhaustion through increased socialization. That learning in turn decreased role stress and subsequent burnout. Studies using convenience samples have shown that perceptions of opportunities for learning and personal development positively related to affective well-being (Rego & Cunha 2009) and psychological work adjustment, which in turn was related to lower rates of use of alcohol and tobacco (Wilson et al. 2004). Finally, in a nine-year ethnographic study, Michel (2011) documented the negative physiological consequences of organizations that control employees' hearts, minds, and energy. Negative effects did surface but not immediately. However, once employees attended to what their bodies were telling them, reducing the control of the organization, they were able to rebound and provide the organization with more positive consequences, including increased creativity, ethics, and judgment.

Another way to broaden the focus on well-being is to consider the role of learning on positive psychological capital (or PsyCap). PsyCap is an individual's positive psychological state of development characterized by self-efficacy, optimism, hope, and resilience (Luthans et al. 2007). Luthans et al. (2010) have shown that a specific type of training (psychological capital intervention) can enhance PsyCap. However, future research needs to investigate if increases in PsyCap also occur as a result of employee involvement in learning activities.

IMPROVING METHODOLOGY IN LEARNING RESEARCH

There are several methodological issues that we believe deserve attention. First, there is a need to establish the validity of new constructs that may help us better understand how human capital resources develop. For example, conceptual clarity is needed on learning agility, which is characterized as the capacity to learn from experiences with speed and flexibility (DeRue et al. 2012a). Learning agility is believed to be important for learning from developmental experiences. However, learning agility must be distinguished from similar constructs such as adaptability, informal learning, and general mental ability (Wang & Beier 2012) for it to be useful. Noe et al. (2010) proposed that learner engagement can help us better understand learner motivation and knowledge and skill acquisition. Learner engagement is based on the work engagement literature (Kahn 1990). Research is needed to determine the distinctiveness of learning engagement as well as to identify which

conceptualization of work engagement is most applicable to learning contexts. Salanova et al. (2005) might be a useful starting point for the development of a measure of learning engagement.

There are a variety of constructs that capture proactive learning behaviors, which are key for human capital resource development in today's business environment. These include human capital, social capital, informal learning, continuous learning, workplace learning, deliberate practice, and self-development (Ericsson et al. 1993, London & Smither 1999, Orvis & Leffler 2011). Some of these constructs are broad (human capital, social capital), and others are unique yet likely overlap (informal learning and self-development). For example, does informal learning include voluntary participation in formal training activities as well as face-to-face or online interaction with others, learning through reflection or experimentation, and learning through reading or seeking knowledge and information online (Dabbagh & Kitsantas 2012, Monaghan 2011)? The constructs have also been operationalized at different levels of analysis (informal learning, human capital, social capital). Additional research needs to help us understand the uniqueness, similarities, and nomological network of these constructs across the micro, team, and macro levels. Also, it will be important to determine if these constructs adequately capture the full range of employees' proactive learning behaviors or additional constructs are necessary.

Second, it is unlikely that a one-size-fits-all approach to human capital resource development will be effective across cultures. Research with an international focus has contributed to our understanding of training, development, and learning in non-US samples, as well as the preparation of expatriates for successful cross-cultural assignments. However, more studies investigating learning from a comparative perspective are needed to provide insight into how today's organizations, competing in the global marketplace, can design effective training practices and facilitate learning and transfer of training. For example, research is needed to address whether ideas such as knowledge sharing and informal learning are similar across cultures (etic) or are culturally specific (emic) (Conlon 2004). Also, research needs to examine the extent to which differences in power distance, uncertainty avoidance, and long-term orientation across cultures influence the adoption or effectiveness of different types of instructor characteristics, learning design, and learning climates (Gelfand et al. 2007).

Third, there is a need to conduct more multilevel research and develop multilevel theory. Mathieu & Tesluk (2010) provide an excellent primer on the role of training and development from micro-, macro-, and cross-level perspectives. They argue that mesolevel research is necessary but challenging because learning systems and their components likely combine and interact in many different ways across situations. They are not easily measured with indexes that sum the presence or absence of systems or their components. For example, understanding an organization's human capital and how it develops requires more than an assessment of employees' learning behaviors. Yet, mesolevel research on learning practices likely has a high payoff for research and practice. Case studies and qualitative research should provide initial insights into how learning practices influence organizations from a top-down or bottom-up perspective. This will also help us understand how an organization's human capital resources are developed through compilation processes involving a combination of learning practices and other HRM practices (Kozlowski & Klein 2000). A good example of the type of theory work needed is the multilevel theory developed by Chadwick & Raver (2013), which helps us understand how individuals' goal orientations influence the way that they individually and collectively engage in organizational learning.

Our understanding of several areas of learning, especially informal learning and transfer of training, has been limited by the use of cross-sectional designs and self-report measures of antecedent and outcome variables (e.g., see Blume et al. 2010). We encourage researchers to use designs that minimize common method variance and recognize that learning and human capital

development involve change over time. In their study on the development of social and human capital, Ng & Feldman (2010) provide a good example of how latent growth modeling can be used to assess change. Many researchers have been unable to evaluate change in their assessments of the effectiveness of learning interventions because of an inability to randomly assign study participants to conditions. Connelly et al. (2013) show how propensity scoring can be used in quasi-experimental designs to improve causal inference.

CONCLUDING REMARKS

We agree with Salas et al. (2012, p. 358), who concluded that “overall, a well-developed science of training has arisen in the last several decades.” However, we believe that the increasing importance of knowledge and skills for the employability and well-being of employees and the role that the development of human capital resources plays in organizations gaining a competitive advantage should shift the focus of training and development research. This means adopting a broader perspective of the study of learning as it relates to human capital resource development, including formal training and development, and an increased emphasis on the social aspect of learning, including informal learning and knowledge sharing. Many important and practically relevant research questions need to be addressed in the areas of new forms and designs of learning, facilitation of learning in the workplace, and consideration of different learning outcomes. For example, research that addresses the use of social media and blended learning in today’s workplace is especially needed owing to employees’ and organizations’ increased use and demand for technology-aided instruction. Also, construct validity work at the micro, team, and organizational levels is needed to better understand proactive learning behaviors such as informal learning, self-development, and development of social and human capital. A key challenge for researchers is to try to integrate micro and macro research from strategy, industrial and organizational psychology, and organizational behavior to understand how individual learning contributes to the development of human capital resources. This will require new theory development and empirical studies using cross-level and longitudinal research designs.

SUMMARY POINTS

1. To contribute to understanding how to develop human capital resources, we need to consider learning from a broader, more strategic perspective that includes formal training and development; self-directed, informal learning; continuous learning; and knowledge management.
2. The ISD model needs to be modified or adapted to better fit the learner-centered rather than the instructor-centered emphasis that has developed in learning design, particularly for technology-based learning methods.
3. Social media, simulations, games, and MOOCs are increasingly being used in practice, but we need a better understanding of their effectiveness.
4. Research has shown that AARs are a design element that can facilitate learning and transfer of training.
5. Studies of the effectiveness of the development of an organization’s human capital resource need to include important organizational-level outcomes that are considered critical for competitive advantage, such as multilevel performance, employment branding and social responsibility, and employee engagement and well-being.

6. Construct validity work is needed to better understand the nomological network of proactive learning behaviors, including informal learning, continuous learning, self-directed learning, and self-development.
7. The development of human capital resources depends on the linkages between learning at the micro or individual, group or team, and macro or organizational levels. There is a need to examine human capital development from a cross-level or mesolevel perspective based on strategic management and industrial and organizational psychology theory and empirical research.

FUTURE ISSUES

1. How do individual and team learning combine (compilation) to create human capital resources?
2. What are the antecedents and consequences of informal learning?
3. What is the role of social media in learning?
4. How effective are MOOCs?
5. What is the role of the context (job demands, work–life balance, social network) in the use and effectiveness of technology-based learner-driven methods?
6. How can training and development activities, learning, and the organization of the learning function best support an organization’s business strategy?
7. Job crafting will provide a context for increasing our understanding of how job characteristics influence learning intentions and behaviors.
8. Human capital resource development will be studied from a cross-level or mesolevel perspective.

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