ADVANCING WORK PRACTICES: RETHINKING ONLINE PROFESSIONAL DEVELOPMENT IN THE CONTEXT OF INTERVENTION-BASED SUSTAINABLE CHANGE

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1. INTRODUCTION

The only constant is change. This statement has its roots in Heraclitus' ancient Greek philosophy. It does, however, also describe a premise of work that many employees experience today: a new business strategy, a new manager, a new It system, new standards, and new procedures. Change is exciting and change is stressful. When external or internal pressure deems organizational change necessary, employees need situated support to reduce potential anxiety and to navigate new paths to individual and organizational performance. If only we could accomplish this by sending our employees on a course.

The objective of professional development (PD) is to advance workplace practices. Professional development interventions (PDIs) are often formalized courses that are comparable with those of higher education; however, another layer of complexity is added to PD as the objective is reached *after* the PDI has been completed. Hence, the end objective is not to learn certain concepts, which can be applied and assessed in a test; it is after those tests that the real learning challenges lie.

E-Learning for PD has become increasingly popular within organizations (Ho & Jones 2015). The prevailing e-Learning intervention delivers a self-paced instructional learning path with programmed and/or recorded content that often includes learner–material interactions with programmed feedback and multiple-choice tests. Stand-alone means that there are no additional activities or processes added to the e-Learning course; it is self-contained. The popularity of using this form of e-Learning for workplace learning is related to an underlying assumption that e-Learning is as effective as face-to-face interventions. A comprehensive body of research supports this assumption (fx. Maloney et al. 2011; Jackson & Lichtenstein 2011). As a consequence, the aim of e-Learning becomes the digitalization of face-to-face training and the development of e-Learning *instead* of face-to-face training. Formalized instruction may, however, not have been the answer in the first place—at least, not the complete answer. Hence, in PD, the comparison between e-Learning and face-to-face instruction diffuses important discussions on the change needed, the possibility of change occurring, and whether instruction is the right means to achieve the objectives.

In light of the above concern, the purpose of this paper is to present a model for broadening the understanding of intervention-based change to individual employee behavior and to show how e-Learning can contribute in the process. Specifically, the paper is structured around the following research questions:

(i) What drives intervention-based change to work practices? (Section 2)

(ii) What is needed to ensure change to work practices? (Section 3)

(iii) Which roles can e-Learning play in the change process? (Section 4)

2. WHAT DRIVES INTERVENTION-BASED CHANGE TO WORK PRACTICES?

This paper presents an intervention-based change model (Fig. 1). The purpose of the model below is to 1) synthesize recent findings in social-psychological and educational research into an intervention-based change process with key motivational drivers for employee commitment to change and consequently 2) highlight the complexity in changing work behaviors through PDIs.

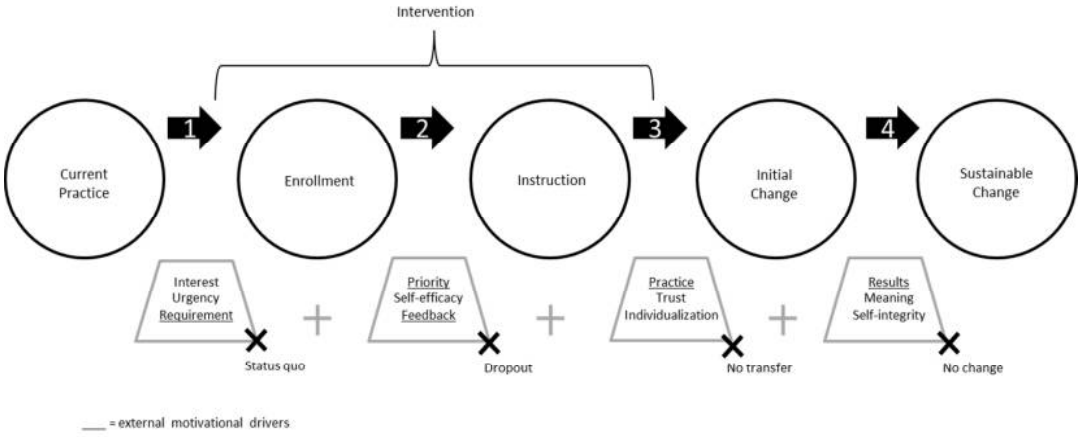

Figure 1. The four-step change process

The five circles in the above model (Fig. 1) are components of the intervention-based change process. The arrows illustrate the critical steps in the process, while the trapeziums list the key motivational drivers that are critical to proceed to the next step. The X in each trapezium indicates the likely consequence of missing motivational drivers. Previous drivers should be added to each new list of drivers. As an example, an employee loses interest (step 1 driver) in the topic during the course (step 2) and drops out. Another employee experiencing the hardship of building new work habits (step 4) may terminate her efforts due to organizational changes at work, which no longer make the change a priority (step 2 driver). The intervention includes the enrolment in (circle 2), engagement with, and completion of formalized instruction (circle 3).

The drivers can be roughly divided into internal motivational drivers, fx interest and urgency, and external motivational drivers, fx priority and feedback (Halawa et al. 2014; Lee & Choi 2011). The external factors are underlined in the model. There is, however, a strong interrelatedness between external and internal drivers, and it can be challenging to decide whether a drop in commitment is caused by a drop in internal or external motivational drivers (Halawa et al. 2014).

The model is a simplification and generalization of extremely complex and heterogeneous human motivations, learning, and action; in many instances, the intervention and changes in work behaviors would be interwoven and the process possibly more circular or spiral-shaped than linear. The simplification aside, the model illustrates how changing work practice is a challenging and vulnerable process that requires more than formalized instruction. Each step will be explained below before returning to this argument.

2.1 Step 1: Motivation to enroll

The first step in the model occurs when the employee decides to enroll in the PDI. The internal motivational drivers are the employee's **interest** in the content and sense of **urgency** to become competent in the field to sustain or increase work performance. As mentioned, the drivers uphold their importance throughout the change process. Thus, the employee's interest in the material must also be present during the intervention (step 2) because "*lack of interest can cause students to dedicate less time to the course, leading them to skip pieces of content, disengage from assessments, or simply proceed through the content at a slow pace"* (Halawa et al. 2014, p.2).

A key external motivational driver ensuring enrollment and persistence is the **requirement** from a manager or workplace to participate in the PDI. The use of compliance and mandatory PD varies greatly from industry to industry; most employees do, however, experience participation in mandatory PD during organizational changes (Miller et al. 2014). A requirement to enroll, complete, and change practice will have a positive impact on persistence throughout the change process, especially when the alternative has negative consequences for the employee's job tasks or employment. Employee engagement and general performance may, however, suffer along the way.

2.2 Step 2: Motivation to engage and complete

The second step is where the employee engages in and completes the intervention. In addition to previous drivers, persistence requires that the participation take **priority** over other job tasks. A temporary decrease in workload can also allow for engagement in PDIs. Once the workload increases, however, the PDI may be down-prioritized, resulting in dropout. Participants in PD are primarily working adults with many responsibilities and distractions (Kaiden 2002). Hence, even when PDI initially takes priority over other tasks, priorities easily change. The low exit barriers for e-Learning means that the decision to leave can easily be provoked by any number of factors in the employee's life (Halawa et al. 2014).

Focusing on internal drivers, ability is an apparent predictor of persistence; low-performing participants tend to disengage more frequently than high-performing ones (Hoskins & Van Hooff 2005). However, the effects of ability on dropout are mediated by the employee's self-perceived **self-efficacy**—the degree to which the employee believes that she can achieve a particular goal. Self-reported self-efficacy has predictive value for persistence and performance (Zimmerman 2000). Though self-efficacy is widely accepted as a key driver of persistence, the timing of high self-efficacy in the change process could be important; high self-efficacy on PDI objectives *prior* to the intervention may undermine a sense of urgency to change, because the employee believes that she is already capable of and possibly already doing what is taught in the PDI. Hence, the employee must find the content sufficiently challenging to be worth the time investment, but not so challenging that content incomprehensibility and volume impede self-efficacy and knowledge gain. Individuals' self-efficacy is formed by their own interpretations of their performance and by social cues (Bandura 1982). Thus, **feedback** can be an important enhancer of self-efficacy. Effective task-related feedback generally contributes to performance improvement. To be effective, *"feedback needs to be clear, purposeful, meaningful, and compatible with (...) prior knowledge (...) It also needs to prompt active information processing on the part of learners, have low task complexity, relate to specific and clear goals, and provide little threat to the person at the self level"* (Hattie & Timperley 2007, p.104). Hence, effective feedback continues to be vital throughout the change process.

2.3 Step 3: Motivation to transfer and initiate change

In step three, the motivated employee initiates changes to his work. For more than a century, researchers within the field of learning transfer have discussed this process: how knowledge and skills learned in one instructional context can be applied in another context, such as the workplace. There is, however, little agreement among researchers about the nature of learning transfer, the possibilities of its occurrence, and the mental or social mechanisms that may underlie the concept (Lobato 2006). That said, several researchers agree that employees should **practice** new skills both during and after the intervention and, thus, be able to immediately act on the new learning (Wahlgren & Aarkrog 2012). The employee must be motivated to practice, which requires actionable PDI instruction and a supportive work climate that prioritises the change (Herrington et al. 2009; Noesgaard 2014). The initiation of change depends heavily on the level of **trust** the employee perceives to be present at her workplace. Experiences of incompetence occur when initiating change in behavior, and practitioners are reluctant to adopt new practices unless they feel certain they can make them work (Guskey 2002). If an organization punishes those who make mistakes and take risks, the employees will, thus, be reluctant to initiate change (Kousholt 2009). Trust has been overlooked in work situations but is a significant factor in PDI persistence and learning (Short 2014).

In step three, **individualization** of the learning objectives and content becomes critical for employee motivation. The employee needs to find a meaningful blend of the PDI proposed changes and the specificities of the individual work context to advance her work performance. Hence, it can be reasonable to allow employees to define their own goals and both challenge and support them when doing so (Blondy 2007). Employees do not transfer learning directly to their work practices (Noesgaard & Ørngreen 2015). Consequentially, insisting on transfer per specification may prove to be counterproductive for employee motivation to change.

2.4 Step 4: Motivation to sustain change

The fourth step turns initial change into sustainable change. This part of the change process is based on Thomas Guskey's model for teacher change (Guskey 2002), in which he shows that practitioners commit to PDIs and change practices sustainably only when they experience positive **results** from the initiated change.

This runs counter to a general understanding that practitioners commit to changing work practices during PD (Guskey 2002). Instead, it is the unpredictable on-the-job reactions to the initial change, fx students' inactivity or a customer's increased engagement, that determine whether or not the employee finds **meaning** in the initiated change and consequently sustains it.

Numerous epistemologically diverse theories of learning underline how accommodating our habits and beliefs to new evidence not only makes creativity, learning, and change possible but can also be a very difficult, frustrating, and painful process (fx Engeström & Sannino 2010; Mezirow 1997; Cohen & Sherman 2014). Through the lens of frustration theory, employees become frustrated when they anticipate positive results in their practices after PDI but find none. Frustration left unmanaged easily obstructs initiated behavior change (Amsel 1992). It often entails an element of discomfort when an employee is led to question his practice as the most fruitful way to foster student learning or business results. Thus, employees may also become frustrated and disengage, because the initiated change conflicts with their beliefs and current practices; thus, posing an identity threat. Self-affirmation theory specifies how the individual needs to uphold his sense of **self-integrity**; to perceive oneself as morally and adaptively adequate: *"the self-integrity motive is so strong that even mundane events can threaten the self as well as instigate defensive responses to protect it"* (Cohen & Sherman 2014, p.335). Providing self-affirming interventions, which focus the individual's attention on his values and capabilities unrelated to the changing work tasks, may ensure the employee's self-integrity and openness to change.

2.5 Empirical support for the model: Advancing science teaching

The intervention-based change model is largely a product of the findings from an in-depth qualitative empirical research study conducted with Danish science teachers participating in an e-Learning intervention intended to improve Danish K-6 science teaching. The chart below (Fig. 2) is a snippet of data from this study. Ann, Lillian, and Julia (pseudonyms) are middle-school science teachers at the same school. They participated in a research study on the implications of an e-Learning PDI, which was conducted at three schools from February 2014 to June 2015 with a follow-up survey six months later (more on this study in Noesgaard & Ørngreen, 2015).

Observation and survey data were gathered in identical ways and weight before (PRE) and after (POST) the teachers interacted with the e-Learning (eL). In the chart (Fig. 2), each value on the x-axis (PRE1-4, eL, POST1-4) represents the teachers' weekly 90-minute science teaching, in which the classroom observation took place. The curves show the teachers' performance on behavioral learning objectives based on observation protocols and video recordings. The control line represents the other teachers in the study, who did not complete the same course as Ann, Lillian, and Julia but were evaluated on the same objectives. The e-Learning intervention included step 3 of the model (Fig. 1) as the learning process alternated between a) instruction with theoretical knowledge, exercises, and practical tools; b) guided preparation for classes; and c) actual teaching, in which the change was initiated.

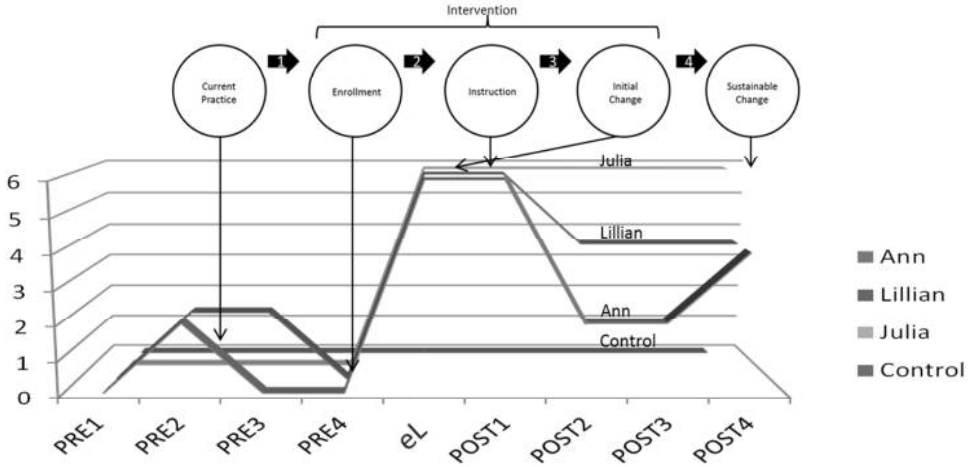

Figure 2. Exemplifying the model: e-Learning for science teachers

In the PRE phase (Current Practice, Fig. 2), Anna and Lillian performed on a few elements of the objectives, though the general picture shows little to no performance on the objectives. During the eL, the three teachers fully performed on the learning objectives in their teaching. In the POST phase, the e-Learning had been completed, and there were no requirements for the teaching, but the classroom observation continued.

The differences in the POST phase were surprisingly apparent—also for the other teachers—despite high levels of similarity in teacher and contextual characteristics measured by self-efficacy, learning outcome, satisfaction, relationship with management, and approach to the PDI. Julia experienced a positive impact on the students during the in-class application and continued to use her new skills after completion, even applying her new questioning technique in her history classes. The follow-up survey indicated that Julia has sustained the change in her teaching. Lillian, conversely, became frustrated as her students reacted to the change in her teaching with inactivity. In this regard, the term "confused counterparts" was coined to acknowledge the observation that even change initiatives specifically intended to increase the counterparts' (i.e., students) engagement may result in confusion, awkwardness, and inactivity. This occurs because

> "When teachers change their methods of teaching, they change the rules of interaction. If they are not informed about, accustomed to or able to understand their teacher's new way of posing questions, students may become confused, frustrated and disappointed, especially if they have worked out how to perform well under the previous rules of interaction" (Noesgaard, 2016, p. 11).

The frustration Lillian experienced appeared to be due to her expectation of increased student engagement (as a result of the initiated change) coming into conflict with her actual experience of decreased student engagement (more details in Noesgaard, 2016).

Both Lillian and Ann continued to apply only elements that were easy to assimilate to their current practice. The follow-up survey indicated that neither Lillian nor Ann is teaching as per the course objectives any longer. Hence, these seemingly similar teachers in very similar contexts, who completed an intervention based on transfer research, underwent very different levels (Fig. 2) and kinds of change. This is an example that supports Guskey's argument that sustainable change and commitment only occur when the initial change yields positive results, which in turn underlines the vulnerability of the initiated change.

2.6 A change in emphasis: From instructional design to in situ support

The vulnerability of unpredictable interactions following the initiated change to the effectiveness of PDIs in advancing work relations has thus far been largely overlooked in research studies. Therefore, this issue will receive extra attention in this section.

First and foremost, the fourth step illustrates the hardship and vulnerability in achieving sustainable change as a result of stand-alone PDIs. One reason for this challenge may be the behavioristic assumption that well-designed and well-executed instruction will advance practices. According to Guskey (2002a, p. 382),

> "Professional development activities frequently are designed to initiate change in teachers' attitudes, beliefs, and perceptions. Professional development leaders, for example, often attempt to change teachers' beliefs about certain aspects of teaching or the desirability of a particular curriculum or instructional innovation. They presume that such changes in teachers' attitudes and beliefs will lead to specific changes in their classroom behaviors and practices, which in turn will result in improved student learning."

The assumption that changes to attitudes and beliefs lead to change in practices reduces PD effectiveness to a question merely of PDI design. The assumption can also initiate a self-affirming ripple effect in which learning theories come to support the assumption. As an example, transformative learning theory states that transformative learning "…involves transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one's reflective insight, and critically assessing it" (Mezirow 1997, p. 11). In the abovementioned assumption, transformative learning would then be expected to take place during the PDI and, in turn, change behavior.

When beliefs do not change before the practitioner has seen evidence of the PDI's effectiveness in their practices, a change in beliefs is primarily a result, rather than a cause, of a change in practices (Guskey, 2002a). From this perspective, the transformation of the frames of reference has only occurred when a positive change in practice has been proven to the teacher. Thus, the chasm between initial and sustainable change in the intervention-based change model (Fig. 2) entails the transformative potential. Evidently, this potential calls for a change of focus from a stand-alone PDI design to supporting the practitioner in finding what he/she perceives as valuable changes in, for example, student learning and engagement for the teacher, patient care for the nurse, and customer attitudes for the sales manager.

The teacher cases in the empirical study indicated that the kinds and amount of evidence required to sustain change and thus enable it to become a part of everyday practice vary from one case to the next. Guskey (2002) focuses on formal evidence of student learning, such as students' test scores, as evidence of the effectiveness of PDIs. The empirical study suggests that whether or not something is considered as evidence of the effectiveness of PDIs is subjective and contextual; as a result, there can be a great variety of experiences, which, to the outsider, may not appear to be caused by the PDI, but which are interpreted as such by the teacher (Noesgaard 2016).

The novelty of the concept of "initial vs. sustainable change" in PD is underlined by its absence in the learning transfer literature. The main aim of the learning transfer literature is to bridge the chasm between PDI completion and the initiated change. Although some studies are indeed concerned with turning formal learning into long-term results (Noesgaard and Ørngreen, 2015), the situated pitfall between initial and sustainable change has not been addressed. However, it is in this messiness of potentially frustrating lived professional practices that the evidence of the PDI's effectiveness is (or is not) created and change, resultantly, is sustained (Noesgaard 2016).

Furthermore, the distinction between initial and sustainable chnage is essential, because the practitioner is challenged not only by the situatedness of PD's effectiveness, but also by a common unexpected dip in performance in the process of initiating change. Fullan (2001) refers to this as "the implementation dip," which "…is literally a dip in performance and confidence as one encounters an innovation that requires new skills and new understandings" (Fullan, 2001, p. 40). People in the midst of the implementation dip experience fear of change and often lack the knowledge and skills needed to make the change work, as it requires them to question and change their understandings and behavior. In this process, they often feel confused, overwhelmed, and deskilled (Fullan, 2001).

In sum, the combination of the following three interrelated elements of this pitfall between initial and sustainable change are likely to contribute negatively to the effectiveness of PDIs: 1) the PDI instilled anticipation that initiating change will lead to increased performance; 2) the implementation dip that runs counter to this anticipation; and 3) the unexpected negative responses of the confused counterparts (e.g., students, patients, or customers).

3. WHAT IS NEEDED TO ENSURE CHANGE TO WORK PRACTICES?

In PD, there is often a gradual attrition of participants from enrollment over completion to change in work practice (fx. in Marsh et al. 2001; Maloney et al. 2011). Attrition need not be negative; the content may prove

irrelevant to the employee after enrollment (step 2), or he immediately finds the exact advice needed. In such instances, the continuation of the PDI could be a waste of time. Many employees who disengage somewhere along the change process could, however, have benefited from persisting. The gradual attrition calls for increasing support throughout the change process, because it becomes increasingly difficult to persist as more motivational drivers are required. Simultaneously, the level of support decreases; often, there is no PDI-related support after the instruction is completed. Thus, the need for motivational support increases the further the employee gets in the change process.

The importance of follow-up in supporting change is well established in previous research; for example, scholars from the American Institutes for Research analyzed findings from over 1,300 studies that potentially address the effect of teacher professional development on student learning outcomes. Virtually all of the studies that showed positive improvements in student learning included significant amounts of structured and sustained follow-up after the main professional development activities (Guskey and Yoon, 2009). Of course, follow-up is not a panacea guaranteed to improve performance. Planned follow-up sessions may improve learning retention, commitment, and even the translation of learning into practice. Often, however, follow-up consists of pre-planned instructional initiatives, which are not necessarily sufficient for providing individualized and contextualized support and challenges for the employee. Timely scaffolding can, however, assist in managing and challenging frustration and potential change avoidance in the zone of proximal development to ensure the change works for the practitioner and the potentially confused counterparts. Simultaneously, affirmative support is critical to allow those engaged in the difficult process of implementation to tolerate the anxiety of occasional failures (Guskey, 2002). This scaffolding support of eemployees' change efforts must be highly individualized, because they vary greatly in terms of their ability to self-regulate: to control thoughts and actions despite the presence of disruptive impulses. An individual's level of self-regulation applies not only to current situations but may "*also influence the decision about whether to enter into various situations or not in the first place*" (Baumeister et al. 1993, p.141). Highly self-regulated employees may persist through formalized learning and, consequently, advance work practice without additional support. Many employees will, however, disengage when the PDI, for example, proves more time-consuming than anticipated (priority–step 2 driver) or poses a threat to their professional identity (self-integrity–step 4 driver). In frustrating situations of feeling incompetent due to no or negative impact on practice, even highly self-regulated individuals find reason to return to the status quo.

The increased need for individualized support makes scaffolding an effective strategy. Scaffolding is providing support at the individual level of the employee's current skill while she is carrying out the task, and then gradually fading out the support (Järvelä, 1995). "*A scaffold is, by definition, a temporary entity that is used to reach one's potential and then is removed when learners demonstrate their learning"* (Lajoie 2005, p.542). Inspired by Vygotsky's (1978) conception of the zone of proximal development, individuals are viewed as having learning potential that is immediately outside of their comfort zones and that can be reached through competent scaffolding by, for example, managers or coaches.

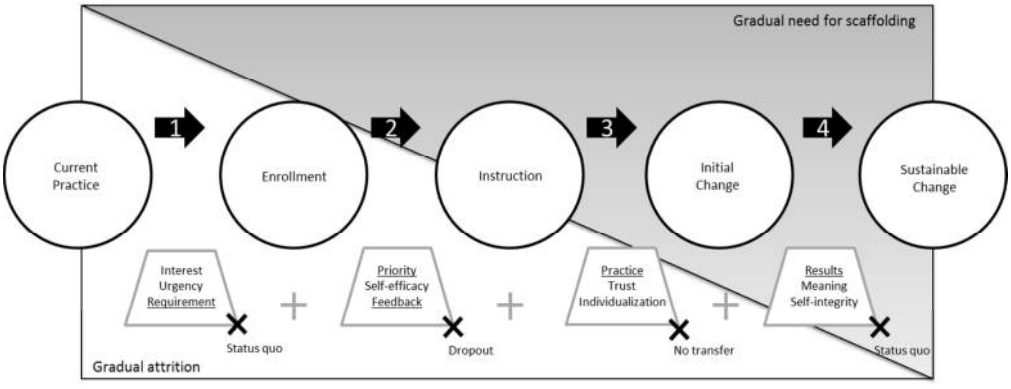

Figure 3. Gradual attrition vs. gradual need for scaffolding

In the above model (Fig. 3), a rectangular background to the four-step change process has been added. It illustrates how resistance to gradual attrition requires increasing levels of scaffolding. This relationship is

naturally simplified and is unlikely to be linear. In addition, attrition is relevant at the group level, while the change process highlights individual motivations. Nevertheless, scaffolding, which is competently directed at the drivers, is likely to have a positive impact on employee persistence because the extent, length, and technique of support can be tailored to levels of self-regulation and individual motivation (Lajoie 2005).

PDI aims to positively impact complex real-world settings and *"isolating the effects of a single program or activity under such conditions is usually impossible*" (Guskey 2002, p. 50). On-the-job scaffolding will, thus, not inevitably ensure advancements but may contribute positively to employees' change efforts.

On the one hand, PD e-Learning as a stand-alone intervention, in which the practices of the target audience are generalized and no post-course scaffolding is in place, faces a double chasm between the intervention and initiating change (step 3, Fig. 2) as well as between initial and sustainable change (step 4, Fig. 2). Face-to-face PDIs have more opportunities for transfer planning and tailoring to individual needs, but they too are faced with the double chasm. On the other hand, such stand-alone PDIs, irrespective of modality, are not the site of the greatest challenge. Guskey (2002b) states as follows:

> If change in teachers' attitudes and beliefs occurred primarily before implementation of a new program or innovation, the quality of the initial training would be crucial. But since, as the model suggests, such change occurs mainly after implementation takes place and there is evidence of improved student learning, continued follow-up, support, and pressure following the initial training that is even more crucial.

Thus, the PDI as a stand-alone intervention is inadequate for achieving sustainable change; however, provided that the needed situated scaffolding is in place post course (or in between course elements), the content can potentially be equally effective when delivered either face to face or via an online instructional PD.

4. WHICH ROLES CAN E-LEARNING PLAY IN THE CHANGE PROCESS?

Compared to face-to-face interventions, e-Learning persistence is extra challenging due to the need for self-regulation combined with low entry and exit barriers. Looking at learning potential, however, several studies find that self-paced e-Learning can effectively convey material for lower-level learning, such as memorization and procedural knowledge (Hofmann 2006). Even in processing difficult material, e-Learning can assist through worked examples that provide structure and sequence, thereby reducing employees' cognitive load (Kachelmeier et al. 1992). Hence, stand-alone e-Learning can offer inspiration, information, and standardized feedback, extending knowledge on subject matter, processes, and procedures. Therefore, e-Learning can be an assimilative learning catalyst that effectively preps the ground for changes in practice.

This paper has argued that e-Learning is unlikely to result in changes to work practices on its own, not because it is e-Learning but because formal instruction in any modality cannot stand alone in change efforts. However, when organizational decision makers assume that well-designed instruction will advance work practices on its own, investments in scaffolding initiatives are logically considered an expensive noncritical add-on to training and, consequently, cut off the intervention chain. Ideally, the costs of scaffolding employees to sustainable change should, however, not be compared to the costs of stand-alone instructional initiatives, which, in themselves, rarely advance work practices. Acknowledging this premise, some suggestions for lowering the direct and alternative cost of scaffolding may include 1) using the majority of PDI investments on on-the-job scaffolding instead of lengthy formal instruction; 2) using e-Learning snippets for retention and assimilative learning purposes; and 3) investing in scaffolding of employees' change processes for business-critical or strategic change initiatives.

At face value, on-the-job scaffolding is not scalable. Despite breakthroughs in machine learning and artificial intelligence, the in-person commitment (supporting persistence) and individualization (supporting meaningful change) cannot be fully and meaningfully turned into algorithms. As such, only incremental cost cuts can be obtained. Scaffolding may, however, become simultaneously effective and cost-efficient through the use of technology. Online coaching and follow-up has been effective in completion of PD tasks and achieving work-related goals (Poepsel 2011). Mobile probes, which are personal text messages with questions or tasks, can provide a scaffolding experiences of *"gentle, but also disciplinary, reminders to act and reflect"* (Ørngreen et al. 2016, p.8). In addition, scaffolding and assessment are two sides of the same

coin; employees are continuously assessed to determine what type or level of scaffold is sufficient to help them reach their potential (Lajoie 2005). Hence, formative digital assessment tools could advance both scaffolding and learning evaluation.

As long as PD is kept within an educational/instructional framework, well-designed and well-executed instructional interventions will result in increased work performance and formal learning and evaluation design will continue to be the main concerns of PD. PD professionals will continue to struggle to find valid and meaningful ways to achieve the ideal instructional learning design—often by means of strategic and highly structured formal training sessions based on competency frameworks with tests and surveys to measure learner satisfaction with and learning outcomes of the instructional intervention. Interventions proven effective in academic settings, such as gamification and adaptive learning, may not be adequate for advancing professional practices in the same form. Instead, PD professionals may want to leverage the way most practitioners have seamlessly integrated technologies into their everyday lives, which may be more effective in changing behavior than any educational PD courses.

Such technological tools cannot ensure performance increases in isolation, but as elements in adaptive learning technologies, they may prove the value of less instruction and more just-in-time and just-for-me performance support.

Broadening its definition to include scaffolding technologies, e-Learning can be the provider of critical content *and* scaffolding in a multitude of fashions. When we start thinking of e-Learning in these ways, we are closing in on answers to employee growth and performance in both meaningful and scalable ways.

5. CONCLUSION

This paper investigated the assumption that e-Learning is as effective as face-to-face interventions when stimulating change. A four-step change process was presented illustrating key challenges and vulnerabilities of intervention-based change. E-Learning can play an important role in the change process, though it highlights that sustainable change requires more than the formal instruction of any modality. Instead of evaluating e-Learning in the light or shadow of its instructional alternative—face-to-face-instruction—the paper suggests that educators, managers, and employees themselves focus on the change needed and the motivational means to accomplish it. This change in perspective can open up to potentially simple and financially feasible technologies that scaffold employees to continuously advance their work practices.

PDIs do not change practice; people do. Therefore, this paper has focused on individual motivations for change. A key argument has, however, been that change does not occur in a vacuum that we can control or design. Thus, an extension of the paper would benefit from elaborating on group dynamics and from adding theoretical models of organizational learning and change. In addition, further research on e-Learning and technological developments can investigate the extent to which in-person situated scaffolding can be digitalized to advance work practices, thus finding scalabilities in and around the seemingly non-scalable.

This article concludes that online PD needs rethinking in order for intervention-based sustainable change to occur. The article suggests rethinking e-Learning as online just-in-time tools for performance support, rather than viewing it as a stand-alone replication of face-to-face instruction. As such, e-Learning—defined here as online technologies—can contribute to the scaffolding follow-up post intervention, for example, through online coaching, digital assessment tools, and mobile probes. Such rethinking of online PD may provide critical, albeit incremental, change, thus heightening the effectiveness of PDIs. Breaking out of the instructional framing of PD may, however, take PD to a whole new level. The article touches on this change, as it problematized instructional e-Learning as a stand-alone approach to advance practices. The contribution of this article has largely depended on a critical investigation of instruction as the means to advance practices. In the hope that further research will elaborate the specificities of PD and further question the common vocabulary and practices within PD, the questions below may assist in reexamining the adequacy of the premise that PD that is effective in advancing practices requires delivering content by means of *instruction* (as discussed in this paper) in the format of *interventions* to be *implemented* in practice. With regards to intervention, we must ask the following question: Do we want to *intervene* in the jobs of the employees or support their performance? Implementation can, on one hand, be a valuable acknowledgement that intervention-based change does not occur automatically. On the other hand, the term "implementation" implies that something will be put into effect—and is thus not currently "activated" in practice. Instead of

delivering instructional interventions to be activated, could PD consist of something that *begins* by activating certain behaviors? Could e-Learning for PD be situated support that leverages the knowledge and experiences of the "confused counterparts"? Further investigation of these and related questions may turn out to be the cornerstone in advancing work practices through intervention-based sustainable change.

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