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Title **Leadership competence: The life-long learning model**

Keywords **Leadership skills, leadership competence, learning from theory and practice, leadership self-learning, business simulations**

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Abstract The literature on leadership (and specifically on the development of leadership skills) agrees that leadership skills are best acquired through the combination of theory and practice. Similar to driving classes without placing individuals behind the wheel of a car, learning from theory alone does not allow applying the acquired knowledge and experimenting with alternative practical solutions. Leadership competence is more complex, it comprises knowledge, skills, capabilities to solve specific problems. The present work overviews the typical ways (learning from theory, practice, as well as through reflection and self-mastery) and methods (e.g., seminars, case-studies, training, coaching) to acquire and improve leadership competence and develops a model of leaders' learning life-cycle, in which these three ways of learning leadership build on each other, suggesting the possibility of leaders' life-long learning. We identify practice-oriented and realistic business simulations as one of the most promising but currently undervalued methods of acquiring leadership skills and developing leadership competence across all phases of leader's learning.

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1. Introduction

Are leaders born or made? This question is relevant since many years (e.g., Johnson et al., 1998; Marques, 2009) and is not clearly answered yet. From the one hand, the predisposed leadership ability, intelligence and personality are positively related to leaders' effectiveness (Arvey et al., 2007; Judge et al., 2002). From the other hand, leaders' performance can be enhanced through diverse leadership development programs, such as mentorship programs (Lester et al., 2011), personal development programs (Petriglieri et al., 2011) and coaching (Robertson, 2013) as well as business games (Kark, 2011).

Building on these findings, leadership scholars and practitioners consent that leadership can at least partly be learned or further developed even for individuals with originally high levels of leadership ability (Andersen, 2012). However, learning to be an effective leader is an ongoing endeavor (Heslin & Keating, 2017) while many leaders are not effective learners (Robertson, 2013), and even fail to learn from their own experience (Heslin & Keating, 2017).

The present work addresses the next and probably the most important question: How can leadership be learned best? The first way – through theory. Leadership is part of the curriculum in the undergraduate, graduate and postgraduate business education. Leadership theories are also often integrated into trainings and seminars mostly for upcoming or less experienced leaders. Learning from case studies allows to analyze and restore best practices or critical experiences by other people. However, acquiring practically usable leadership skills from the textbook and lecture materials is very difficult, because there is still no precise definition of leadership, knowledge about leadership theories is not sufficient, and leadership practice is usually complex and situation-specific (Siewiorek et al., 2012). Overall, leadership classes are criticized to be too compartmentalized, to be too theory-driven and lacking learning from praxis. Moreover, many students are young, lack working experience in organizations and have not developed sufficient capability to reflect on their behaviors and actions (Roberts, 2008).

The second way of learning leadership is through experience. Experiential learning provides the opportunity to apply concepts learned in the classroom or from the textbook in practice. This way of

learning is becoming increasingly relevant in education (e.g. in form of team projects or business games) (e.g. Riggio et al., 2003), but is more typically acquired through working experience. However, learning is not the certain outcome, but rather the possibility. In addition, it depends on the context and on the individual ability to learn from experience. This is in line with the literature arguing that leaders often fail to learn, and do not extend their leadership repertoire over years of practice (Brookfield, 1995).

The third way to learn leadership - through reflection, which is typically realized through leadership development programs, such as coaching, or mentoring - is growing in importance. Such programs are more focused on the development of leaders' self-awareness or specific leadership skills (e.g. communication and social skills, leading teams of employees, dealing with conflicts). The main challenge in the development of such programs is to define how learning through experience can be implemented while avoiding potentially undesirable effects on people or firm outcomes. These methods typically combine theory and practice, but require intensive co-work of trainers and participants. Self-mastery, which builds on and closely related to reflection, can be realized with the help of computer-based self-learning methods.

One of the most promising, but currently overlooked methods to learn leadership at different levels (including learning through reflection and self-mastery) is based on simulations. Simulations combine many advantages of the leadership learning ways described above. In realistic business environments, they allow practical application of theoretical knowledge and experimenting with different leadership styles and behaviors, stimulate reflecting on own actions and behaviors, and can be used to train specific leadership skills without the intense co-work with the trainer.

In the following, the present work briefly discusses the definition of leadership competence. After that, it describes the ways of learning leadership from theory, from practice, and through reflection and self-mastery. It argues that learning through reflection on own behaviors and actions, experimenting and adapting them to changing conditions and work on improving own practices is one of the most effective ways of learning leadership as it approaches higher levels of cognition, stimulates self-regulated learning,

and enhances their self-awareness. We develop a model of leaders' learning life-cycle, in which the three ways of learning leadership build on each other, suggesting the possibility of leaders' life-long learning. We identify business simulations as one of the most promising methods of acquiring leadership skills across all phases of leader's learning life-cycle.

2. What are leadership competences and what is the goal of learning?

Effective leadership is an important factor of success for any organization. However, leadership is not something that can be easily codified. Although we can observe actions of leaders, we cannot see leadership. One can only make sense of actions performed by leaders and the reactions of employees. This is what Sprenger (2012, 31) points to as "gluing a label" on leadership: individuals observing leadership motivate/explain specific actions from the perspective of an "assigned" leadership label. He argues that there are only few rules and no regularities that would be universally true. It is, however, a fact that leadership is a social phenomenon and requires acceptance by employees in order to achieve set purposes. Leading employees through formal legacy (e.g. hierarchy or bureaucracy) becomes more difficult due to an increasing complexity of interactions between leaders and employees. Thus, leadership cannot exist without acceptance and followership. Moreover, it often naturally emerges if there seems to be a lack of it. Nevertheless, not all individuals have ability to lead. Many must learn it first.

Leadership competence is cross-sectional in its' nature and comprises a number of methodological (e.g., analytical thinking, entrepreneurial thinking, decision-making skills, organization skills etc.), social (e.g., readiness to cooperate, empathy, negotiation skills, conflict management, team competence) and personal (e.g., self-leadership, goal orientation, responsibility, flexibility, self-reflection) competences and skills (Pastoors et al., 2019).

Leadership is based on the ability of individuals to set the goals as well as to direct and control a group of people to achieve that goals (e.g. Hicks & Gullet, 1975; Pastoors et al., 2019). As leadership implies leading a group of subordinates, the role of leaders can be particularly seen in managing work processes, in communicating with employees and bonding them to the organization, as well as in developing trust,

creativity and work motivation of the staff. However, effective leadership requires also self-leadership, i.e. the ability to reflect on own strengths, values and ideals as the latter flow through communication and actions of leaders into daily business. Self-management, time-management and one's own work coordination help to improve work with employees (Pastoors et al., 2019).

If leadership is understood as influencing behaviors of others to achieve set goals, one might agree that acquiring leadership competence is successful if this influence on others is purposeful and (always, more frequently, or at least sometimes) leads to expected results. However, acquiring leadership competence may appear challenging as it can fail not only because of leader's actions, but also due to behaviors of subordinates, due to the relationship between both or within the specific context which restricts individual actions for example through organizational culture, or established structure and processes. Learning from experience and reflection might help to better estimate one's own and others abilities as well as to develop the ability to correctly interpret work situations and to apply right instruments (such as empathy, emotional intelligence; Goleman, 1995) to achieve set goals.

The development of competences (where competence is ability to independently solve specific complex problems) is based on acting and learning from consequences of performed actions. It comprises a cognitive, a normative and an operational dimension (Harder, 2017). Thus, individuals with extensive knowledge in a certain area are able to win insights into certain areas, which consequently leads them to finding an appropriate solution to a specific problem (cognitive dimension). Values of individuals and their capability to meet appropriate situation-specific decisions (normative dimension) influences how they perform planning, organization, execution and control (operational dimension). Competence is, therefore, a result of the interplay of knowledge, values, experiences, capabilities and of the will (Harder, 2017), which enables individuals to act independently and creatively. Own experiences, reflection and evaluation of own actions play an important role in the development of a specific competence. They can be integrated into diverse leadership learning/development programs, which will be considered in the following chapters.

3. Learning leadership from theory

Although leadership theories are often integrated into seminars or trainings for young professionals and upcoming leaders, learning from theory predominantly takes place at universities, as a part of the curriculum in management programs at the undergraduate, graduate and postgraduate level. Management education research has made a lot of progress in testing the effects of leadership courses/methods of teaching (mainly) on students' performance (e.g., Ginzburg et al., 2018; Raymer et al., 2018; Karriker et al., 2017).

Although many universities increasingly use innovative concepts of teaching leadership (e.g. blended learning; Hilliard, 2015), learning remains a teacher-centered exercise with largely compartmentalized and too abstract knowledge and little room for practicing leadership skills. Learning about complex models (such as, for instance, Fiedler's contingency model) ensures transfer of theoretical knowledge, but does not develop the ability to use them – to actually lead (Nierenberg, 2003). Besides that, the context of collective social action, risk-taking, classroom experimentation and grappling of the personal aspects of students' values and beliefs, the sense of self come too short. Leadership literature acknowledges that in practice leadership occurs at different levels and the emerging social interactions have high influence on the resulting team or organizational performance (Raymer et al., 2018). Thus, learning to collaborate and to manage social relations should also be a part of leadership education. However, due to the relative sparsity of group tasks with strict task or role independence, students perceive little value in working collaboratively to achieve common goals or share experiences (Lohman et al., 2019).

Sewiorek et al. (2012) argue, that it is extremely difficult to teach leadership by using traditional methods of teaching such as textbooks or lecture materials, because knowledge of leadership theory alone is not sufficient for practicing leadership. Moreover, it is not effective in transmitting the complex, and often tacit skills required in the workplace (Day, 2000).

It is impossible to learn driving a car just on the base of theoretical knowledge (Nierenberg, 2003).

Similar to this example, it is impossible to develop leadership skills without the possibility to experiment while applying them in practice. Thus, learning from theory provides knowledge of "how" to perform actions and change, but does not automatically produce the active "makers" of this change.

4. Learning from practice

Learning is not only about the transfer of knowledge, it is a matter of specific contexts and real-life (including working) experiences (Lave & Wenger, 1991). Developing leadership competences is an ongoing, interactive process between the leader and the team (Dierckx de Casterle et al., 2008) which takes place through interpersonal cooperation on a daily basis. This means that managers learn through mediated actions in situations where people, context and culture are central issues (Vygotsky, 1978).

Knowledge, capabilities and values form based on individuals' own experience (primary source of experience) or on reflection from experience by others (secondary source of experience). Experience should be understood as entirety of all learned and applicable actions, perceptions and reflections generated through interactions with the environment and one's self. Normally, experience of individuals accumulates from both sources, however, own experience delivers more meaningful and memorable "lessons" and serves as a basis for reflection and evaluation, which ideally contributes to a development of more complex and flexible actions specifically and to the development of leadership competence in general.

To improve individuals' ability to learn how to lead in and to manage complex situations (which is often implemented also outside the workplace within the frame of leadership development programs), it is necessary to confront them with realistic and relevant problems, where there is room for negotiation, multiple perspectives on the problems and on their solutions (Sewiorek et al., 2012). Learning in environments based on authentic professional practices enables people to develop deeper understanding of leadership aspects (Shaffer, 2004). Learning from experience allows to put oneself as an active participant in the leadership practice and change process (Robertson, 2013), enact change and observe the (also social) effects of own actions.

Learning from practice-oriented leadership learning methods is, however, only defendable if it delivers a stable set of definable and learnable skills (Barker, 1997). Skill development includes structuring knowledge, practicing a set of behaviors, and integrating personal intellectual and emotional capabilities with social patterns and moral orders. Leadership theory broadens individuals' understanding of leadership-specific phenomena in that it communicates basic theoretical "assumptions, assimilated values and predominant behavioral patterns into conscious awareness", and enhances understanding of their influences on decision-making and individual behaviors (Barker, 1997, 360). Thus, although learning leadership from theory is less goal-oriented, but it creates the basis for future actions and enables integration of new experiences. For this purpose, many practice-oriented leadership development programs integrate theoretical insights into leadership with the practical exercise of acquiring leadership skills.

Trainings and practice-oriented seminars are most popular methods combining theoretical and practical perspectives in learning leadership. Personal development and training contributes to the development of competences (Persson & Thylefors, 1999; Nilsson & Furaka, 2012) and to improving the capacity to manage changes and lead staff. This includes, for instance, developing emotional awareness, self-confidence, the ability to adapt to situations in daily work (Day, 2000). Seminars for leaders typically include both theory-components and problem-based practice-oriented exercises, that are developed to internalize the acquired knowledge and to translate it into practice. Experience in management positions, and mentoring by experienced leaders, are perceived to be effective for leadership development (McKenna et al., 2004).

5. Learning leadership "from within"

Many leaders do not sufficiently reflect on their actions and behaviors and are willing to look outside of themselves for the reasons for poor practice. However, Argyris (1991) points out that particularly the leaders who are able to critically reflect on their own practice are more likely to increase their self-awareness, to learn from their leadership and to improve their leadership practices.

To manage the complex challenges, the uncertainty and the dynamism of the environment, the modern leaders need not only theoretical knowledge about the change the leaders can cause through their actions and behaviors. They are required to be able to practically apply this knowledge, act as agents of change. Besides emphasizing the role of practical experience, the recent leadership literature also recognizes the necessity by leaders to make sense of own values, beliefs and assumptions and to thoughtfully reflect on own actions and behaviors, highlighting the importance of learning leadership (transformative professional learning) (Robertson, 2013; Antonacopoulou & Bento, 2003).

"Learning leadership is not simply about getting more knowledge", and not about "leaders having more experience of leadership", but about "opportunities for more thinking about that knowledge, more sense-making" (Robertson, 2013, 56). Seeing leadership as practice and learning effectively from it on a daily basis is an important, but rarely sufficiently developed and effectively implemented skill for leaders. However, developing this skill contributes to better problem-solving, decision-making and critical thinking ability, produces better complexity and conflict managers who are able to control their emotions (Dawson, 2008, 3). Learning leadership provides the opportunity to learn from practice for practice, to reflect and to internalize the knowledge and skills on a higher cognition level.

Kolb's seminal work (1984) develops adult learning theory, which emphasizes experiential learning (active experimentation and concrete experience), but also points to the importance of reflective observation and abstract conceptualization within this process. However, as Robertson (2013) argues, this model has two important issues. First, many leaders get caught between the active experimentation and concrete experience parts of the cycle, simply trying out different strategies to the problems of the same order. In addition, leaders do not necessarily see the importance and urgency of applying their reflective skills as part of their leadership practice. Second, Kolb's model misses "the *how* of the reflective observation and the abstract conceptualization stages" (Robertson, 2013, 57).

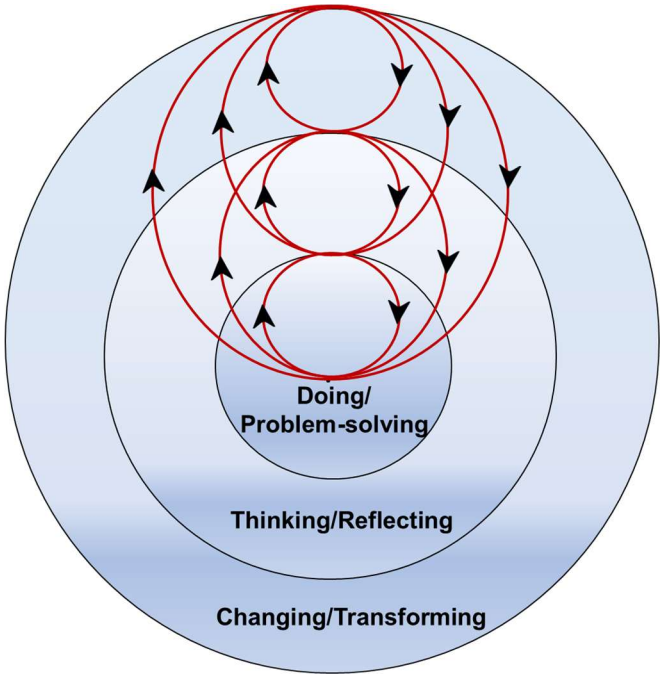
Argyris (1991) describes learning leadership as a sequence of two loop processes. The single-loop style of leadership is concerned with "problem-solving". It is reactive in practice, with little improvement

of that practice (the "how" of learning). The second loop considers the "why" (i.e. meaning-making and reflective phase). Studies, referring to Argyris (1991) and Argyris and Schön (1974), such as Robertson (2013), speak of the triple-loop learning (or "deutero-learning" in the original work by Argyris and Schön, 1974; Tosey et al., 2012). Figure 1 presents how this literature conceptualizes the triple-loop model of leadership learning (feedback processes, depicted as circles with arrows, exist within each and between all loops). The third loop explores transformational possibilities for future practice (i.e. "what might be"), as it helps to access new ways of seeing ideas which may then challenge their existing paradigms and beliefs and value systems. The self-regulated learning is a higher-order learning which relies on self-reflection and self-awareness capabilities of individuals developed in the double-loop process. In the third loop individuals fully understand their strengths and their areas for further development, and take responsibility for this self-directed process. This paradigm of personal transformation (Argyris, 1991; Antonacopolou & Bento, 2003; Robertson, 2013) or "leadership from within" (McDermott, 1994) implies seeing things differently, wanting to explore new frontiers, adding critical perspective, making sense of own experiences as well as discovering and nurturing leadership in themselves and not in isolation, but in community.

Capable "metacognitive" (i.e. self-aware and self-reflecting) leaders seek ways to examine and challenge their own thinking, to be able to rethink and see in a different way. Leaders are not equally able and willing to critically analyze their experiences and to reflect on their behaviors and actions. Heslin and Keating (2017) argue that managers can only learn from their experience if they are in the "learning mode", meaning that leaders consciously strive for self-improvement and intentionally frame and pursue "each element of the experiential learning process with more of a growth than a fixed mindset" (p. 368). A number of other scholars support the view that the core processes that enable developing of these "metacognitive" skills are particularly those that encourage *engagement* in exploration of thinking (e.g. Robertson, 2008; Watkins et al.; Zuber-Skeritt, 2011). Engagement itself is a multifaceted construct which is partly influenced by motivation (Buil et al., 2019) and comprises cognitive, emotional and behavioral

dimensions (Fredericks et al., 2004). Cognitive engagement refers to learners' effort to understand what is being taught, emotional engagement refers to the feelings about the learning experience (e.g. interest, enjoyment, boredom, or frustration) and behavioral engagement refers to behaviors necessary to accomplish the goals.

Figure 1: The triple-loop model of learning from professional experience

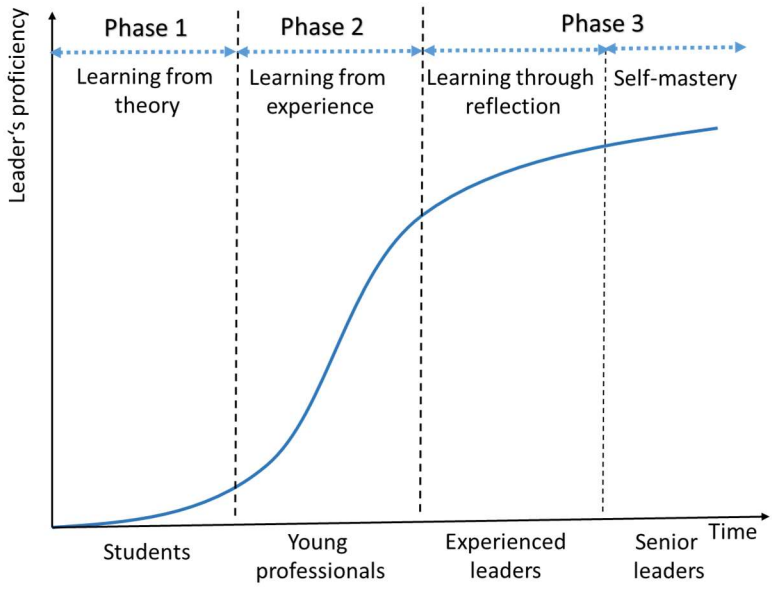


Source: Developed based on double-loop and triple-loop model conceptualizations in Argyris (1991), Robertson (2013), Tosey et al. (2012).

In addition to the self-awareness and the capability to reflect on own behaviors and actions, self-regulation is key to improve self-mastery and achieve higher performance at any task (Goleman, 2009). Self-regulation is the ability to deny impulse in the service of a goal (Goleman, 2009, 165). Self-mastery is learning what goes on inside of you, how to become more aware and to withstand the "emotional storms" (Goleman, 2009, 113) and how this ability contributes to own success as a leader. Self-mastery has been consistently found in people identified as effective leaders and star performers (Taylor, 2013). Such leaders typically find time to reflect quietly, often off by themselves, which allows them to think things over rather than to react impulsively (Goleman, Boyatzis & McKee, 2002, 40).

Self-regulated learning takes place when leaders fully understand their strengths and their areas for further development and take responsibility and ownership of this self-directed process (Robertson, 2013). This is only possible if individuals have account of leadership theory, have experience in applying it in practice, are able to reflect on their behaviors and are able to learn on that and transform own actions. Based on that we propose the leader's learning life-cycle curve (Figure 2), which symbolizes the progress which is necessary to become a leader who is able to develop one's own leadership skills and capabilities through self-regulated learning and self-mastering. As it follows from paragraphs 3 and 4 learning from practice in Phase 2 requires the theoretical knowledge and base for actions which can be obtained in Phase 1. Learning leadership through reflection is possible only if one can apply leadership skills in practice. Reflection without relation to leadership theory will not lead to learning (Roberts, 2008). Finally, self-mastering in Phase 3 is only possible if individuals are self-aware and are able to reflect on their behaviors and actions.

Figure 2: Leader's learning life-cycle



Note: Blue line depicts an exemplified natural leadership learning curve.

This supplements the three-loop model in Figure 1 by adding a life-learning perspective on leadership which can be described as the possibility[1] of progressive increase of the radius of leader's learning/proficiency from "doing" to "changing" with working experience. In contrast to models by Kolb (1984) and Argyris (1991) that do not explicitly include time dimension, the model in the present work argues that practicing leaders can sequentially deepen their learning level but only if they have sufficient knowledge and skills base from previous phases of learning. Our model suggests that the ability of leaders to reflect and improve their practices should improve with time of working experience.

The demand for effective leaders that have the ability to reflection and self-mastery requires the development of new methods to leadership learning (Heslin & Keating, 2017). Coaching by professional trainers or experienced leaders incorporates many characteristics of learning "leadership from within" and is perceived as effective for leadership development (McKenna et al., 2004). Robertson (2008) finds that through coaching leaders become more self-aware, more cognizant and thoughtful about the learning process, starting with their own. It comprises reflective inquiry, reciprocal and collaborative process, which is performed with the goal of learning towards desired outcomes. Coach's support and challenge stimulate critically reflective questioning (Robertson, 2013). Leaders are supposed to approach the spaces of vulnerability and new learning, to challenge each other's thinking, to co-construct new ways of being, knowing and doing together in leadership practice (Robertson, 2008), which involves an emotional engagement (Robertson & Webber, 2002). Thus, coaching allows to learn leadership "from within". However, it has limitation as it is typically oriented on increasing self-awareness and reflecting by leaders with respect to the goals proposed by the coaches and the participants and, thus, does not have a systemic character. Moreover, it is highly individualized and involves intense co-work with the coach. In the next section we discuss simulation as a learning method, which contributes to closing methodological gaps in studying from theory, practice, reflection and self-mastery and can be effectively applied in each of the

[1] Learning is a possibility, but not a necessary outcome, as people do not have equal ability to learn.

three phases of leadership learning cycle.

6. Learning with the help of business simulations

Rapid development of information and communication technologies requires the development of leadership skills necessary for work in distributed and virtual organizations, which might be very challenging due to the absence of face-to-face contact between leaders and employees (Sewiorek et al., 2012). Moreover, it requires leaders who are able to reflect on their behaviors and transform themselves while adapting to the dynamically changing environment. Traditional leadership development tools become outdated and are not able to provide systemic frameworks to develop leadership skills through self-mastery and to do it without intense face-to-face contact with the coach or trainer. Thus, the new challenge in learning leadership is to develop such methods, that could facilitate learning leadership through the whole leaders' learning life-cycle.

Simulations is one of the most recent and promising methods which is designed to enable individuals' self-reflection and to stimulate them to think about their actions and behaviors. Their advantage over other methods is that simulations can be conducted without intense co-work of the "trainer" and the individual. Thus, it is a powerful self-learning method which can be adapted to diverse (also digital) environments.

The main advantage of business simulations is that they are very flexible in design: they can incorporate both theoretical insights on leadership and practice-relevant knowledge and exercises. Simulations may address the lack of collaboration within teams by establishing team relationships based on strict functional independence of team members, which would, in turn, stimulate exchange of ideas, collaboration and work for the common goal (Lohman et al., 2019). Task or role interdependence, shared team goals may deliver additional value in working together (Palloff & Pratt 2005; Thibaut & Kelley, 1959; Lohman et al., 2019). Feedback mechanisms are important for developing a sense of competence, and for reflecting on own behaviors, because they inform players about how well they are performing in the game

(Csikszentmihalyi, 1990). Other factors that affect players' perceived competence include the difficulty of the tasks and the usability of the game (Eseryel et al., 2014).

Simulations allow to construct optimal challenges to facilitate intrinsic motivation by increasing the feeling of competence during an action (Ryan & Deci, 2000; Buil et al., 2019). Simulations may influence behavior by increasing engagement in the game, whereas engagement has been recognized as an important factor of conscious and intended learning (Robertson, 2008; Heslin & Keating, 2017, Buil et al., 2019). Greater interaction in teamwork and collaborative learning (Drake et al. 2006) as well as enhanced learner engagement (Fripp 1997; Feinstein et al. 2002; Edelheim & Ueda 2007) refer to the most important advantages of simulations over other experiential learning methods.

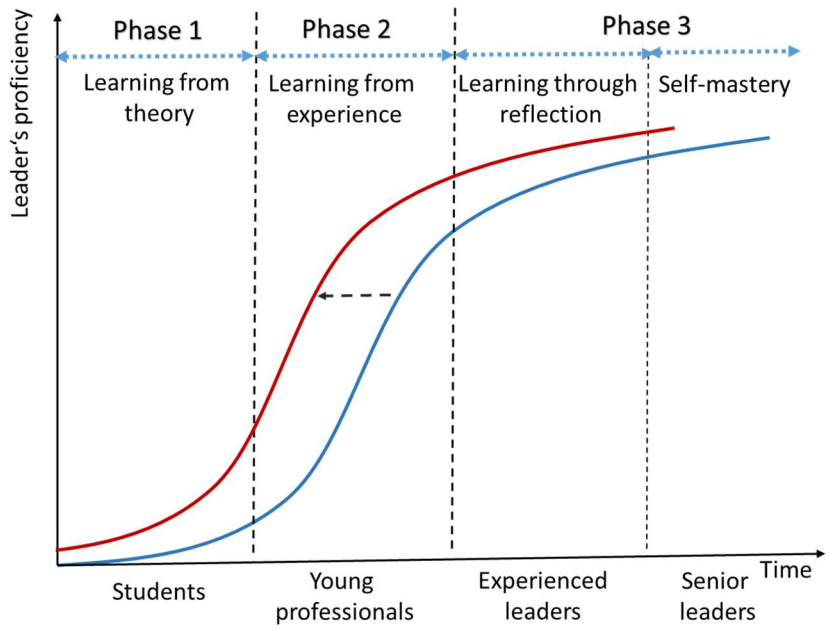
A number of authors have argued that knowledge should be situated in the activities, context, and culture in which it is developed and applied (Brown et al. 1989). Contexts that facilitate satisfaction of psychological needs (and therefore foster intrinsic motivation) yield the most-positive psychological, developmental, and behavioral outcomes (Buil et al., 2019; Ryan & Deci, 2000). Simulations enable authenticity of the environment (Lohman et al., 2019), which, in turn, encourages team members to cooperate, exchange ideas, and share experiences to develop knowledge and skills, increase satisfaction with the learning experience and enhance self-reported learning outcomes (Lohman et al, 2019).

Business simulations are virtual representations of real business situations, but in a risk-free environment (Buil et al., 2019). Under such circumstances, learning from failure becomes more effective (Galea, 2001). Simulating business context and strategic management functions enables using them as training tools. Thus, participants are required to make decisions and develop and implement own strategies while anticipating competitors' actions and behaviors (Doyle & Brown, 2000). When playing, individuals cultivate critical thinking and problem-solving skills (Loon et al., 2015).

Although it is probably not possible to learn leadership ahead of time (Roberts, 2008) (i.e. to prepare oneself to all potential situations that can arise and to think about the most appropriate solutions for these challenges), using well-developed business simulations to learn leadership already at early stages

of leadership learning life-cycle could shift leaders' learning curve to the left (as depicted in Figure 3). We propose, that the combination of theory, practice, possibility to reflect and master one's own skills increases individuals' awareness of leadership practice and improves individuals' cognitive ability.

Figure 3: Leader's learning life-cycle



Note: Blue line shows an exemplified natural leadership learning curve. Red line depicts leadership learning curve if simulations are used already at the early stages of leadership learning cycle.

The advantages of this method cause growing interest to the use of simulations in leadership research (Ryan et al., 2006). However, simulations have also some limitations. Due to highly competitive nature or complexity, simulations can create anxiety and frustration in players, which can impede learning (Doyle & Brown, 2000; Matute & Melero, 2018) or lead to team conflicts (Adobor & Daneshfar, 2006). One potential concern is that if simulations are not perceived as realistic, they may not cause individuals to behave authentically or may lose motivation. However, the bulk of literature on complex business simulations has shown, that participants typically perceive simulations as realistic, which increases the likelihood of demonstrating authentic behaviors, enhances engagement and switches on the "learning mode" of individuals (Buil et al., 2019). Thus, through the possibility of integrating theory, practice, as well as the possibilities to reflect and master own skills through self-regulated learning, business simulations

have high potential to be used in the context of leaders' life-long learning. The growing application of simulations for teaching leadership as well as in business contexts as a part of leadership development programs support this view.

7. Discussion and future research

The present work overviews different ways of learning leadership and the methods that are typically used or can be used to convey leadership skills. Although learning from theory is important, individuals become more effective leaders if their theoretical knowledge is combined with their experiences, professional training and self-development (Experteer.de).

The development of communication and information technologies drives change in leadership learning. The first tendency is the growing need in self-reflecting and self-mastering leaders, who are able and ready to cope with risks and uncertainty and to learn in dynamic environments. The second tendency is the increasing demand for leaders who have sufficient digital competences and are able to lead geographically dispersed teams even in the absence of face-to-face communication. Such leaders should be developed with the active use of technologies and with the help of self-learning methods which stimulate self-awareness, critical thinking and self-reflection and enable leader's self-mastery. Most effective leadership requires the combination of theoretical knowledge and practical experience, going through all three loops of learning from professional experience (learning "how" the change works, take an active part in it, and, finally, reflect from it and transform it) (Argyris, 1991). However, many leaders are not effective learners. They often do not devote sufficient attention to reflect about their actions and behaviors, moreover, many leaders do not realize that they may be trapped in applying their already accumulated experiences and experimenting with the same set of instruments in similar situations over years (Robertson, 2013).

Simulations offer the possibility to combine theoretical knowledge and practice it, create realistic business environments and stimulate authentic behaviors, experimentation and learning. Although they obviously have limitations, they can be used completely digitally, flexibly without intense co-work with the

coach and combine all levels of cognition (theory, practice, self-reflection and self-mastery).

The popularity of simulations in business environments, in teaching and research has grown. Still it has enormous potential. The present work develops the model of leaders' learning life-cycle, which builds on the idea of leader's life-long learning with different phases of learning leadership. The phases build on each other while increasing leader's proficiency. However, it should be noted, that it is not possible to make a sharp distinction between the phases of leadership learning cycle. Particularly the phase 3 (learning through reflection and self-mastery) often takes place simultaneously with phase 2 (learning from practice). Although the related literature agrees that reflection is not possible without practicing leadership and self-mastery is not possible without reflection, future research might explore how to distinguish between the three more precisely (e.g., Roberts, 2008; Robertson, 2013). One interesting avenue of research is also to analyze under what circumstances and in how far these phases might cross and whether specific leader's and workplace characteristics (e.g. work experience, size of the team of subordinates) play a role in developing individual's leadership competence.

The present work contributes to the literature on leadership competence and leadership development in that it develops a model of life-long leadership learning and adds a time perspective (time line) of acquiring leadership competences to the existing triple-loop leadership learning perspective. Furthermore, the current paper emphasizes the potential of business simulations for developing leadership skills along the whole leaders' learning life-cycle. While the effectiveness of this method has already been shown on students and their outcomes, future research can explore the effectiveness of simulation applications within real business contexts. Moreover, it is necessary to investigate how one can limit the negative effect on learning simulations may cause due to their high complexity, dynamism, and, consequently, high pressure on participants.

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