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Industry Research Report

LearnDesignCheck: Understanding what makes data-driven organizational learning effective and creating a tool for it

Abstract

This Industry Research Report aims at finding a solution to the problem of how mature, service-oriented organizations might secure, using data-driven methods, that investments in learning and development contribute to business goals, such as profitability and growth. It includes a literature review on the effectiveness of organizational learning from both an individual/team level and a corporate/strategic level, that also involves the study of digital solutions that support the learning. The research also includes the development of an application, LearnDesignCheck, for pre-evaluating and following up on learning initiatives. The application was developed in cooperation with the Swedish grocery retail group ICA.

The main findings are the following: On individual/team level, there exist several factors for effective learning, such as supervisor support, feedback and retrieval practice, that are not systematically utilized by corporations. On corporate/strategic level, a partnership between line management and the learning function on aligning learning goals with business goals is not only a must but also needs to be consistent all along the learning initiative, as well as being focused on identifying and dealing with concrete situations where learning is promoted or prevented, so-called enablers or blockers. Regarding digital solutions that support organizational learning there are immense opportunities, but if there is no established methodology in dealing with both individual/team and corporate/strategic level aspects of learning, they will be of limited use.

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1. Introduction

The fundamental drive behind this project is the broad need for reskilling and upskilling employees that the onslaught of digital transformation has brought upon most businesses in the last few years.

I have 25 years of experience from the Swedish IT and telecom industry, working both within it as a process development consultant, and for it as a public affairs expert at the Swedish IT and telecom industry association. The last ten years have been dedicated to help the association's members – around 1300 companies, both large and small, with a total of 95 000 employees – first to define and describe its aggregate needs for different IT expert skills and then, through various networking and lobbying activities, broaden the recruitment base for the sector. A central part of my job has been to be author and project manager for a series of surveys on the need for expert skills, the latest report being 'The IT Skills Shortage' (IT&Telekomföretagen 2017).

Besides the glaring shortage of expert skills that the IT sector constantly suffers from – in the Swedish case an estimated deficit of 70 000 IT experts by the year 2022 (IT&Telekomföretagen 2017), another observation has emerged in the last few years: That the need for more digital skills in working life is both far wider than the tech sector's need for expert skills, and more related to informal, on-the-job continuous learning sort of skills where the formal educational sector is not the primary provider. Wernberg (2019) defines two kinds of skills besides the technical specialist skills for which there is a growing demand: 'Enabling skills', required to be able to benefit from intelligent tools in order to work in new and more efficient ways, and 'complementary non-technical skills' that enhance humans comparative advantages in relation to machines.

Organization after organization are discovering that a huge effort is required to reskill and upskill their employees to benefit from the digital transformation, and some have begun to embrace 'learning' as an important ingredient in corporate culture. There is a gap though between the broad need for enhanced skills of different sorts and the current, limited view of corporate learning as the provision of courses. It is this gap that this Industry Research Report addresses.

My curiosity about how organizations outside the tech sector deal with reskilling and upskilling led me to contact ICA, one of the leading grocery retail groups in Sweden. In 2018 they embarked on an ambitious project to make learning as a central business strategy, which among other things led to their HR unit being awarded 'The HR team of the year' (Wise IT/Human Growth Award 2019). Although the strategy has generated a lot of inspiration, ICA, like many other organizations, struggles to identify the business effects of their learning activities. For that reason, ICA and I decided to develop a solution that would help them design learning activities in ways that make follow-up regarding business-related goals possible.

2. Purpose

2.1. Goal

The overall aim of the Industry Research Project is to find a solution to the problem of how mature[1], service-oriented organizations might secure, using data-driven methods, that investments in learning and development contribute to business goals, such as profitability and growth.

The goal of the project is to produce a pre-evaluation and follow-up tool to be used whenever a significant learning initiative is taken within an organization. The tool includes the following elements:

- A checklist on evaluation actions needed to secure that the initiative fulfils its intended goals.
- A list of quantifiable input-output data on both costs and benefits of the learning initiative.

2.2. Literature review and methodology

The literature review has consisted of research that approaches data-driven organizational learning from two different angles: First digital management research in general and how learning, implicitly or explicitly, makes part of it, and second on learning as such and how digital solutions might support it.

The methodology has consisted of a mixed method with a series of interviews and the development of a prototype 'LearnDesignCheck' that applies the findings in the literature review and the interviews. The prototype was developed in cooperation with the Swedish grocery group ICA. The interviews were made with one academic expert within the field (professor Per-Erik Ellström, Linköping University – see appendix 3a) and three HR/learning and development managers from three Swedish corporations comparable to ICA: the SEB bank, the Länsförsäkringar insurance company and Ericsson, the telecom systems company (see appendices 3b-d).

The method was outlined in a project plan that was created on September 15, 2020 (see appendix 1). The plan was largely followed, with a few exceptions: First, an interview with a professional research expert within the field, from a large consultancy firm (Deloitte), was planned but could never be arranged, second, the dates of the production of the prototype became delayed with a couple weeks, and third, the format in terms of number of participants and iterations became more limited than planned.

2.3. Delimitations

One overall limitation that affected the project was the Corona pandemic, that lead to all interactions, without exceptions, being made digitally. This restricted the practical application part in particular, since the options of using different methods for idea generation, prototyping etc. became limited due to no physical meetings being possible to arrange.

[1] By ”mature” I define organizations that were established before the arrival of the internet in the mid 1990's.

Another delimitation that I chose to do to focus on mature, service-oriented companies because of my previous experience is that it is these kinds of organizations where the skills challenge is the greatest.

A third delimitation, in order to make the scope of the study more manageable, was to focus on measurement of the business effects of learning initiatives, rather than studying data-driven organizational learning in general. The latter is rather extensively researched anyway, since it is the object of the former.

2.4. Structure of the report

Following the descriptions above of the goal, literature review and methodology, the report is structured according to the following: A literature review in section 3 and methodology description in section 4, followed by a discussion, an analysis and conclusions in sections 5, 6 and 7.

3. Literature review

The introduction above indicates that the digital transformation leads to skills needs that challenge the ways learning is organized and performed. The thesis statement is thus that in order to find solutions to how organizational learning should be organized in effective ways we need to study both the effects of digital transformation, and the tools and methods to deal with it, as such, and how organizational learning is organized.

The literature review is therefore made from two angles: In subsections 3.1 to 3.3 the focus is on the effects of digital transformation in general, and the ways learning makes part of it, and in subsections 3.4 to 3.8 the focus is on organizational learning and how digitalization both affects and supports it.

3.1. Introductory overview of digital transformation and its effects

The effects of digital transformation on how organizations learn and develop come from a combination of different, mainly technological, developments in the last fifty years. I write 'mainly' because parts of the developments are also related to changes in usage and business models.

In this subsection the most important developments are covered, including their combinatorial effects, leading to the further study on their effects on learning in the following two subsections.

A natural starting point is the so-called Moore's Law. This refers to the ongoing increase of processing power in closed circuits chips, that are the central component of all sorts of digital equipment. The origin of the concept was an observation made in 1965 by Gordon Brown – then engineer at Fairchild Semiconductor and later co-founder of the integrated circuit chip company Intel – that the number of electronic components including transistors on an integrated circuit chip would double every year (Goolio 2015).

The pervasive effects of the on-going increase of processing power (see figure 1) have been underscored by most observers of the consequences of digital transformation (for example Brandrup-Wognsen 2019a and 2019b, Kelly 2016 and Ismail et al 2014).

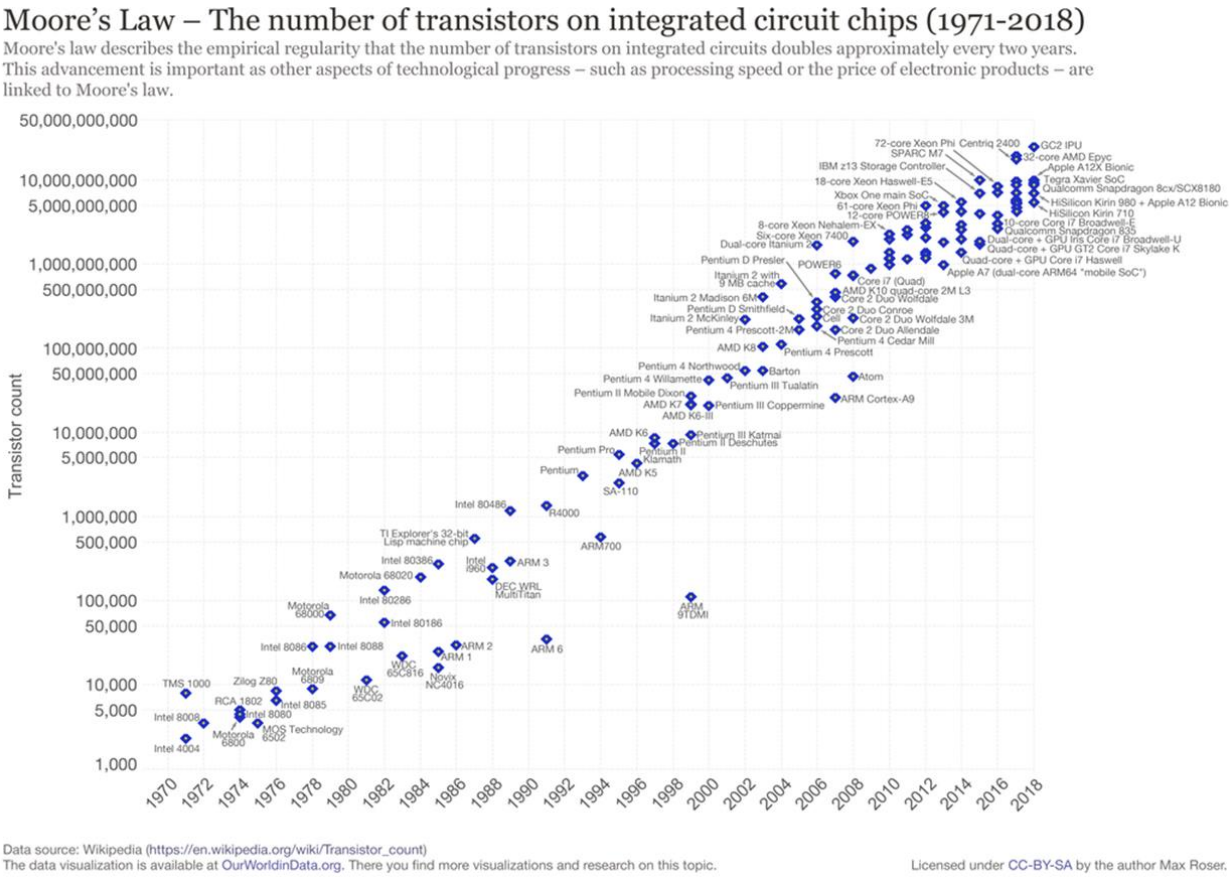


Figure 1: Graphical Illustration of Moore's Law. Source: Business Insider (2019).

The effects of the successive increases in processing power were until the 1990's mainly restricted to the administrative and IT-related parts of the economy, mostly in the form of effectivization and automation of administrative och manufacturing processes. Beginning in the 1990's, a series of technical developments beyond the mere administrative or manufacturing domains gained momentum, developments that in turn were boosted by the effects of Moore's law.

It is difficult to distinguish one development trend from another, and in order to do that one first needs to identify what the basic digital components are that are under development. One way of defining it is through IT&Telekomföretagen's recurring surveys on the need for IT expert skills, of which the most recent one is IT&Telekomföretagen (2017). As part of the surveys the respondents – employers within IT, telecom and digital services – are asked what kind of digital products and services they deliver. The categories that the products and services belong to are presented in figure 2.

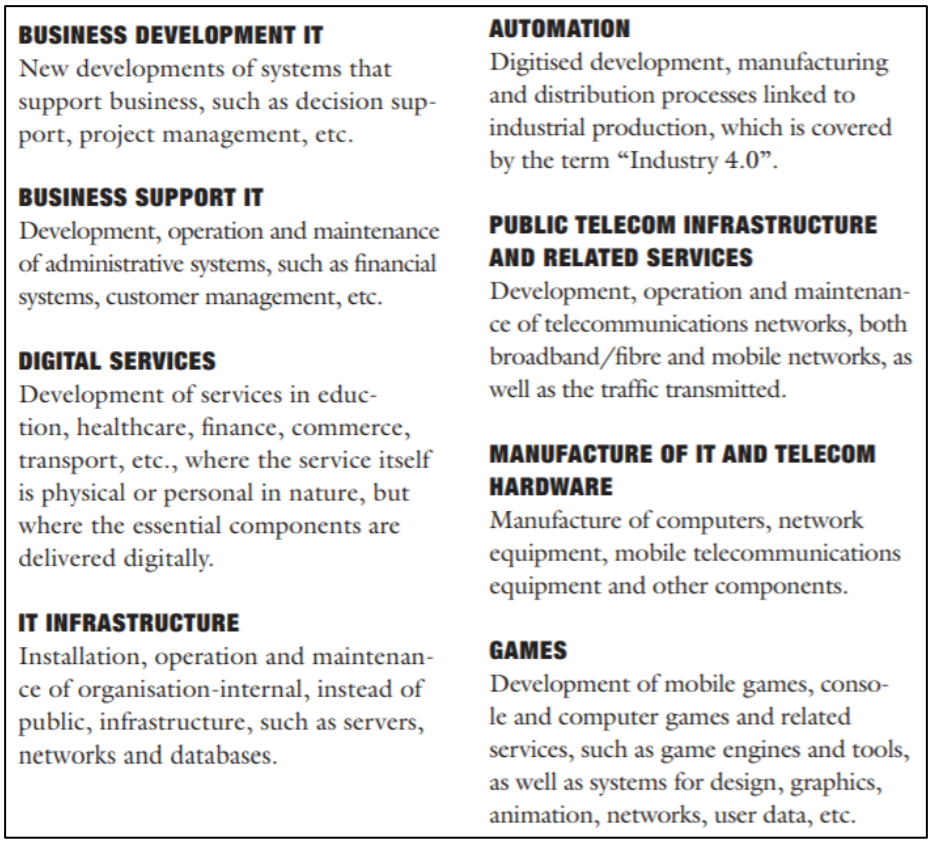


Figure 2: Digital products and services that IT and telecom suppliers deliver (IT&Telekomforetagen 2017).

The respondents in the IT&Telekomföretagen surveys are further asked what the main development trends are that drive the needs for skills. In the 2017 survey, 13 trends were identified, se figure 3.

In order not to lose oversight when I discuss digital development trends relevant for learning, I here group the products and services represented in figure 2 into the three broad categories that normally define the IT and telecoms sectors: hardware, software and communications development. Combining these three categories with the 13 drivers, developments could be described along the following lines.

Regarding hardware ('IT infrastructure', 'Managing of IT and telecom hardware' and 'IT infrastructure' in figure 2), the most prominent developments, besides the constantly increasing data processing power already described, have been within data storage and battery capacity. These underpin most of the drivers in figure 3, but in particular those numbered 1, 5 and 7, with their heavy reliance on cloud computing and Big Data. On the software side ('Business development IT', 'Business support IT', 'Digital service', 'Automation' and 'Games' in figure 2), we have seen strong developments in programming technologies, with machine learning and neural networks as their current, leading forms. These also underpin most drivers, but number 7 in particular, with its focus on artificial intelligence.

Figure 3: Drivers for development. Source: IT&Telekomföretagen (2017).

Within communications technologies ('Public telecom infrastructure and related services') we have seen the establishment and expansion of fixed, mobile and satellite networks, that together with the break-through of the internet protocol and the world wide web has lead to electronic communication being truly universal, across geographical areas and reachable to any kind of electronic device. These are also examples of technological developments that

underpin many of the drivers in figure 3, but most prominently number 6 and 11, with the great demands put on both mobile and fixed communications services.

The 'multiple underpinning' described above mirrors the observation of Ismail et al (2014): when these technological developments intersect, they lead to exponential effects, see figure 4.

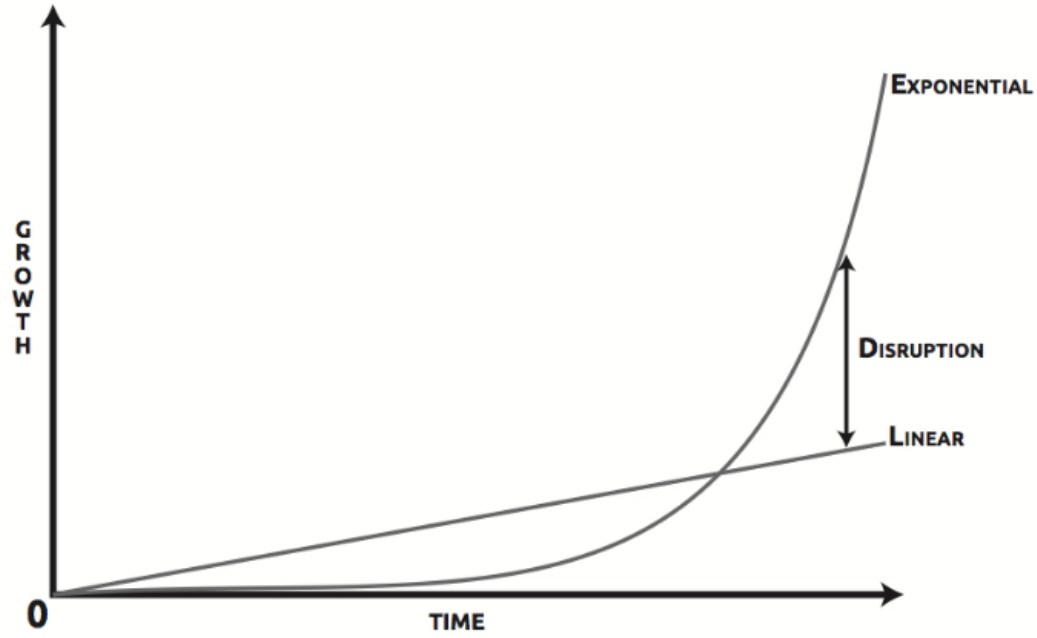


Figure 4: Linear vs. Exponential. Source: Salim et al (2014).

The way these combined technological developments affect how people interact and what is perceived as generating value, has been described by Kelly (2016) in the form of twelve 'forces'. Kelly categorizes these forces by using verbs in ing-form, 'becoming', 'cognifying', 'flowing' etc. In order to single out the developments that are linked to the learning theme of this IRP I put the most relevant of Kelly's forces into the following groups, further described below: Dematerialization, knowledge abundance, networking effects and platform dependence.

By dematerialization, that corresponds to the Kelly forces 'accessing' and 'flowing', is meant that access to data and digitally provided services is gaining in value relative physical ownership. Knowledge abundance, corresponding to Kelly's 'cognifying', entails that knowledge and knowledge-enhancing technologies are becoming readily accessible for everybody. The networking effects, 'sharing' and 'interacting' according to Kelly, are the combination of different sorts of access – to data, knowledge, people and organizations – over ever-more user-friendly interfaces and platforms, which in turn leads to a massive combinatory value increase. Platform dependence, or 'tracking' and 'filtering', finally, is the consequence of the combination of the powerful effects of the other three forces with the limited cognitive capacity of the human brain. This leads to a necessity to filter the abundance of information and communication channels. In theory the user has the power to choose, but in practice the filtering is to a large extent governed by the providers of

communication platforms, and the way services are designed using algorithms and user data.

Reflecting on the fundamental effects of the exponential digital transformation described above, with the purpose of this report – how to make organizational learning effective – in mind, I do the following observations.

A general observation is that the abundance of information in combination with the speed of change puts a great deal of pressure on every individual to learn and adapt. 'Learning agility' could therefore be regarded as a core competence.

Furthermore, the easy access to abundant knowledge and knowledge-enhancing technologies is indeed a powerful enabler of learning. However, as described further in section 3.4, learning, in terms of changed behavior and improved performance, is a rather inert process. Non-learning focused observers of digital transformation such as Kelly tend to underestimate this inertness.

Finally, the importance of dematerialization needs to be nuanced. First, there will always be human needs of physical products that cannot be dematerialized, such as food, housing, household equipment and transport means. Second, even for all-digital services, there is a need for predictable, standardized structures and processes that cannot be readily 'transformed'. This applies in particular to regulated and/or liability-prone fields such as banking, insurance and health care. This calls for a somewhat more long-term perspective on learning than the very much 'here and now', immediate value-perspective of Ismail et al (2014), Kelly (2016) and other observers, such as Ries (2011) and Hoffman & Yeh (2018).

3.2. Managing digital transformation and the role of learning

In addition to the general effects of digital transformation described above, one could point out effects on how organizations are structured and managed, highlighted by Ismail et al (2014).

First, there is the struggle to reconcile the traditional linear perspective on how products and services are produced and delivered with the centrifugal effects of dematerialization, knowledge abundance and networking effects. This affects organizations in different sectors in varying degrees, depending on how prone to dematerialization their products are, but as Ismail et al observe, all need to adapt.

Second, there is the challenge to change the traditional concept of management of scarce (mostly physical) resources to the concept of management of abundance of information-based assets. Ismail et al underscore, as also Kelly (2016) does, the importance of benefiting from 'accessing' and 'sharing'.

Tools, methods and models to get the best out of the digital transformation

The transforming effects of digitalization on both individuals and organizations have gendered a set of tools and methods to achieve maximum benefits from it. One could distinguish between tools and methods used on the small scale, or project level, on one hand, and methods to be used on the strategic level. The most prominent among the former are Design Thinking, Lean Startup and Agile. A brief description of each follows.

Design Thinking

Design Thinking is a multidisciplinary, human-centered approach to innovation (Carlgren, Elmquist and Rauth, 2016). It includes three stages: need finding, ideation and experimentation, and these in turn build on the following five core elements: User empathy, problem framing, experimentation and iteration, being visual and bringing diversity (Carlgren, Elmquist and Rauth, 2016). When applying Design Thinking, the various stages and elements are usually encapsulated into a so-called double-diamond model, see figure 5.

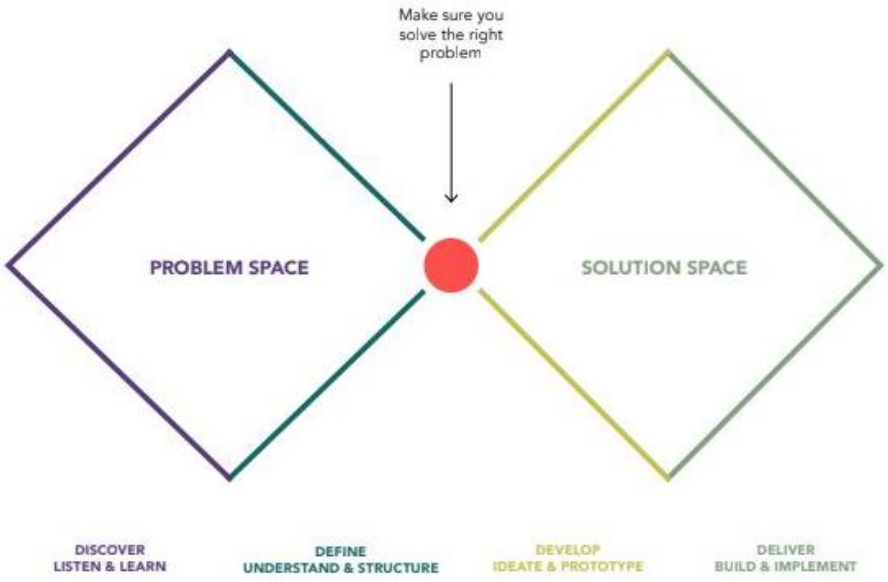


Figure 5: Design Thinking: The Double Diamond model (Lycke 2018).

The Design Thinking method has its greatest value at the beginning of a development initiative, when there are many unknown factors to deal with, where basic question are asked, such as what to do, why it should be done, for who and with whom. As could be read in figure 5, it is a learning tool, where the learning is based on exploring, testing and iterating until one lands on a clear path to the development of a solution.

Lean Startup

The Lean Startup method is a way of combining Toyotas Lean manufacturing model, focusing on enhancing value by minimizing waste, with a start-up approach where prototypes are quickly produced and gradually improved by recurring user iterations (Ries 2011). Central to the model are the build-measure-learn cycle (see figure 6), the importance of achieving validated learnings at each cycle, to produce MVP:s, minimum valuable products, on the learnings, and to make ‘pivot’ or ‘persevere’ decisions regarding strategy, based on the level of success of the MVP:s (Ries 2011).

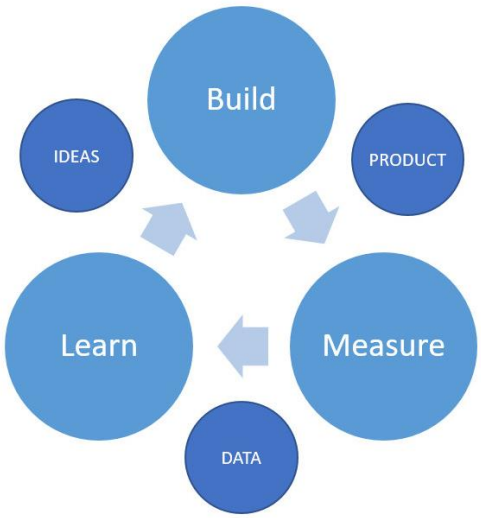


Figure 6: The Build-Measure-Learn concept within Lean Startup (Ries 2011).

The Lean Startup also has learning as an explicit component, but in comparison to Design Thinking, it is more about adapting and drawing conclusions from stepwise developments.

Agile

Agile is an approach to project management, where you work in a flexible, adaptable way towards a long-term goal. The environment is uncertain and turbulent, requiring tight, cross-functional cooperation within teams and with clients, users and other stakeholders. Development is normally done in time-boxes, or 'sprints' (Agile alliance 2019).

The learning component is not explicit in Agile, but similar to Lean startup there are implicit learnings in the adaptations that are made for each sprint.

Methods on strategic level

Raising the perspective to a strategic level, Ismail et al (2014) present how and the so-called Exponential Organization organizes its operations along ten 'attributes', divided into two groups, one focusing on internal attributes for internal control, acronymized as IDEAS, and five focusing on externalities, SCALE, that primarily provide creativity and growth – see figure 7.

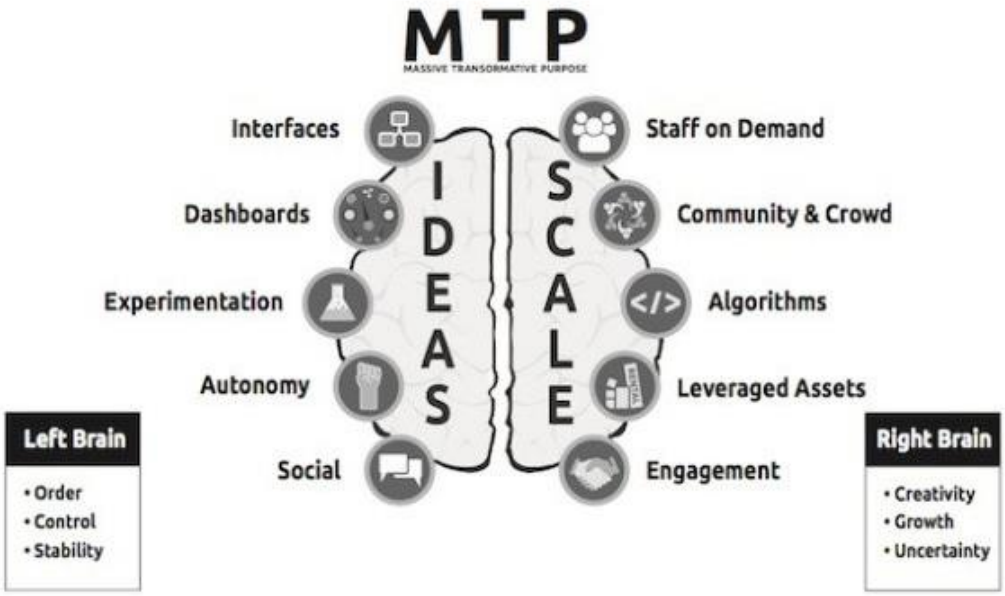


Figure 7: Exponential organization framework model. Source: Ismail et al (2014).

In the internal, left side part of the model, Ismail et al explicitly promote Lean Startup as a method. A general observation I make is that all the attributes, with namings such as 'interfaces', 'social', 'algorithms' etc., strive to incorporate the learning-relevant digital transformation effects I listed at the beginning of the section: Dematerialization, knowledge abundance, networking effects and platform dependence.

In addition to Ismail et al's model, that is most easily applied by relatively young, tech-intensive companies (although the authors underscore that the model is applicable for all sorts of organizations) one could point to other models that deal with how large, mature companies should deal with disruption and promote innovation. One is presented by Sharma (1999), that proposes a holistic approach that tackle the five central dilemmas that large corporations confront when trying to innovate: 'Seeds versus weeds' (ie. identifying ideas worthwhile developing among many), 'Experience versus initiative', 'Internal versus external staffing', 'Building capabilities versus collaborating' and 'Incremental versus pre-emptive launch'.

Complementing Sharmas analysis and recommendations with later thinking and method-development, there are other strategies on how to promote innovation in mature organizations. One is to establish a separate or semi-separate entity with a specific assignment of driving innovation. An example of this is the Swedish bank SEB:s entity SEBx, an innovation studio whose mission is to "drive progress, push boundaries and instigate change". (SEB no date, Malmer 2019).

Another strategy is to apply open innovation as described by Chesbrough (2003), where stakeholders outside the organization's own innovation entities could be involved. Sharma's (1999) way of dealing with 'Building capabilities versus collaborating', could be complemented with the benefits of Lean Startup and Agile: to have a strong, shared vision, under which the collaborating organizations can pivot (Ries 2011) and utilize the strengths of cross-functional teams (Agile Alliance 2019).

It is also worth noting that the Lean Startup methodologies are not reserved for startup companies alone, or SEBx kind of studios or open innovation partners for that matter. As Blank (2013) shows, larger corporations like General Electric and Qualcomm can successfully apply Lean Startup methodology in parts of their organization.

Coming back to the question of the extent to which learning is covered by the methods above, I do the following reflections.

Besides the 'learn'-step in the Design Thinking and Lean Startup, learning is at most an implicit part of the methods. The learning is furthermore mostly from the perspective of making practical adaptations as a preparation for the next step in a process, and not as a cognitive process leading to longer-term behavioral changes.

Connecting to the general observation at the beginning of the section, on learning agility as a core competence in an information-abundant and rapid-changing world, all methods described above have flexibility and adaptability as central themes. Learning agility could therefore be regarded as presupposed competence in the methods, but they say nothing on how it should be developed and applied in the long run.

My final reflection also involves the long-term perspective. A recurrent theme in Ismail et al (2014) is to have a truly slim organizations with a minimum number of 'FTE:s' (full time employees) and instead make use of 'staff-on-demand' and 'community and crowd'. As is discussed in section 3.6, psychological safety is one important ingredient for learning. Ismail seems to regard workforce skills as just one resource one among many, and there is no problematization of the need for stability and continuity in order to achieve lasting learning effects.

3.3. The aggregate perspective on the need for reskilling and upskilling

The previous section focused on the company level and the need for learning and reskilling and upskilling. Lifting the perspective to the aggregate level, a need to make investments in reskilling and upskilling emerges very clearly. The World Economic Forum estimates that by 2022, 54% of all employees will require significant reskilling and upskilling (World Economic Forum 2018).

Other studies have been made that, on aggregate levels, chart and analyse the effects of digitalization on the nature of work, among them McKinsey Global Institute (2018), see figure 8. A common theme is that automation and digitalization transform the needed work skills from the manual and routine to the cognitive and non-routine.

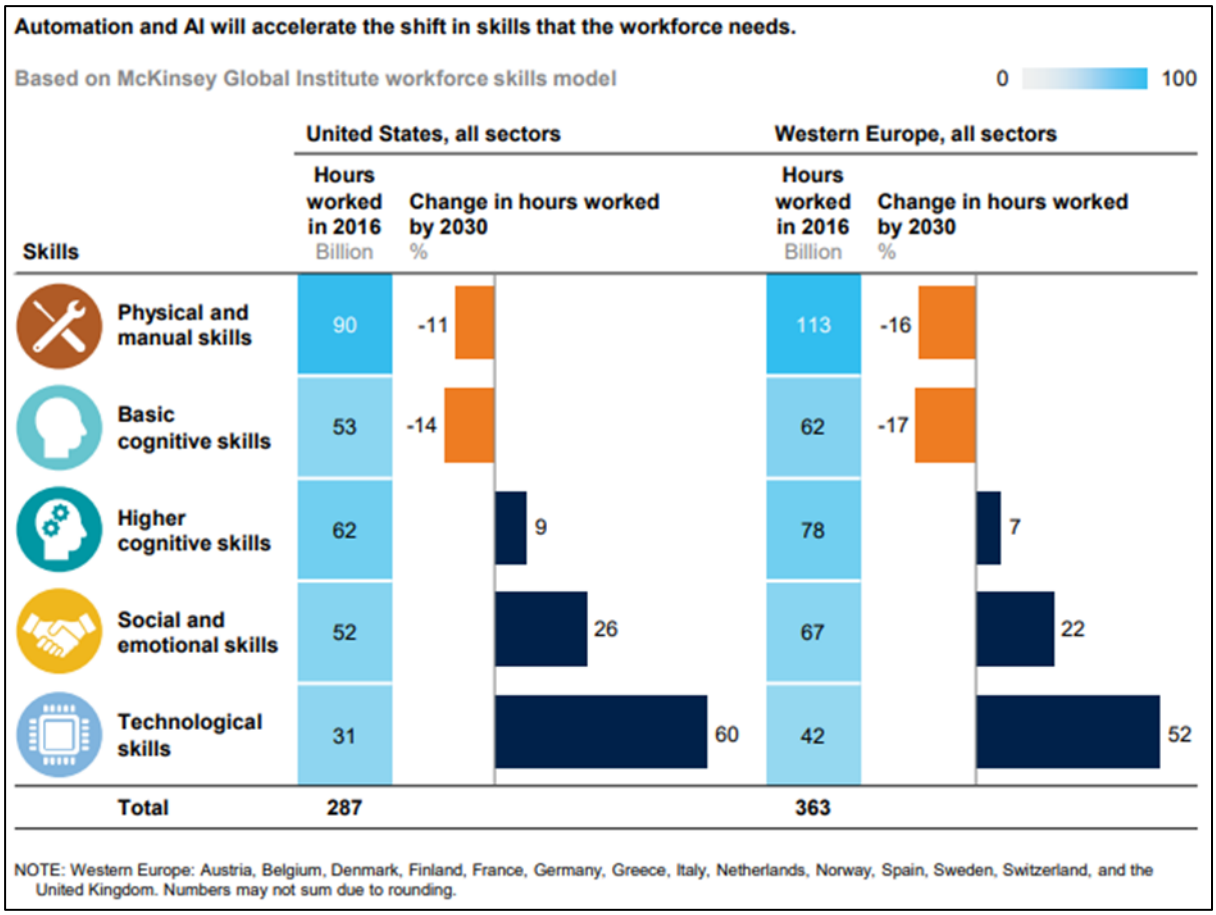


Figure 8. Source: McKinsey Global Institute (2018).

Another indication of the effects from digital transformation could be found in McKinsey & Company (2017), where a survey from LinkedIn users is presented, focusing on the technological skills regarded to be important in the future, see figure 9. A note of caution, beside the fact that self-reported web surveys have some methodological issues regarding reliability and validity, is that it gives a mere snapshot of what the drivers are regarded to be today, thereby missing the underlying dynamic changes.

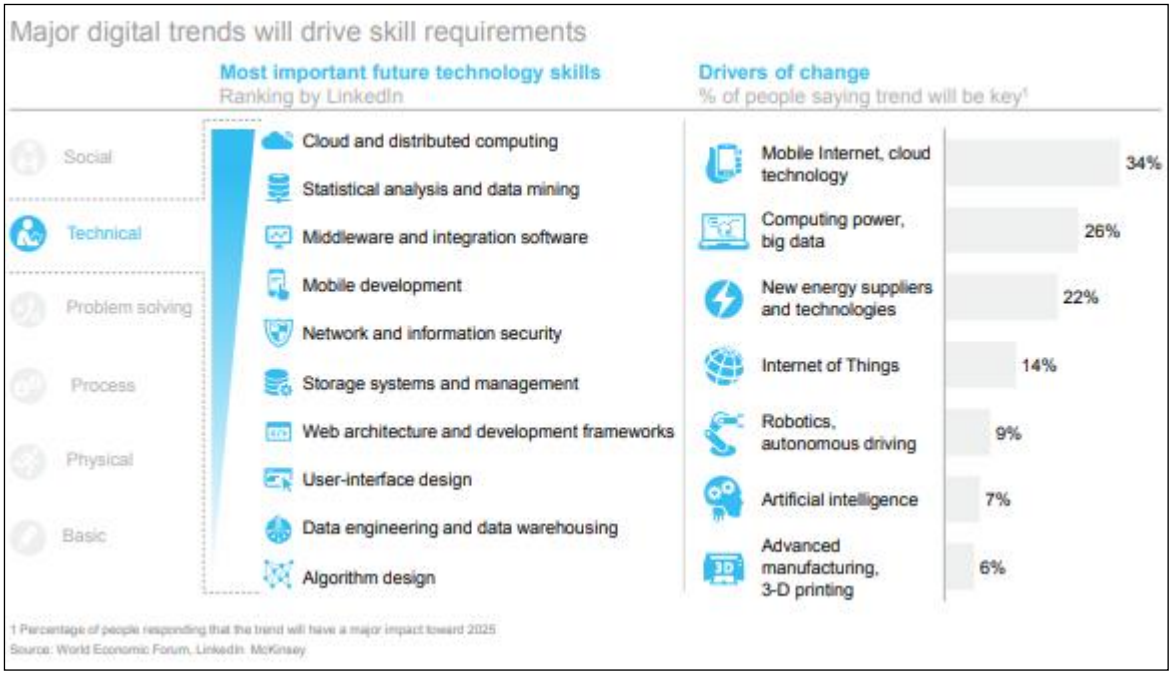


Figure 9. Source: McKinsey & Company (2017).

There are some further limitations to the McKinsey studies that are leading to not taking full account of the overall effects on the labour market. First, the analyses build on surveys made on business leaders in existing companies answering questions regarding existing professions. This leads to an underestimation on the effects on the workforce as a whole, including smaller and emerging companies (see for example Hoffman & Yeh, 2018).

Second, it leads to a static perspective on the nature of business itself, that undergoes fundamentals shifts to platform-based, networked economies and to more consumer-centric, service and access-based business models (Kelly, 2016, McKinsey Digital, 2018).

The above limitations notwithstanding, the main take-aways from this section is that there not only is an overall need to upskill a large proportion of the workforce, but there are also strong needs for reskilling, i.e. learning, within the workforce.

3.4. On learning and its effects in a digital world: Overview, definitions

The area of organizational learning, or training, and the ways to measure its effects is in itself complex. Adding the perspectives of digital transformation complicates it further. In the review made in the following sections I have chosen to deal with it along the following lines: First, in this section, an overview of the different definitions of learning, then an overview of factors that have proven to promote the effects of learning, divided by factors related to the individual or team level (section 3.5) and the organizational or strategic level (section 3.6). I then go into the issue of how to measure that learning leads to the desired effects (section 3.7) before going into how digitalization both affects and supports learning in various forms (section 3.8).

The two literature reviews made by Noe et al (2014) and Ford et al (2017) have been of particular importance.

Definitions and the nature of learning

Noe et al (2014) present the following set of definitions:

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 knowledge, skills, abilities and other resources.

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

Examples of formal learning are classroom and online courses. Examples of informal learning are on-the-job-training, peer-to-peer training, coaching and social learning. Informal learning could take a great number of forms, and the factors that are analyzed in the next section (reflection and feedback, spaced practice etc.) mirror these different forms.

Regarding the role of formal vs informal learning in organizational development, both Noe et al (2014) and Ford et al (2017) refer to sources claiming that up to 75 % of the learning taking place within organizations are of the informal kind. A reflection is that the exact figure may not be important, rather the sheer amount of studies that cover informal learning of various sorts is a confirmation of its importance. Another observation is that several sources underscore the importance of the interdependence between formal and informal learning and trying to find a proper mix between them, rather than off-setting them against each other (Manuti et al 2015, Van der Heijden et al 2009).

Two other concepts that are prevalent in academic literature are ‘Transfer of training’ and ‘Interventions’.

Transfer of training is defined by Noe et al (2014) as “The use of learned skills and abilities on the job” (p. 249). Kazbour et al (2013) further specifies it as “the degree to which trainees can apply the knowledge, skills, and attitudes gained in training to the job” (p. 5).

Regarding interventions I have not succeeded in finding a clear definition, but a contextual interpretation from among others Noe et al (2014), where it is mentioned frequently, refers to situations when employees are subject to direct actions to obtain or apply learnings.

Before embarking on the review of the effects of different forms of learning within a digital context, I want to highlight the fact that learning is an inert process. Referring to a number of sources, Kazbour et al (2013) state that a problem with most training programs is that only between 5 % and 20 % of what is learned in training is ever applied on the job. Clark (2020a) underscores that learning demands attention and requires effort. The human brain’s working memory, he argues, is a narrow funnel through which they acquire knowledge and skills. “Psychologically, we’re hard-wired to delay, procrastinate, not take learning seriously and see the rewards as too far down the line to matter. We have to fight these traits and do what we can to encourage authentic and effortful learning” (Clark 2020a, p. 132).

3.5. Factors on micro-level that enhance learning towards achieving business goals

Since the scope requires the securing that investments in learning and development lead to the achieving of business goals, I focused on debates that cover factors within learning and training that contribute to business outcomes.

A first general observation is that most studies focus on the micro level, i.e. on actions and behaviors related to individuals or groups of individuals. Studies that focus on the organizational or strategic level, of interest for the assessment of whether different learning initiatives contribute to business goals, are scarce in relation (Noe et al 2014).

That is not to say that micro level effects are unimportant. As the following account of different factors shows, they indeed contribute to business performance.

The factors are numerous and difficult to distinguish from each other. The account below should therefore be regarded as a tentative effort to put them into natural groupings. The length of some of the italicized headings mirrors the extent to which factors have been bundled.

Motivation/self-regulation/goal orientation

Ford et al (2017) mentions helping individuals to translate their goals into action through setting implementation intentions as an effective example of an intervention impacting behavioural changes outside a training context. Gollwitzer and Sheeran (2006) made a review of 94 independent tests that showed that implementations intentions had a positive effect on medium-to-large magnitude on goal attainment, with a factor of 0.65. Friedman and Ronen (2015) proved empirically, through two experiments, that forming implementation intentions at the end of a training program increases the likelihood of using the newly acquired skills.

A number of studies further confirm the relation between self-regulation/goal setting and learning. In a meta-analysis made by Sitzmann and Ely (2011), they identified ‘Goal level’, ‘persistence’, ‘effort’, and ‘self-efficacy’ as having strong effects on learning. In another meta-analysis by Mesmer-Magnus and Viswesvaran (2010) the efficacy of five common pre-training interventions in promoting learning – Attentional advice, goal orientation, metacognitive strategies, advance organizers and preparatory information – was explored. Attentional advice and goal orientation yielded the most consistent learning gains.

Brown et al (2013) designed a goal-setting intervention among 210 managers, using so-called behavioural observation scales (BOS), to facilitate transfer from a 2-day performance coaching programme. The results suggested that providing the managers with BOS that outline the key skills covered in the training programme, having them set goals or urging them to do their best to use these skills back at work, and having workplace colleagues assess their performance at work using these BOS, may be sufficient to bring about transfer. In another study made by Brown et al (2016), 172 participants in a public-sector management development were assigned to one of three behavioral conditions: behavioral outcome goals, behavioral specific goals and rank-ordered behavioral goals, together with a comparison with a ‘do-your-best’ condition. Self-efficacy and transfer (self-BOS ratings) scores, across all conditions, were higher post-program, and behavioral outcome goals

increased transfer relative to the other two forms of behavioral goals. There was no evidence, however, that either form of behavioral goals was superior to 'do-your-best' goals.

A motivation-related factor that is pertinent in the digital context relates to gamification. A meta-analysis by Sitzmann (2011) explored the theory that simulation games are more effective than other instructional methods because they simultaneously engage trainees' affective and cognitive processes. Consistent with the theory, posttraining self-efficacy was 20% higher, declarative knowledge was 11% higher, procedural knowledge was 14% higher, and retention was 9% higher for trainees taught with simulation games, relative to a comparison group (with a reservation here that the results showed strong evidence of publication bias in simulation games research).

Supervisory support

According to Noe et al (2014), social support from supervisors has long been recognized as important for both learning and transfer of training. Among studies referred is Ouweneel et al (2009), that examined the effects of task characteristics, such as psychological job demands and job control, as well as social support from the supervisor and colleagues on informal on-the-job learning, among 1,588 managers in the Dutch home-care sector. They concluded that high demands, high control, and high colleague and supervisor support were each associated with high levels of informal learning. Another study is Walumbwa (2009), that tested an integrative model of voluntary learning behavior with a sample of 398 employees from a large automobile dealership. They concluded that individuals are more likely to pursue learning activities when they identify with their employing organization and have a high-quality leader-member exchange relationship with their supervisor.

Kazbour et al (2013) conducted a study involving eighty human resources employees, where they participated in a workshop testing both formal and mixed formal/informal learning methods. The informal element in the latter group included having a stronger involvement of their managers. The results suggested that managers who interact with employees in the work environment before and after training increased the likelihood of transfer taking place.

Reflection and feedback/After-action reviews

Sparr et al (2017) made a partially mixed-method field investigation on feedback-seeking and reflection as informal, proactive learning behaviors in the transfer of formal training in the context of global leadership development programs. Their investigation supported the hypothesis that feedback seeking and reflection are both relevant facilitators of transfer of training, and that the transfer was highest when both feedback-seeking and reflection were high.

Both Noe et al (2014) and Ford et al (2017) promote After-action reviews (AARs) as a design element that can facilitate learning and transfer of training. AAR could be considered as a systematized form of reflection, defined by Noe et al as "learning experiences in which learners analyze their behavior and review their performance on tasks and events that occur during training" (Noe et al 2014, p. 255). Tannenbaum and Cerasoli (2013) conducted an extensive quantitative meta-analysis of literature related to debriefs (that, according to them, is synonymous with AARs) and found that organizations can improve individual and team performance by approximately 20% to 25% by using properly conducted debriefs. Villado and Arthur (2013) found that although the effect of AARs on knowledge acquisition

remains unclear, they may be an effective approach for enhancing team complex task performance and for developing or maintaining high levels of team efficacy, openness of communication, and cohesion.

Spaced/interleaved/retrieval/post-training practice

Different studies have tried to capture which ways to design practice is more effective. Donovan and Radosevic (1999) made a meta-analysis of 63 studies that centered on the relationship between conditions of massed practice and spaced practice with respect to task performance. The analysis indicated that individuals in spaced practice conditions performed significantly higher than those in massed practice conditions. They observed though that effect sizes were significantly higher in studies with low methodological rigor compared with those with higher rigor.

Roediger and Butler (2011) contains a review that emphasizes the strength of retrieval practice for long-term learning. They define retrieval practice as "the act of calling information to mind rather than rereading it or hearing it. The idea is to produce 'an effort from within' to induce better retention" (Roediger and Butler 2011, p. 20). Besides their finding that retrieval practice often produces superior long-term retention relative to studying, they observed that repeated testing is better than taking a single test, that testing with feedback leads to greater benefits than does testing without feedback, that testing under conditions that make retrieval easy often has little effect and that the benefits of retrieval practice can be transferred to different contexts.

Other practice forms were the focus of a monograph made by Dunlosky et al (2013), consisting of a review of ten learning techniques: elaborative interrogation, self-explanation, summarization, highlighting/underlining, keyword mnemonic, imagery use for text learning, rereading, practice testing, distributed practice, and interleaved practice. The context was student learning, but I find it worthwhile to consider in organizational contexts too because the techniques involving practice proved to benefit learners of different ages and abilities and boosted performance across many criterion tasks and educational contexts. Practice testing and distributed practice received high utility assessments, while interleaved practice received moderate utility assessments, in part because it had just begun to be systematically explored.

3.6. Factors on strategic/meso level

Regarding the relation between having focus on the micro level, discussed in section 3.5 above, and the corporate management level, Noe et al (2014) state: "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" (Noe et al 2014, p. 261).

I interpret 'meso' level as being the intermediate level between the individual or team on one hand and the industry-wide 'macro' on the other, i.e. meso is the corporate management level. Similar to the challenge in finding natural groupings for the micro level factors in section 3.6, there is a difficulty in distinguishing between different factors that relates to research on company-level activities to enhance effects of learning. An effort is

made below, but a reflection that could be made beforehand is that they all in some way or other point to Brinkerhoff and Apking's (2001) 'performance system', explained in the following subsection.

Management commitment and other 'meso' contextual factors

In line with the aims of this study which are looking to secure learning initiatives that reach business goals, I have reviewed which covers *meso level* management commitment to learning. Noe et al (2014) and Ford et al (2017), both explore literature that advise that there is a gap in the knowledge required at his level.

A perspective in the literature that both explicitly and implicitly wants to promote management's role is the one of enhancing 'transfer', i.e. there is an underlying assumption that the knowledge provided by training must be maximally applied. An example is Baldwin et al's (2017) calls for a more 'consumer-centric' perspective on training transfer research. By this they mean getting closer to trainees, trainers and learning contexts, and examine ways to both optimize transfer and measure it in a more expansive way. Another example is Blume et al (2019), that present a so-called Dynamic Transfer Model that involves a process with repeated transfer attempts in order to achieve work behavior and performance (see figure 11).

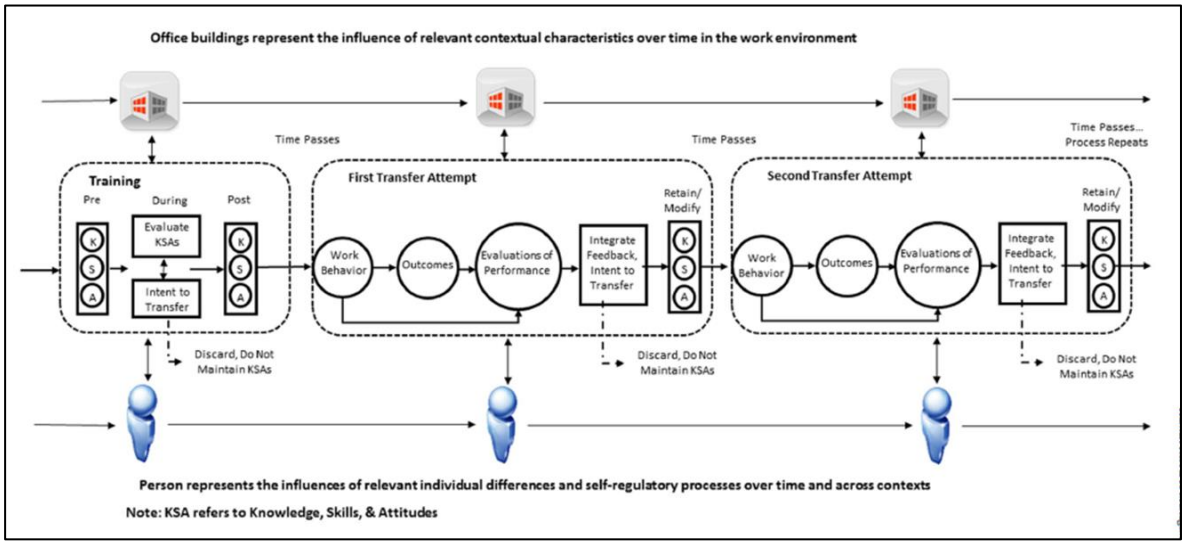


Figure 11. Dynamic Transfer Model. Source: Blume et al (2019).

Other strands of the literature cover the effects of contextual factors beside the explicit training activities, where 'management commitment' could be one among many. An example is Ellinger (2005) that, focusing on how to best promote informal learning, draws a map where 'Learning-committed leadership and management' is one out of four contextual factors mentioned, see figure 12.

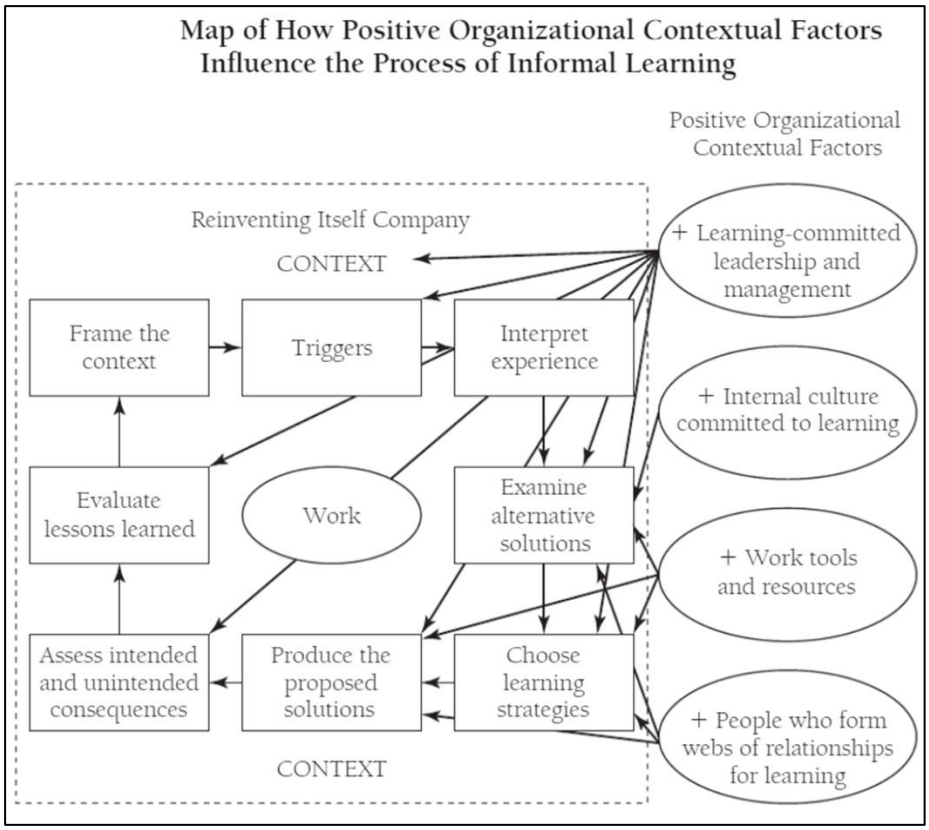


Figure 12. Source: Ellinger (2005).

Other contextual factors that I consider 'meso-relevant' refer to the working climate in general, such as having a supportive learning environment and ensuring psychological safety. Regarding the latter, studies that could be mentioned are Kostopoulos and Bozionelos (2011) that found a link between psychological safety and learning when studying 142 project teams, Carmeli et al (2009) and Carmeli et al (2011) that found that trust facilitated learning among students and CEO's respectively, and Swift and Hwang (2013) that cognitive trust (as opposed to affective trust) is important in creating an organizational learning environment.

One conclusion that I draw is that the literature tends to have a somewhat one-eyed, training-professional focus on securing 'transfer', rather than having the management's perspective where learning, training and transfer are no ends in themselves. Another is that leadership commitment as a contextual factor tends to be regarded as something passive, more like 'being supportive' rather 'being in charge'. Regarding other climate-related factors such as having a supportive learning environment and promoting trust and psychological safety, line management's responsibility for dealing with these are at most implicit in the literature, while I think that this is a 100 percent management responsibility.

Brinkerhoff's high impact learning approach

While the academic literature approaches the question on corporate management's role in securing effects of learning in rather roundabout ways, Brinkerhoff and Apking (2001) turn on the issue heads-on. Line management's responsibility for achieving business-relevant permeates their work and they question many of the concepts that traditional training is based upon.

According to Brinkerhoff and Apking, there are five interacting key principles for achieving high-impact learning:

1. *Strategic leverage.* Organizations should focus their learning efforts on a few strategic actions rather than seek to be comprehensive. To define the actions the organization should start by identifying the most critical business goals, then backtrack them through processes, job/team results and learning of the most critical competencies. It is in this respect that Brinkerhoff and Apking promote 'leveraged transfer' and not just transfer, underscoring that transfer should have direct connection to the aspired business results.
2. *Deep business linkage.* Achieving 'business results' should not be a vague, overall purpose of training but should permeate all aspects of training design, development, implementation and evaluation and should be directly linked to individual performance.
3. *Systematic Learning-to-Performance Process.* Learning and performance improvement should be integrated rather than be focused on creating separate 'events'. Brinkerhoff and Apking warn about using terms such as 'before', 'during' and 'after' training. Performance support does not start 'after' training, nor does thinking about goals and results only 'before' training.
4. *Integration with Performance Support Systems and Factors.* Performance improvement is at the heart of the high-impact learning approach, and it is here that the concept of 'performance system' comes into focus. Brinkerhoff and Apking acknowledges that performance is complex, that it is not only driven by capability but also by intrapersonal factors such as attitude, motivation and values as well as by external factors such as workplace culture, management, support tools, rewards etc. Their point is that much of this system is undefined and not overtly managed, but parts of it nevertheless very recognizable and powerful.
5. *Exquisite Learning Solutions.* By 'exquisite' they mean responsive and adaptive solutions, not necessarily expensive och fancy. They should always be the best solution for the needs and circumstances that drive them.

Based on these principles they define the high-impact learning process, which according to them consists of three major elements: creating focus and intentionality, providing learning activities to enhance capabilities and supporting performance improvement. The illustration in figure 13 emphasizes that the three elements are structured and managed as a coherent process.

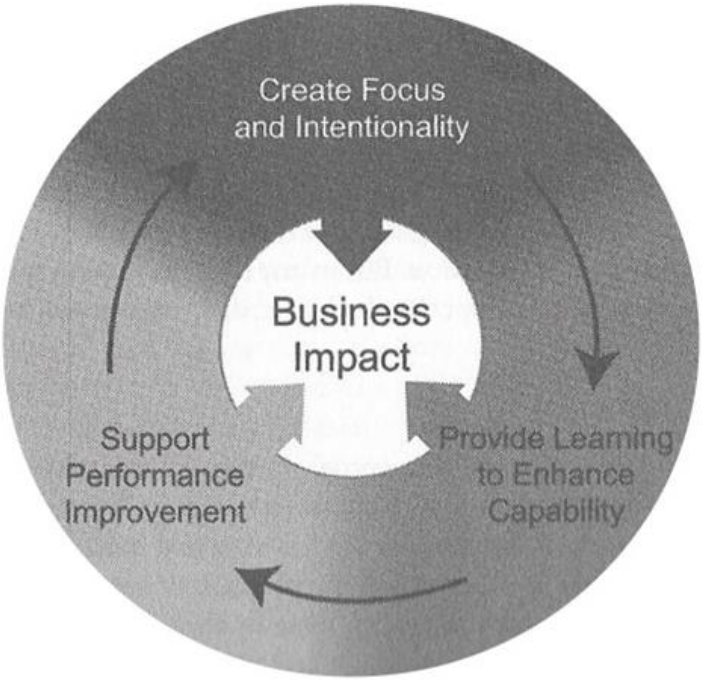


Figure 13: Core processes of high-impact learning. Source: Brinkerhoff and Apking (2001).

The key principles and core elements are the bases of Brinkerhoff and Apking's 'metatool': the impact map. They define it as: "A visual representation of the linkage, or 'line of sight', between a job position or a functional role and how the capabilities (skills and knowledge) for that role influence key business results of the organization" (Brinkerhoff and Apking 2001, p. 60). The map could have many formats depending on the complexity of the learning initiative and the number of job roles involved. They share a common core structure, however, represented by figure 14.

Figure 14: Fundamental Impact Map Structure. Source: Brinkerhoff and Apking (2001).

3.7. Measuring effects of learning

When dealing with the tricky question of how to assess that investments in training lead to business results, a standard reference is the work of Donald K. Kirkpatrick and his four-level model (Kirkpatrick and Kirkpatrick 2005, see figure 15).

Level	Critical question	Guidelines for evaluation
1: Reaction	How do trainees react to the program, or better, what is the measure of customer satisfaction?	1. Determine what you want to find out. 2. Design a form that will quantify reactions. Encourage written comments. 3. Get 100 percent immediate response. 4. Develop an acceptable standard. 5. Measure reactions against the standard.
2: Learning	To what extent has learning occurred?	1. Measure knowledge, skill, and/or attitudes before and after the training. 2. Use a paper-and-pencil test for knowledge and attitudes. 3. Use a performance test for skills. 4. Get 100 percent response. 5. If practical, use a control group that does not receive the training to compare with the experimental group that receives the training.
3: Behavior	To what extent has on-the-job behavior changed as a result of the program?	1. If possible, evaluate on before and after training. It is usually impossible to do this, so it becomes necessary to do it after the program and determine what the participant is doing differently than he/she was doing before the program. 2. Allow time for the behavior to change. 3. Survey and/or interview one or more of the following: a. The trainee b. The bosses of the trainee c. The subordinates of the trainee d. Others who observe the behavior of the trainee 4. Get 100 percent response or a sampling. 5. Repeat at appropriate times. 6. Use a control group if practical. 7. Consider the cost of the evaluation versus the possible benefits.
4: Results	To what extent have results occurred because of the training?	1. Measure on before and after training. 2. Allow time for possible results to take place. 3. Repeat at appropriate times. 4. Use a control group if practical. 5. Consider the cost of the evaluation versus the possible benefits.

Figure 15: The Kirkpatrick model. Source: Kirkpatrick and Kirkpatrick (2005), compilation of pages 5-7.

As Professor Donald Clark notes, Kirkpatrick has for decades “been the only game in town in the evaluation of training” (Clark 2020b). As he also notes, Kirkpatrick is hardly known within education. I can confirm that I have found no reference to Kirkpatrick in any of the academic texts that I have read in doing this IRP.

Clark further presents several criticisms against the model, among them that it is summative, ignores context, ignores methods of delivery and is totally inappropriate for informal learning. Brinkerhoff and Apking (2001), when discussing the pros and cons of the Kirkpatrick model in chapter 9, note that the return-on-investment (ROI) oriented levels three and four are far less applied than the first two, because they are regarded as being more difficult and expensive to measure. They point out that training practitioners might state apologetically that they are working toward doing ‘better’ beyond levels one and two.

Brinkerhoff and Apking underscores though, in line with their perspective that learning activities are only one among several elements to achieve performance (see section 3.7 above), that training only produces capability, and not performance. To use ROI approaches on ‘training’ is therefore inappropriate, at levels three and four it is not ‘training’ that is evaluated but the larger performance improvement process in which training plays only a small role. Brinkerhoff and Apking conclude that the four-level framework does not guide inquiry directly to the performance environment, nor does it aim to identify and assess the most critical performance factors that make the difference between success and failure.

That is not to say that evaluation with an ROI perspective should not be done. Brinkerhoff and Apking argue though that evaluation should be a learning process in itself, with a sharing of responsibilities between management and the training function. The authors recommend

an evaluation framework focusing on performance improvement based on the following three primary questions, using the strategy graphically illustrated in figure 16 (both the questions and the strategy chart also appear in Brinkerhoff 2005):

1. How well is our organization using learning to drive needed performance improvement?
2. What is our organization doing that facilitates performance improvement from learning? What needs to be maintained and strengthened?
3. What is our organization doing, or not doing, that impedes performance improvement from learning? What needs to change?

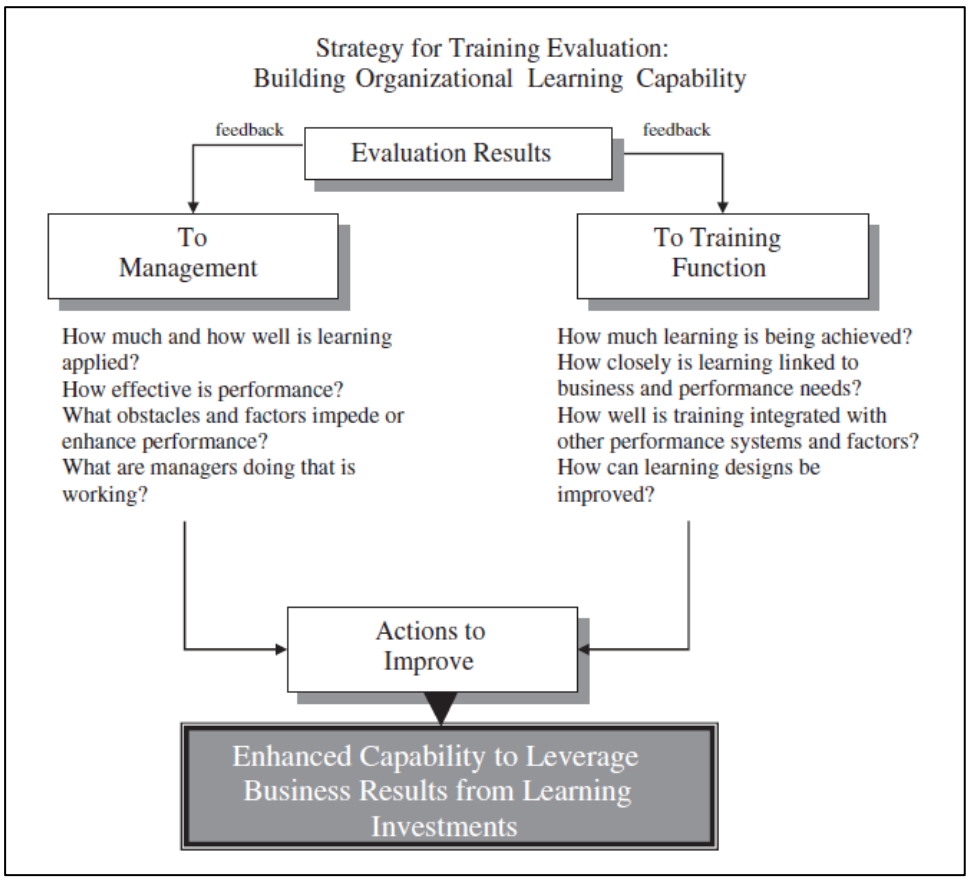


Figure 16: Whole-Organization Evaluation Strategy. Source: Brinkerhoff (2005)

As a method within the strategy, that addresses the primary questions above, the so-called Success Case Method is presented and tested in Brinkerhoff (2005). The method entails the locating of potential and likely success cases – individuals or teams that have used a new capability acquired through the training initiative in a successful way – by using surveys or performance data, and then making interviews to document the actual nature of success. The method is as useful to identify instances of non-success.

Brinkerhoff (2005) says that this method not only gathers valuable insights, it also contributes with a strong storytelling effect. He also presents the result of a case study using the method on 172 technicians of an IT company. The technicians, working worldwide, went through two-week courses that would help them sell server peripherals. By making surveys half-way through large differences in the use of the course learnings were discovered. Some technicians reported that the learnings had ‘saved their day’ while 50 % were not using the

learnings at all, one reason being that they had no customers buying the server peripherals. This led to a redesign of the enrollment procedures so that only those technicians who had true needs went through the training.

Another study focusing on performance-based methodologies is Kazbour et al (2013), already referred to in section 3.6 when discussing effects of supervisory support. The study indicated that transfer increased among participants whose managers interacted with them in the work environment before and after the training.

3.8. Digital tools and methods that support learning

This section covers the use of digital tools, methods and systems that support learning. In analogy to sections 3.6 and 3.7 I begin by looking at the use from the micro (individual, team) level, before looking at the organizational level. I conclude by some reflections on the research of how effective different tools are in achieving learning results.

On the use of digital tools, with focus on micro level

Brinkerhoff and Apking (2001) dedicates a chapter early in their book (number 2) to discuss the pros and cons of 'e-learning'. Although they acknowledge the effectivization potentials of it, they conclude that there is nothing inherent in e-learning technology that assures greater performance results from training than any other training technology. They underscore the importance of how the training is designed, where the proper paradigm is to ask, when creating e-learning, 'How do we help people learn from their performance?' rather than 'How do we teach them this content?'.

It should be noted that Brinkerhoff and Apking's work dates almost twenty years. The internet had only been established for five years at the time, and the developments with their combined exponential effects, described in section 3.1, were still to come.

The effects of these developments on learning, with Artificial Intelligence (AI) as its central manifestation, is the object of Clark (2020a). Clark observes that conventional e-learning has largely been one-size-fits-all with a focus on the presentation of content as media that generally ignores what is already known by the learner. With AI on the other hand, Clark goes on, truly adaptive learning is possible, where the online learning adapts to the learners' needs as they progress through a computer-based learning experience. My observation is that this comes closer to the proper paradigm of Brinkerhoff and Apking (2001) mentioned above.

Clark (2020a) differentiates between 'personalized' and 'adaptive'. While traditional personalized learning could have a wide meaning regarding the level of sensitivity to the individual learner, truly adaptive learning, using recent developments in AI, comes closer to delivering the effectiveness of one-to-one learning in line with what Bloom (1984) describes, according to Clark.

Clark is cautious to present AI as a solution for everything related to learning. He finds the term 'intelligence' unfortunate and prefers to define AI in terms of competencies, using software and statistical pattern matching, rather than being intrinsically intelligent. AI could be many things, Clark argues, and is bound to certain domains. The problems to get AI to be more general across domains is perhaps the greatest limitation of AI in its current form, according to him.

Within its various domains, using elements such as machine learning, broadly defined by Clark as software that gets better the more it is used, AI is indeed powerful though, according to Clark. With different applications, using appropriate interfaces including chatbots and video, AI strengthens adaptive learning, including the informal factors mentioned in section 3.5: peer-to-peer learning, interleaving, spaced practice etc. (Clark 2000, chapters 5, 9 and 10).

Tools and systems for organizational learning

Raising the perspective to the organizational level, there is a whole set of tools and systems that in some way or other supports organizations' learning functions. Johan Skoglöf, a senior learning consultant with more than 20 years of experience of developing learning functions in large Swedish organizations, describes the ecosystem of learning solutions in figure 17. (Skoglöf 2019).

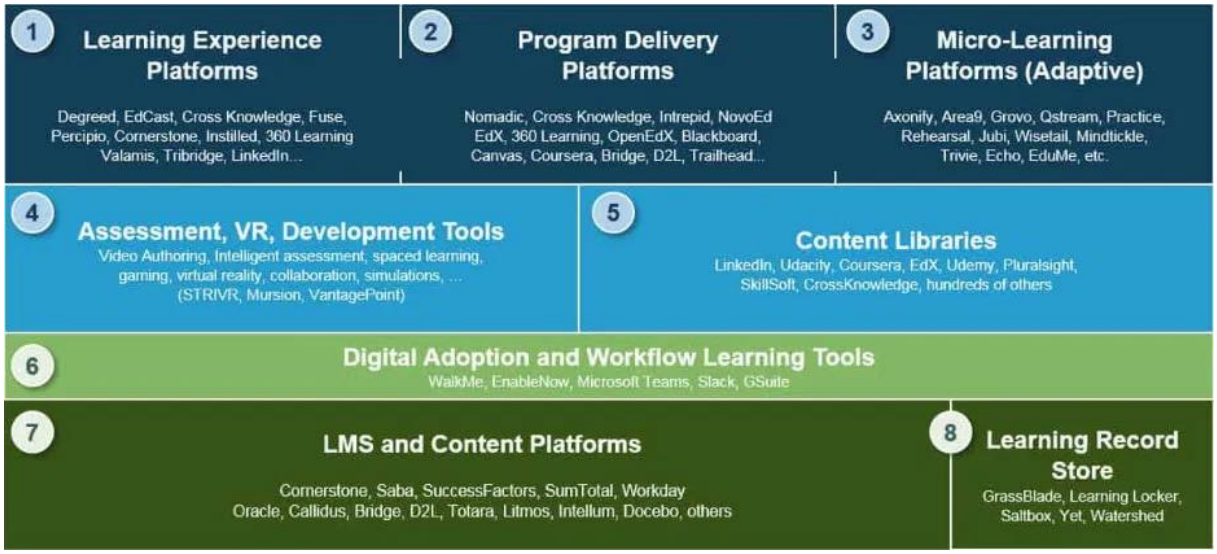


Figure 17: Ecosystem of learning solutions for large organizations. Source: Skoglöf (2019).

At the heart of most large organizations is the Learning Management System, LMS. It could be described as a software application or web-based technology used to plan, implement and assess a specific learning process (Rouse 2019). Clark (2020a) notes that LMSs were designed for a world before personalized delivery, smart software and AI, and that they are written in old technology, are inflexible and unable to meet the agile needs of education and business. As Johan Skoglöf says, "employees are tired of clunky LMSs and boring e-learning" (Skoglöf 2019).

Learning experience platforms, LXPs, tries to get around the clunkiness of LMSs by opening up towards external sources in a way that creates a unitary experience for the user. Users can edit and add their own content (Skoglöf 2019). According to Clark (2020a), LXPs are the response to what an AI-driven online world demands, in the form of technology that is more responsive to the needs of users, multiple systems and the real data needs of an organization.

As shown by figure 17 a whole host of tools and functions are layered on top of and around the LMSs and LXPs: Workflow learning tools, development tools, micro-learning platforms, that use the adaptive, AI-powered functions mentioned by Clark (2020a) above: peer-to-

peer-learning, interleaving, spaced practice etc. A central element here is the experience application programming interface, xAPI, that allows tracking and data generation (Clark 2020, p. 11). This availability of data opens up for the four functions of data described by Clark: to *describe* what things are happening, *analyse* and tell us why things are happening, *predict* what is likely to happen and *prescribe* what should happen.

My reflection is that, although it is easy to get impressed by the huge opportunities made possible by the different AI-powered tools and technologies, they are elusive to grasp with regard to their actual learning effects. Going through academic research on training, these technologies hardly seem to exist, not even the comparatively old LMSs have been mentioned in the literature that I have gone through.

3.9. Conclusions from the literature review

My main conclusions are that the digital transformation puts a great pressure on both individuals and organizations to increase their learning agility and that those who manage the digital transformation and develop tools for it tend to underestimate the level of effort needed to achieve learning. Academics and professionals in the learning domain on the other hand have a challenge in taking full account of the effects of digitalization.

Regarding measuring the business effects of learning, there is a tilt in academic research to focus on the micro level and underestimate the importance of the overall performance system, where Brinkerhoff & Apking (2001) suggest a more performance system-including perspective. The digital tools and methods for learning that have evolved in the wake of technological developments, artificial intelligence in particular, show great promise, but remain to be structured and measured, including the usage of data generated, in effective ways to secure business-related goals.

The aim of my project is to find a solution to the problem of how mature, service-oriented organizations might secure, using data-driven methods, that investments in learning and development contribute to business goals, such as profitability and growth. Therefore, I would like to propose the following three research questions.

1. On the strategic level, what tools and methods are there that secure that overarching, business-related objectives are met?

   As sub questions to number 1, inspired by the three critical elements identified by Brinkerhoff and Apking (2001), I propose: What tools and methods are there that secure:
   a. Learning intentionality among employees (motivation, goal orientation etc.)
   b. A supportive performance system (leadership, systems support, working climate etc.)
   c. The provision of adequate learning resources?

2. On the micro (individual/team) level: To what extent are learning initiatives regularly followed up on the following parameters?
   a. Motivation and goal orientation among employees
   b. Supervisory support
   c. Reflection and feedback

   d. Spaced/interleaved/retrieval practice

3. In general, to which extent are learning-related systems and tools used to measure and follow up the parameters in questions 1 and 2?

In the next section, I will detail how this statement was explored and these questions were answered.

4. Methodology

The disposition of this section follows the chronological order of how the primary research was performed. I begin by presenting ICA, the case company of this IRP, and the initial process leading to a first outline of how an application that addresses that goal and the research questions should look like. This also included a meeting with a learning tech expert at ICA regarding possible data sources for the application. I then present the insights obtained by my interview with Per-Erik Ellström, professor in worklife learning, insights that were fed into my development of the application towards a first prototype. I then report from my interviews with HR and learning representatives from three corporations of comparable size and maturity to ICA. I then present the progress towards a prototype, the testing of it and the finalizing of it into a minimum valuable product.

Towards the end of the section I present some additional insights I gained from interviewing a manager at Promote, a company that specializes in helping companies with creating learning journeys, strongly inspired by Robert Brinkerhoff. The interview was not planned from the beginning, but the opportunity showed up by coincidence with just a few weeks remaining of the project. Since the company operates in activities so closely related to the theme of this IRP, I considered it worthwhile to include some insights from the meeting into the final phase of this IRP.

The section also includes how ethical considerations were explored.

4.1. The case of ICA

The insights of mature organizations' need for massive reskilling and upskilling, gained through my current position and illustrated by the reports referred to in section 3.2, led me to start looking in the spring of 2020 for organizations that could function as cases in the Short Specialist Project. A contact was established with ICA, one of the three large grocery retail groups in Sweden. It had in the previous been awarded 'The HR team of the year', because of their group-wide efforts to reskill and upskill its personnel (Wise IT/Human Growth Award 2019).

Grocery distribution and sales is an industry that, even though the final products that generate revenue are mostly physical, is subject to digital transformation of various kinds. First, there is an extensive logistics apparatus to be taken care of, from suppliers around the world to the store shelfs or e-commerce site pages. Second, there is an ever more complex set of customer relations that are developing, using special offers, recipes, memberships and discounted add-on services offered by partners within travel, restaurant and other industries. Third, as a consequence of the digital transformation where customer access in itself is an asset, many grocery chains are diversifying into other industries. ICA for their part have started offering services within banking and pharmaceuticals. ICA also has operations in the Baltics through the local grocery chain Rimi.

A snapshot of the ICA Group's economic activities is shown in figure 18 below.

Figure 18: An overview of the ICA Group's strategies and businesses. Source: ICA (2020).

ICA has a long tradition of personnel training. 'ICA Skolan', the ICA school, has been in operation since 1955 (Centrum för näringslivshistoria et al 2017). With the need to reskilling and upskilling due to the consequences of digital transformation described above, the ICA Group management decided in 2018 to take a more comprehensive approach. As part of the strategic objective 'Empowered organization' (see figure 18, yellow diamond at the top left), and a top priority within its People strategy, ICA in April 2018 launched the group-wide learning strategy 'ICA Learning Ambition'. The mission of the strategy was formulated as: "We prioritise and enable learning to create greater business results – through new mindsets and behaviours, and use of digital opportunities" (ICA 2018, slide 18).

The Learning Ambition was packaged into four focus areas, with the common theme of linking learning with business: 'Learning creates business value', 'Our learning habits make us grow', 'Collaboration is key to learning' and 'It's easy to learn at ICA' (see figure 19). As one tool among many to promote digital learning within the four areas, a Microsoft Sharepoint-based platform Grow@ICA was launched.

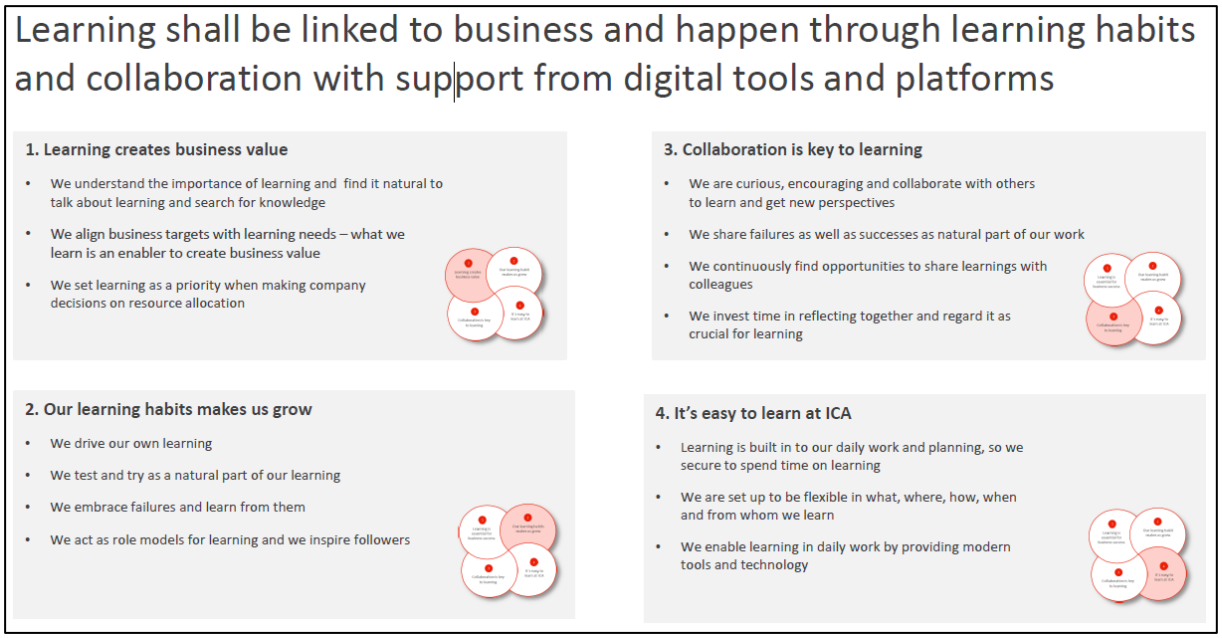


Figure 19: The ICA Learning Ambition's four focus areas. Source: ICA (2019).

As part of an early pilot working with the company, I previously explored the effects that learning activities had on business results, with the use of Grow@ICA as a case. From the initial observation I became aware of the fundamental challenges that all learning functions encounter when trying to measure the effects and prove its business worth.

4.2. Developing LearnDesignCheck – process overview

From this, I sought agreement with ICA to look further into the subject of finding ways to secure that learning initiatives met business objectives, including using data sources whenever these were available. I and my main contact point at ICA, the Digital Learning Lead Malin Wretman, decided to initiate the development of an application that could be used on learning initiatives. It should be used to both pre-evaluate and follow up on the extent to which the initiatives contribute to business goals. As starting points for the development some recently concluded learning initiatives would be used.

The process went along the following steps, described in detail in the following subsections (and mostly following the project plan, see appendix 1): I first drafted a conceptual design for how the tool could look like (section 4.3). I then asked Malin Wretman to select a handful of recently concluded initiatives – maximum five –as candidate test cases for the production of the tool (section 4.4). We then arranged a meeting with a learning tech colleague to identify what possible data sources there were for following up on learning initiatives (section 4.5). I then revised the conceptual design (section 4.7), based on insights from the meeting with the learning tech colleague, my continued literature studies and the interview with Professor Per-Erik Ellström (section 4.6).

As one of the more important activities of the project, a workshop with learning professionals at ICA was arranged where the conceptual design could be matched against a selected number of learning initiatives (section 4.8). Based on this I then, in successive steps, developed a prototype of the tool, further including insights from literature studies and additional interviews (sections 4.9–4.11). I performed a test the tool with a subject matter

expert at ICA, which led to the finalizing of a minimum value product version of the tool (sections 4.13).

4.3. Drafting a first version of the conceptual design

Following two meetings with Malin Wretman on 26 August and 11 September, with intermediate email conversations, and parallel to deciding upon an overall project plan, Malin Wretman and I decided to do a process to develop an easy-to-use tool that could be used whenever a learning initiative was taken. Malin Wretman envisioned that it could be in some Microsoft format, so it could be inserted into ICA's Sharepoint-based eco-system. I noted this wish, but argued the project at this stage should focus on functions rather than deciding on a specific format.

A first version of a conceptual design of the tool, then named 'LearnCheck' was produced by me on 15 September, see appendix 2a. Early on it was decided that it would have two dimensions: One checklist part where activities necessary to secure the link to business objectives were specified, and one data gathering part, linked to the checklist part. As shown in appendix 2a, I envisioned a series of windows where the tool's users would enter relevant evaluation actions and related data sources. I further envisioned that, as the use of the tool proceeds, both in the actual learning initiative and in forthcoming initiatives, that relevant data would be available automatically.

At this stage I became more familiar with Brinkerhoff and Apking (2001), which contributed to some specific features of the concept, among them the division into stages 'early–middle–later', rather than 'before – during – after' – this in order to underscore that learning is a process rather than an event, and that both learning experts and line management are involved all the way.

4.4. Choice of candidate reference initiatives

One part of the August-early September meetings and email conversations with Malin Wretman was also the stepwise selection of recently concluded learning initiatives at ICA, that would function as reference cases in the production of the tool. At the start, as also stated in the project plan (see Appendix 1), five candidate cases were planned to be identified. In the preparation to the next step of the process – the meeting with Learning Tech Kristian Nordlund, see below – the number of candidate initiative was reduced to three:

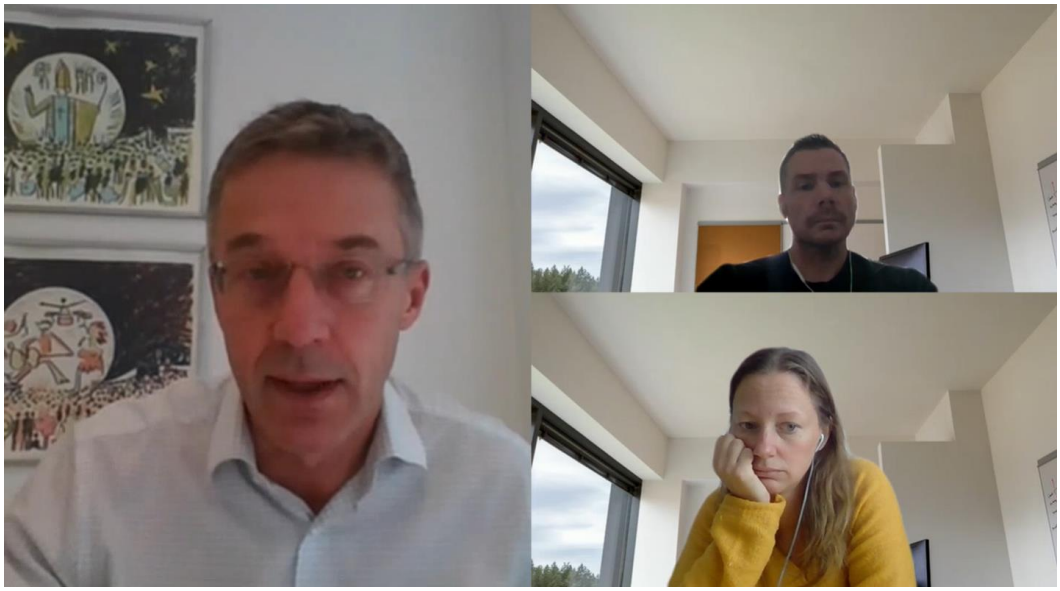
The ICA Banken initiative: A project to transform ICA Banken's introductory course to fewer hours of classroom education and a larger share of digital self-study.

The Grow@ICA initiative: A calculation of the value of establishing Grow@ICA in comparison with alternative platforms.

The mental ill health case: A project to calculate the cost of using a subject matter expert in ICA's operations to convert a training in treating mental illness into a blended approach instead of using an external supplier for making workshops.

4.5. Meeting to identify data sources

A meeting was arranged with Kristian Nordlund, Learning Tech at ICA, on 2 October in order to get an overview of the possible data sources that would be available when designing a tool along the lines of 'LearnCheck', with the three candidate initiatives mentioned above as references. Malin Wretman also participated in the meeting.



Picture 1: Data analysis meeting on 2 October. Clockwise from left: Fredrik von Essen, Kristian Nordlund and Malin Wretman.

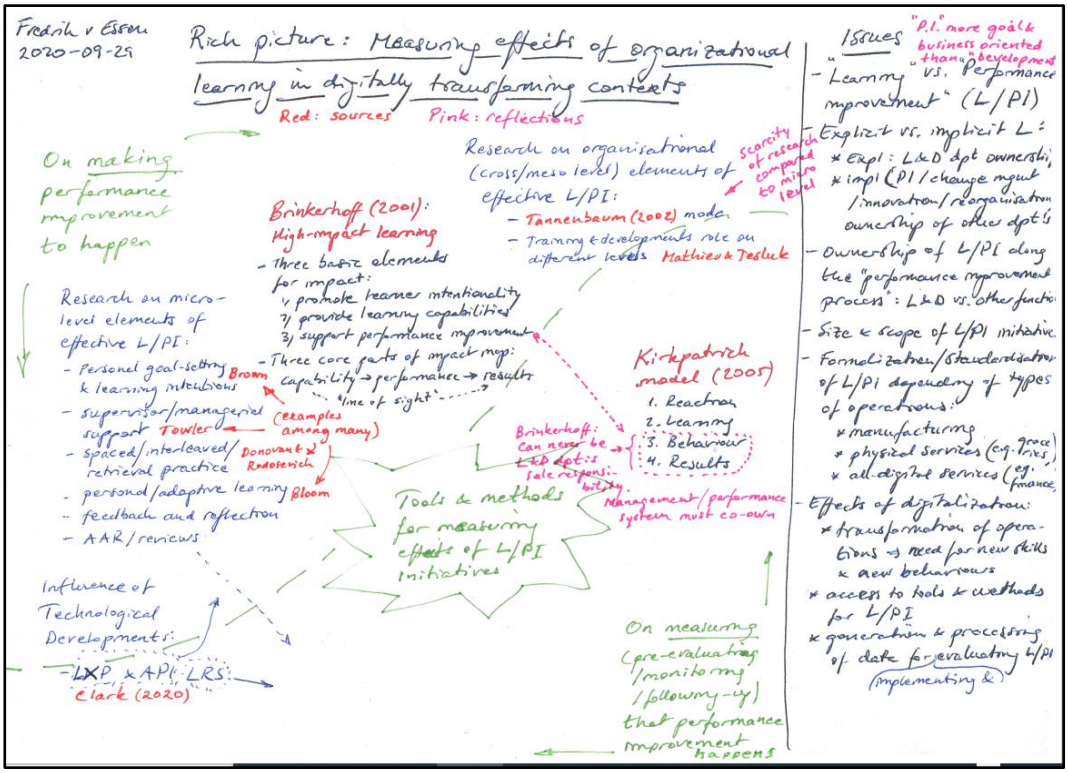
A full account of the meeting is found in appendix 4a. Among the most important conclusions for the progress of the development of the tool were that the two-part structure of the tool, with an evaluation action checklist and a linked data source list, was considered to be useful when designing learning initiatives, and that the usefulness of the data part of the tool is very much dependent on what hypotheses were made regarding the aims of the learning initiative. These hypotheses could be very different, such as 'more use of mobile functions' or 'lowered rates of sickness leave', and you need to define them before you investigate what data that could be gathered and managed.

The data that could be gathered from ICA's different systems with relative ease is interaction data: who has visited a certain site at a certain time. It was made clear that there is a scarcity of data related to the skills of the users in ICA's LMS/LXP and HR systems, among other things depending on the decentralized structure of the ICA group, with many independently managed grocery stores.

Both Malin Wretman and Kristian Nordlund underscored that the tool should be kept simple and not have an initial ambition to connect to ICA's various systems. Another reason not to focus on linking into any particular system is that most of the learning activities within the ICA group is taking place outside the framework of its LMS/LXP system.

4.6. Interview with Per-Erik Ellström

Professor Per-Erik Ellström is a professor in worklife learning at Linköping University, Sweden. We arranged an interview by Teams on 6 October. As a basis for the interview five insights of mine were sent by email beforehand, insights I had made on literature review as far as it had progressed by then. In the email I attached a rich picture of the issues and insights I had gained by then, see picture 2. A full account of the interview is in Appendix 3a.



Picture 2: Rich picture made by me centering on literature that in some way or other deals with measuring the effects of learning.

My first insight was that much of the academic literature is focused on learning initiatives at the micro level and deals only to a limited extent with the organizational/strategic perspective. Professor Ellström agreed that there is a clear divide. The learning research is dominated by the pedagogical and psychological strands of academia, and they tend to focus on the micro level. The strategic level on the other hand is dominated by organizational/management and human resource research, where learning has a much more muted role.

My second insight that professor Ellström commented upon was that Robert Brinkerhoff goes heads-on on the strategic perspective and is very clear on the division between learning capabilities on the one hand and performance improvement on the other hand. The responsibility for performance improvement is shared between the learning function and line management and it also explains, according to my interpretation of Brinkerhoff and Apking (2001), why Kirkpatrick's model would never work as long as levels 3 and 4 are considered the sole responsibility of the Learning and Development department.

Professor Ellström's reaction was that Brinkerhoff makes the same point that he is advocating, that there is no quick fix about education, that a sharing of workload and

partnership is necessary regarding the learning environment. It is an old insight, but the quick fix-mindset is very entrenched. Line management needs to be involved and not delegate to the learning function.

On my follow up question why is there such inertness in changing this mindset, Ellström answered that it has to do with separation of organizational functions, where there always is a tendency to regard any kind of developmental function, be it HR, work environment or quality development, as a 'side wagon' to the core business.

My third insight was that I thought that 'Performance improvement' captured better what the purpose of learning efforts are than 'development': It is more goal- and business-focused. Professor Ellström tended to agree, but cautioned that 'performance improvement' could be interpreted in a narrow, mechanical sense, and not necessarily in an innovative and disruptive sense.

To my fourth reflection, that I lack an analysis of how learning and performance improvement should be organized in activities that place different demands on formalization/standardization, such as complex industrial companies versus more digital service companies, Ellström agreed that the level of formalization of operations is important to consider when designing learning activities. However, according to Ellström the big difference is not between industrial and service-based operations, but between operations that are high and low in complexity, irrespective of them being industrial or service-based.

My final insight focused on the influence of digitalization, where I had observed that the academic articles I had looked through at the most treated it as a side issue. Ellström agreed that digital tools are important, but as Brinkerhoff states very clearly, there is nothing inherent in the digital solutions that guarantee performance improvement. You still need to ensure that there is a learning readiness to use the digital tools and a performance system that works in partnership.

4.7. Revision of conceptual design

With the 2 October meeting as a basis, together with further insights gained from literature studies and the interview with Professor Ellström, I produced a revised conceptual design of the tool.

Three main insights were brought into the revised version. First that the tool should as much as possible support the establishment of a partnership between the learning experts and the line management. Part of the challenge is to make line management co-owners of the whole process, and not regarding learning as an event that can be delegated to a separate learning function.

Second, in line with Brinkerhoff and Apking's (2001) focus on performance improvement, I tentatively used 'learning and performance improvement' instead of the common term 'learning and development'.

Third, I built in the distinction between micro and meso/strategic level parameters into the tool. An explanatory part explaining this, and other elements such as the distinction between Brinkerhoff and Apking's (2001) and Kirkpatrick and Kirkpatrick's (2005) perspectives, was added at the end of the revised version.

The revised design is found in appendix 2b. It was renamed to 'LearnDesignCheck' to underscore the importance of the tool being a help to design the learning initiative, rather than just checking that learning is taking place. A schematic picture showing the fundamental logic was included, see figure 20.

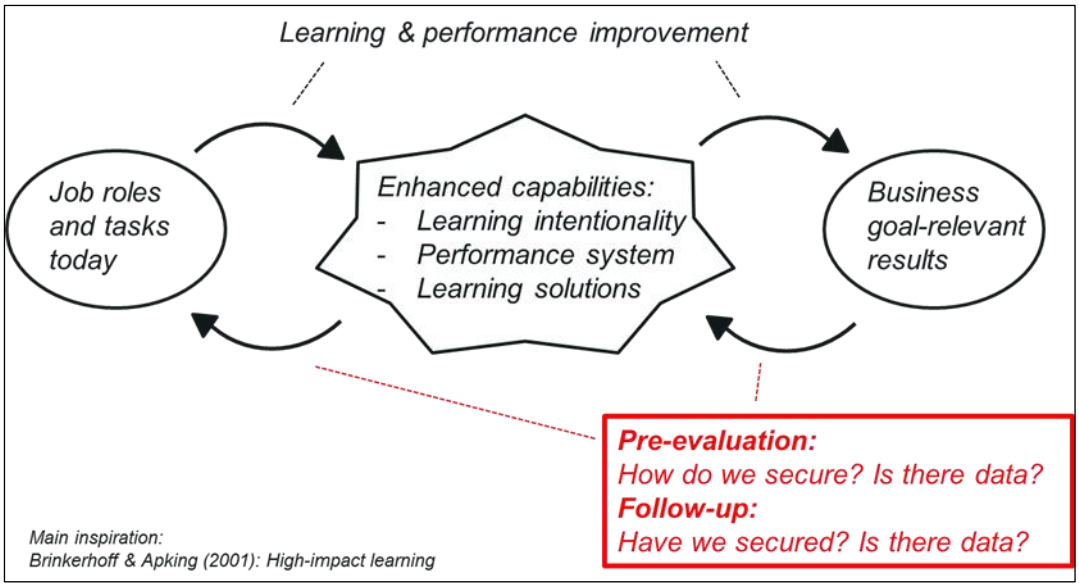


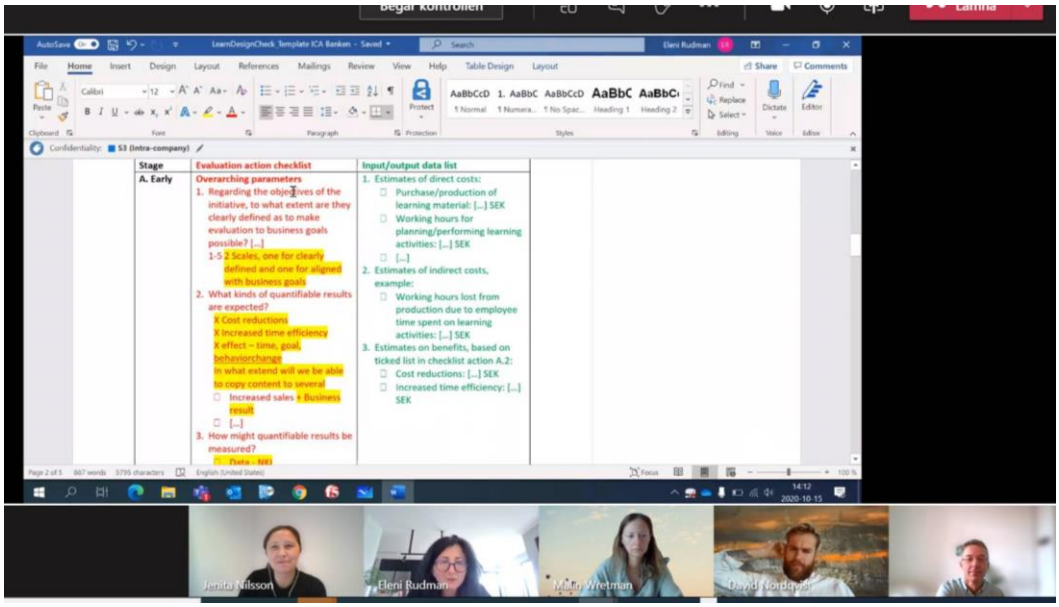
Figure 20: Fundamental logic of 'LearnDesignCheck' in its 2020-10-09 version (see appendix 2b).

4.8. Workshop matching the revised conceptual design with final choice of recent learning initiatives

A workshop involving three learning experts from ICA, together with Malin Wretman and me, was arranged on 15 October. Planning for the workshop, Malin Wretman and I decided to reduce the number of reference cases to two, in order to make the group workshop part workable (A total of five participants made the division into two rather than three groups natural). The two elected initiatives were the ICA Banken and the mental ill health cases (see section 4.4).

As a preparation for the group workshop part, I made two templates of LearnDesignCheck, one adapted for each initiative, and sent to the participants. Malin Wretman and I decided beforehand which participants would belong to a certain group, based on the earlier involvements that the participants had had with the respective initiatives.

A full account of the workshop and its results and insights is presented in Appendix 4b. In the sub-appendices B and C to the account the two templates can be found, showing what the two groups entered into the templates.



Picture 3: Workshop 15 October: Going through the mental ill health template.

Five main conclusions were passed on into the prototype development phase. First, the Brinkerhoff-based categorizations of parameters into levels (organizational/micro) and elements (learning intentionality, performance support and learning solutions) were perceived as abstract even for learning professionals. A use of simpler, everyday terms was asked for. Second, a clarification was needed on who were the actual targets of the parameters: The managers of learning initiatives, the operations managers were the initiatives will be implemented or the employees/users whose skills and behaviors are intended to be enhanced by the initiatives.

Third, there was a need to distinguish between general objectives within a subject matter area (such as 'improve mental wellbeing') and objectives related to the initiatives where investments in learning will be made related to the ditto area (such as 'raise knowledge how to deal with mental ill health'). Fourth, the workshop participants listed a great number of parameters that they considered relevant to follow up, to the extent that the listing would be unmanageable in the continuing process. An instruction on how to formulate the parameters was needed, without making the tool being perceived as inflexible.

Lastly, when the parameters within the same category were numerous, a prioritization of the most important parameters (top-three for instance) could be considered.

4.9. Insights from interviews with HR/L&D experts from comparable corporations

In order to get broader perspectives than from just one large organization, and to obtain inspiration for the development of the tool, I wanted to interview a set of corporations of comparable size and maturity as ICA. Via the learning consultant Johan Skoglöf, that was my mentor in the project, I came into contact with senior HR and learning experts at the commercial bank SEB, the telecom systems supplier Ericsson and the insurance company Länsförsäkringar.

The interviews were conducted in a semi structured form via video link (Teams). They all were based on the same questions that I had sent by email beforehand. Documentation

from the interviews can be found in appendices 3b–d, with the questions added as sub-appendices to each. All interviewees have confirmed the correctness of the documentation.

The interviews were based on the research questions that I had identified at the time, accounted for in section 3.9 above. The three questions with subquestions referred to below, covering strategic factors, micro level factors and digital tools and systems issues, are thus the same as in section 3.9.

Kristina Bixo, Head of Learning & Development at SEB

On the first question, Bixo highlighted the extent to which SEB worked strategically with skills development, with business planning linked to strategic workforce planning. She underscored the importance of the learning and development function connecting to different strategic initiatives, identifying their ambitions and trying to secure impact by following up on data where available.

Regarding data Kristina Bixo said that SEB had increased their capacity to address the challenge of connecting to data to skills development since they had a better 'data lake' to which they also could feed people data. However, linking people data to business data was an ongoing challenge.

Picture 4: Interview with Kristina Bixo (left) on 13 October.

Regarding the sub-question on providing learning solutions, Bixo emphasized the importance of the learning functions having the business perspective in order to become credible partners. A narrow Kirkpatrick-based approach on each single learning module does not work. Top management do not buy 'the product', they want help with their ambitions and want to feel safe that you have understood them as a partner, and that you deliver a concept that often includes change management skills.

Due to a shortage of time we went directly to the third question. Bixo highlighted the importance of flexible platforms that support self-driven learning, using partners that provide access to content. This access should also include filtering and curating in order for the employees not to get overwhelmed, and it should also be combined with spaces where employees can collaborate and create insights together with others.

On my follow-up question that the individually focused aspects mentioned in the answer to the third question contrast to the strategic perspectives on the first question, Kristina said they are linked. She meant that since learning is such an outspoken strategy from top management, the employees feel motivated to learn. Thereby some of the factors in the second question, motivation and supervisor support, were implicitly touched upon.

Peder Laitamaa, learning & performance consultant at Ericsson

[Some minor deletions made in this openly shared version]

When responding to the first question, Peder Laitamaa started by saying that he did not think 'learning' in his initial contacts with business. You need to do research on what they do so that you can talk with them about their business. By this way you build up an interest on their side and become a credible partner. Once you understand the business problem, you can consider whether education is a solution. If so you start, using Brinkerhoff-inspired impact mapping, documenting challenges that can be solved by learning.

Laitamaa said that he normally used the impact map on greater transformations where there is a need to work in many different ways. He referred to Robert Brinkerhoff's and Timothy Mooney's (who he had met and cooperated with) stressing of systemic factors, and that and in order to understand these factors you cannot just automatize, you need to go in as consultant and dig into the operations, make questions and do research so you can identify operational blockers and enablers.

Laitamaa showed the impact map he uses, se figure 21. The lower brown box, 'Blockers' and 'Enablers', was a kind of favourite of his. Examples of blockers could be difficulties to recruit, restricted access to data after completing education or the absence of overarching goals when it comes to using the knowledge acquired by training, leading to other goals being prioritized.

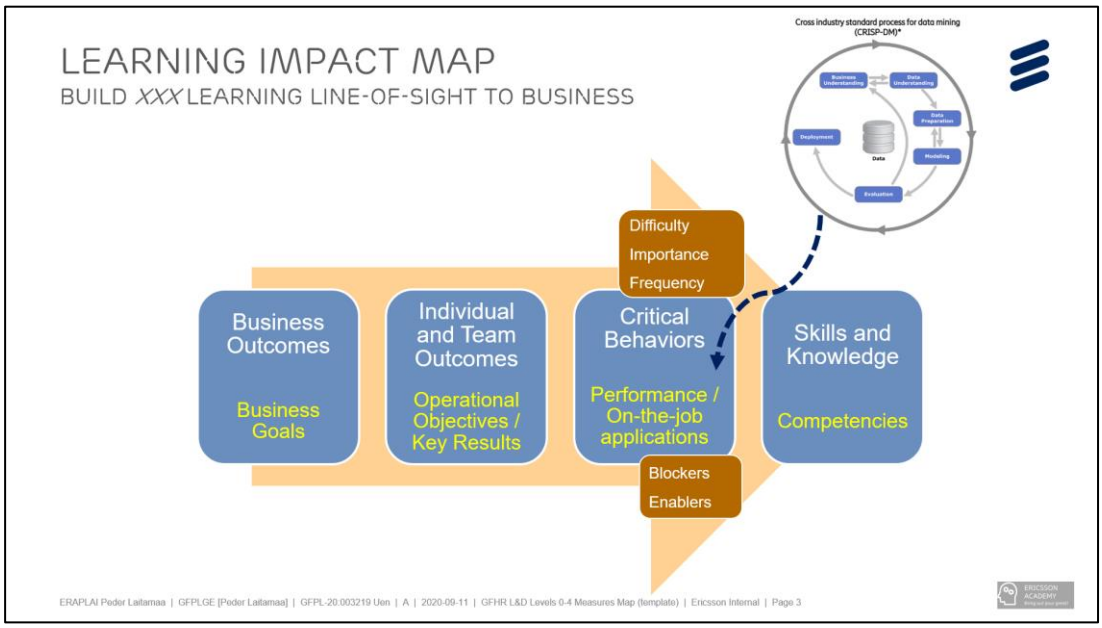


Figure 21: Learning Impact Map used by Peder Laitamaa, Ericsson.

Laitamaa also uses the Kirkpatrick concept, but said that in order to follow up results on the third level – transfer to the workplace – you need to have systems that capture what people do in their jobs. It needs to be documented. What you could do is to follow up to what extent people apply knowledge three months later. Low numbers, encourages you to look deeper why it was not better. The tricky part for an organization like Ericsson, is to sort out whether effects depend on the training program or on contextual factors such as cultural change. Normally it is both, but to tell the importance of either is very challenging.

Responding to the second question and the list of micro-level factors, Laitamaa stressed the sub-points 'motivation and goal orientation' and 'retrieval practice' and the importance of intrinsic motivation factors, where he has done some studies. He did not work with data at this level though, Ericsson rather worked in a more general way with the culture, with guidelines such as 'Be CEO of your own career' and other elements that have been promoted by top management.

Regarding the third question, on the use of systems and tools, Laitamaa mentioned that LMSs only operate on the lowest of Kirkpatrick levels. He rarely talks about these platforms, there is such a great many ways to learn that are not linked to an IT platform. One tool that Laitamaa highlighted was Degreed, a 'one stop shop for learning content' making it easier to find and consume learning, used by 75 % of Ericssons' personnel. There are a lot of data and knowledge that could be gathered by this and other systems, but Laitamaa was more keen on following up on levels 3 and 4. This is not to say that IT is not important, Laitamaa said, automation, data science, machine learning, analytics, are fast growing areas also in the learning domain.

Laitamaa concluded by underscoring that the linking together with business, with a dialogue around possible solutions connected with gathering data along the way, is what is important.

Stefan Gunnarsson, learning & development responsible at Länsförsäkringar

[Some paragraphs deleted in this openly shared version]

On the first question Stefan Gunnarsson made a general reservation that he had only been employed at Länsförsäkringar since April 2020. He could point however to some overarching initiatives to raise the personnel's skills within digitalization, such as the MOOC[2] program 'AI for all'. The challenge for Länsförsäkringar, as for many other companies according to Gunnarsson, is to complement the knowledge that employees have attained in courses with the application of the knowledge. One way to deal with it is to work with fewer areas where a shift in knowledge is strived for. Länsförsäkringar has so far decided on two main competence shift areas, 'AI for all' and 'Learn to learn', the latter aiming to promote learning and upskilling on a regular basis.

Regarding the sub-questions on learning intentionality and performance system, Gunnarsson said that he was not acquainted with Robert Brinkerhoff. Gunnarsson said however that he was in charge of establishing an information structure regarding Länsförsäkringar's learning solution. The ambition was to make the information readily accessible and searchable and

[2] Massive Open Online Course

that it should be clear what the goals and purposes of different educations are, all this in order for the management to make priorities on who should do which education.

Picture 5: Interview with Stefan Gunnarsson (left) on 22 October.

On the third question Gunnarsson stressed that Länsförsäkringar operates in a highly regulated domain and for that reason was not able to use cloud-based services. Länsförsäkringar has an LMS that is subject to some 'embryonic' changes to improve the user experience, such as browsing among possible educations, providing tools for content creation and introducing functions for reminders and shorter rehearsals.

Summary of interviews – insights for the development of LearnDesignCheck

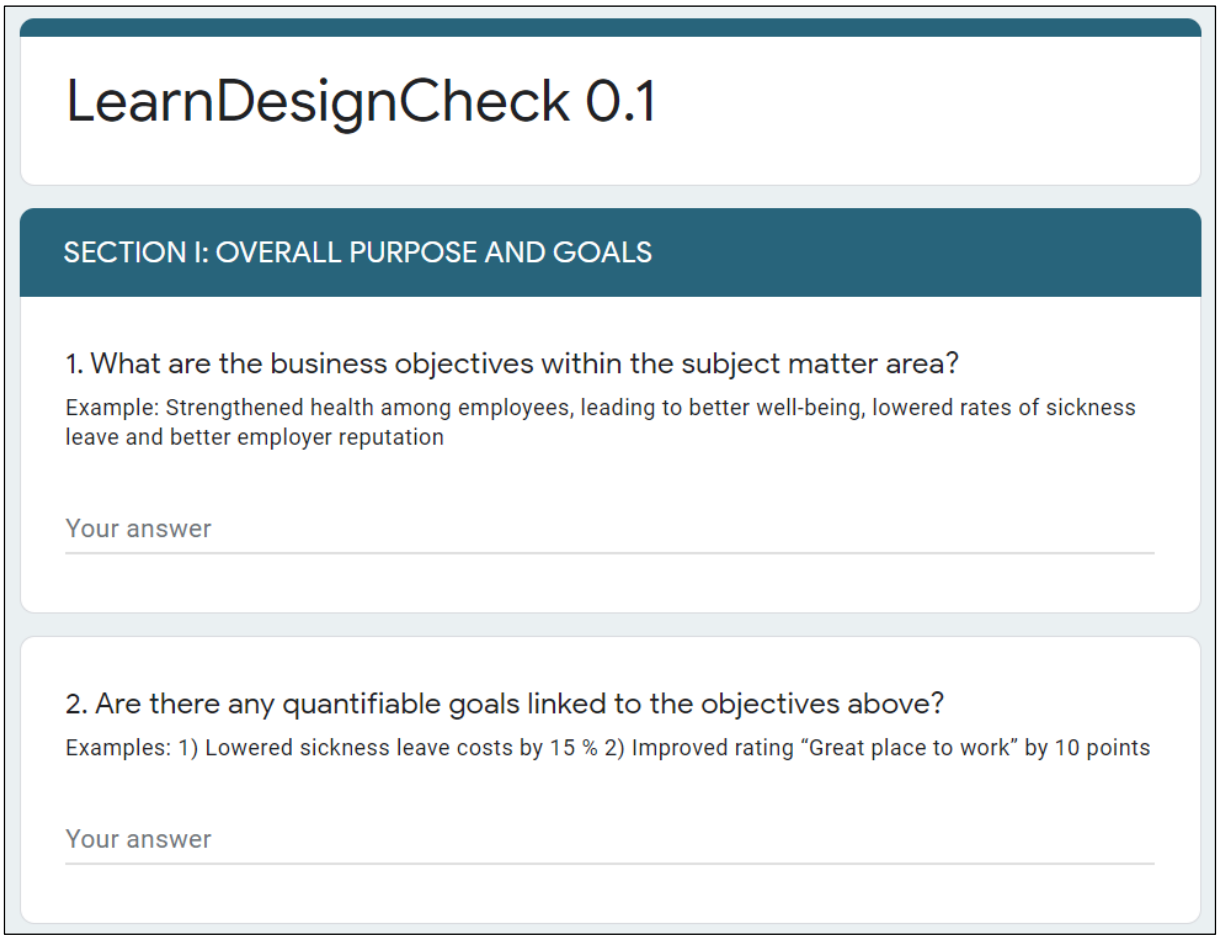
My conclusions from the interviews, of relevance for the development of LearnDesignCheck, were the following: First, that anything that could support the establishment of a true partnership between line management and the learning function is of value. Second, that the Brinkerhoff perspective, with its focus on performance system (or 'systemic factors' as Laitamaa described them) is not just theoretical but something that is applied in reality and considered to be of value. Third, that data gathering is considered important but that there are challenges in finding data that reflect business-related effects of learning initiatives. Fourth, that micro-level effects are not consistently monitored, although they are considered important. Fifth, that LMSs and other support systems for learning had muted roles when discussing business-related effects of learning. Developing the access to content seemed to be what is currently demanded from these systems.

Other insights that are relevant for the project beyond the development of LearnDesignCheck are elaborated in section 5 Discussion.

4.10. Developing a prototype

When converting the conceptual design, made in Microsoft Word, to a true prototype were text and data can be easily entered, extracted and updated, I decided at a first stage to use Google Forms.

A first version, that can be found on https://bit.ly/LearnDesignCheck_v01, was sent to Malin Wretman on 29 October. An example of one of the views where information is to be entered can be seen in picture 6. The tool also contains introductory views showing the fundamental logic (a revised version of figure 20) and the structure of the tool (see figure 22).



Picture 6: First version of LearnDesignCheck, in Google Forms format.

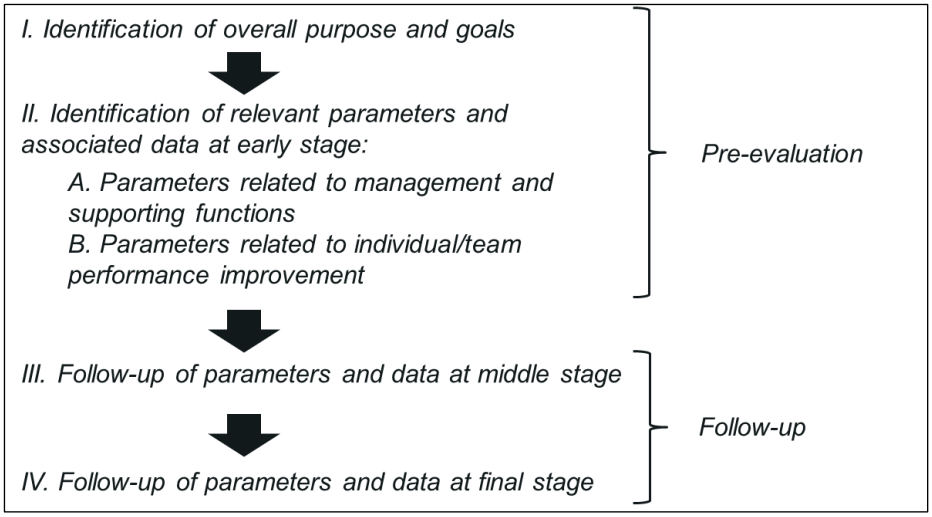


Figure 22: Structure of LearnDesignCheck

Malin Wretman provided the following feedback in an email on the same day: First, the fundamental logic model was difficult for subject matter expert (i.e. a non-learning expert) to understand. Maybe a video could be included to explain. Second, the number of questions were large, which could be an obstacle in small initiatives. Third, it was not clear what happens with the data that is entered, and how it could be accessed and processed later.

I produced a revised version 0.2, accessible on https://bit.ly/LearnDesignCheck_v02, that also included a video, accessible on https://youtu.be/Qdh-RhZmh60. The number of questions were condensed, and a clarification was included that all questions were optional.

Malin Wretman and I had a brief meeting on 5 November, where she commented that the data accessing and processing part would still be a problem using Google Forms. In addition, the two-tier structure of the previous, Word-based conceptual design version, with parameters on the left side and data sources on the right, was not doable in an easy way. Before the upcoming test session she recommended that, in addition to the Forms version, an Excel form could be produced.

I then put all my focus on creating an Excel version, where different sheets would mimic web pages, with a first 'Sheet overview' sheet that would function as a homepage (see picture 7). In this sheet there were links to all other sheets. In a second sheet, 'Introduction', I added an explanatory text, the fundamental logic model, the structure description, and a link to the video.

The following sheets, corresponding to the latin-letter numbered tags in the structure description in figure 22, were the ones where the actual entry of parameters and data would be made by the user. I therefore named the sheets 'ENTER I. Overall information', 'ENTER II. Early stage' etc. All the data that is entered in the 'ENTER'-sheets are automatically copied to the last sheet, named 'COLLECTED INFORMATION'.

Picture 7: First view of LearnDesignCheck, version 0.4.

By transforming the tool to Excel, I could re-create the two-tier structure from the conceptual design versions, and I could also present the entered data in a more user-friendly way (see picture 8 below as an example of the two-tier structure). The 0.4 version can be found in Appendix 4d.

The ENTRY II, ENTRY III and ENTRY IV sheets had the same structure, where you enter information of potential enablers and blockers subdivided by the perspectives 'A. Parameters related to management and support functions' and 'B. Parameters related to individual/team performance improvement' in accordance with the fundamental logic and structure descriptions (cf. figures 20 and 22). I made one addition in the 'ENTRY III. Middle stage' sheet however, where I, inspired by Brinkerhoff's (2005) Success Case Method, put an extra question whether there were any identified success cases including reasons why they were successful.

4.11. Testing the prototype with a subject matter expert

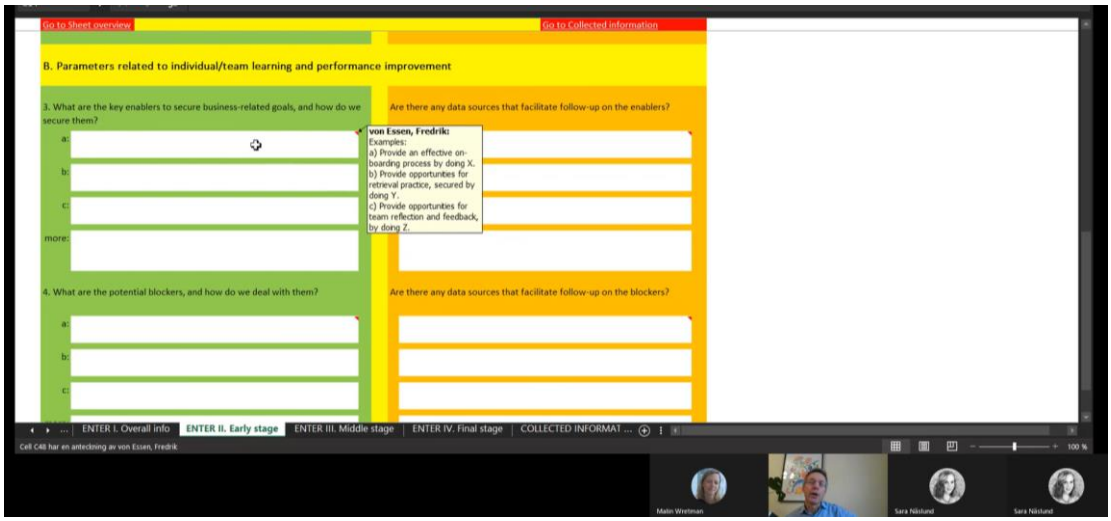
A test session, based on version 0.4 of the tool, was organized on November 30. Malin Wretman had invited Sara Näslund, a subject matter expert within automation, as a test person. Malin Wretman, who also participated, had been careful to choose a non-learning expert.

A full report of the test session can be found in appendix 4c. The overall feedback that Sara Näslund provided after concluding the test was that she regarded it as a highly interesting tool. She said that it would be very useful to use in initiatives no matter if they are large or small, in order to check how it is linked to business goals, and what are the conditions.

The parts of the prototype that were thoroughly discussed were the ENTRY I and ENTRY II sheets. Towards the end I briefly showed the additional, Success Case Method-inspired

question on Entry III, that Sara Näslund found very positive, that it would be of great value to show both for the responsible persons and those who have succeeded.

There were some issues with the prototype that needed to be fixed though. The most discussed part was the 'ENTER II. Entry stage' sheet. First, there was a discussion whether the user should identify enablers and blockers with relation to the business-related goals or learning goals (both identified in the 'ENTER I. Overall info' sheet). I had put business-related goals out of my ambition to always maintain a line-of-sight. Both Sara Näslund and Malin Wretman argued that learning goals should be put there instead, since the business-goal/learning goal link already was established in the ENTER I-sheet, and also because the user of the tool only could control enablers or blockers that were part of the user's learning initiative, and not with overarching business goals.



Picture 8: Discussing the 'ENTER II. Early stage' sheet during test session.

Second, there was a discussion whether to maintain the division between parameters related to the management and support functions on one hand and those related to individual/team performance improvement on the other hand (conf. II.A and II.B in figure 22). In the end it was decided to keep this division because of the importance of promoting the management's responsibility in the learning initiatives. I would add an explanatory text at the top of the sheet that underscored that it was not crucial to distinguish in what part various parameters should belong, as long as both the 'A' and 'B' perspectives were used.

4.12. Comparison with Promote's learning design tools

[One sentence deleted in this openly shared version.]

With just two weeks remaining of the project an opportunity came up to meet Promote, a Swedish educational consultancy company. I was offered an interview together with a demo of Promote's platform with their Nordic manager Karin Plith. A full account of the meeting is found in Appendix 5.

Promote established ten years ago a close cooperation with Robert Brinkerhoff, and together they developed a method, High Performance Learning Journey, HPLJ. A web based platform was developed to support the method. The essence of HPLJ is to design the learning journey, starting with the business results, and then going backwards to the

learning objectives via two parts that lie in between, ‘performance outcome’ and ‘moments that matter’.

Karin Plith highlighted the identification of ‘moments that matter’ as the toughest, yet most crucial part.

When demo-ing the platform, Karin pointed to web windows where the journey was visualized, thus helping to specify the moments where learnings are practiced.

Although I was only able to draw some general conclusions from the meeting, being so close to deadline, I could clearly see links to the enabler/blocker and Success Case Method elements in LearnDesignCheck.

4.13. Finalizing and delivering a Minimum-Valuable-Product version

The change requests that were the result of the test session were merged into a new version 0.5 that was sent to Malin Wretman and Sara Näslund on 4 December, together with the notes from the test session (Appendix 3c). I then had a brief, project wrap-up meeting with Malin on 8 December.

Malin considered the tool being well timed since issues regarding how to link learning efforts to business results are getting more and more attention. She noted as a two-fold mindset challenge for learning professionals to both think more in line with business results and think in terms of relevant data gathering. This is both a challenge and an opportunity for a tool such as LearnDesignCheck. A final reflection on this topic from her was that, during the test session, it became so much clearer how the tool was supposed to be used when I sat nearby and explained it. An insight for the future is thus to make it more intuitive and self-explanatory.

Some further cosmetic changes were made to the tool, before delivering a final MVP version 1.0, to be found in Appendix 6.

4.14. Ethical considerations

The main ethical challenge of the project was how to deal with sensitive information provided through the interviews and meetings. Although ICA formally belongs to the grocery retail industry, it is diverging into the industries of some of the other interviewee companies, and therefore competing with them. I needed to underscore for the interviewees that I would not pass on any of the information from the interviews, as presented in Appendix 3, to other parties. When adding functions in LearnDesignCheck, such as the enabler/blocker elements, I was careful not to divulge the sources of inspiration (Ericsson in the enabler/blocker case).

5. Discussion

In this section I summarize my findings from the literature review and the methodology along three themes: 'Learning as a phenomenon in a digital world', 'Micro and meso perspectives on learning' and 'Securing business-related goals'.

Learning as a phenomenon in the digital world

On the importance of 'learning agility': The literature review, in particular the non-academic part presented in section 3.2, together with the experiences from the four corporations covered in the sections 4.1 (ICA) and 4.9 (SEB, Ericsson and Länsförsäkringar), have underscored the importance of learning agility among employees as a way to deal successfully with the digital transformation described in 3.1 (dematerialization, knowledge abundance, network effects and platform dependence). Furthermore, there is a need to focus on enhancing learning agility by reskilling and upskilling current employees, rather than exchanging them for new recruits, as shown by the aggregate analyses by World Economic Forum (2018) and McKinsey Global Institute (2018) in section 3.3. This is also supported by the observation on how all four corporations involved in this project prioritize a learning culture.

One fundamental aspect that limits learning agility is the observation that learning is inert and requires effort, as noticed by Clark (2020a), referred to in section 3.4. This inertness tends to be underestimated by promoters of digital business management development that have 'learning' as a component in their models, such Ries (2011) and Ismail et al (2013), as described in section 3.2.

On the importance of informal learning: The academic research described in section 3.4 underscores that informal learning is of great, and increasing importance compared to formal (i.e. classroom or otherwise structured) learning, both by estimates of the share of organizational learning that the informal kind has – 75 percent – and by the sheer volume of research articles focusing on it. The experience from the four organizations described in sections 4.1 and 4.9 shows that they all, to various degrees, invest in systems and tools where employees are encouraged to do their own learning activities. One recurrent theme among the four organizations was the focus on facilitating for employees to get easy access to content beyond the restricted reach of traditional Learning Management Systems.

On the somewhat one-eyed focus of 'transfer of learning': The academic research described in section 3.4, including Blume et al (2019) and their 'Dynamic transfer model' presented in section 3.6, tend to regard the securing of learning being transferred to learners as an end in itself, rather than having a perspective of the learning being dependent on what is actually needed from the business perspective. None of the corporations I have dealt with in my methodology ever mentioned 'transfer' as an important factor.

On the conditioned importance of technological support for learning: As described in section 3.8, the use of, and the possibilities with technology for supporting learning has a low presence in the academic research. This contrasts with the large investments that most large organizations do in Learning Management Systems and other digital tools, confirmed by the study of the four corporations in the methodology section. However, when discussing how

to achieve business-related goals by learning, none of the organizations involved in the study highlighted the various supporting systems as particularly important. This is mirrored by Brinkerhoff and Apking's (2001) observation, referred to in section 3.8, and further supported by Professor Per-Erik Ellström in section 4.6, that there is nothing inherent in the digital tools that guarantee performance improvement.

Micro and meso perspectives on learning

In the literature review I made a distinction between factors that contribute to the effects learning on micro level, i.e. individual or team level, and those on 'meso' level, by which is meant the corporate or strategic level. As Noe et al (2014) observed, referred to in section 3.6, academic research has focused more on the former.

When going through the academic literature covering the micro level (section 3.5) I identified factors contributing to enhancing effects of learning that I categorized within four broad groups: 'Motivation/self-regulation/goal orientation', 'Supervisory support', 'Reflection and feedback/After-action reviews' and 'Spaced/interleaved/retrieval/post-training practice'. Through my cooperation with ICA and the interviews with the other three corporations, I observed that all these factors were considered important by the corporations, but they were not systematically monitored and followed up. They also had a more muted role than the meso level perspectives when discussing learning effects during the interviews referred to in section 4.9.

The meso level factors covered in academic literature, referred to in section 3.6, emphasized the importance of management commitment, psychological safety and other workplace climate factors. However, while management commitment in academic research was considered as one factor among many in both the micro and meso domains, Brinkerhoff and Apking (2001) consider it as critical for effective, or 'high impact' learning to take place.

Securing business-related goals

The Brinkerhoff and Apking (2001) high impact learning perspective lies close to the aims of the project, with its focus on achieving business-related goals. As the interaction with the four corporations in the methodology part shows, the Brinkerhoffian approach does not have the same dissemination as Donald Kirkpatrick's four level model (Kirkpatrick and Kirkpatrick 2005). Brinkerhoff's approach was recognized by professor Ellström (cf. section 4.6) and truly applied by Ericsson and Promote (cf. sections 4.9 and 4.12) but was hardly mentioned otherwise.

The Kirkpatrick model, covered in section 3.7, whose levels 3 (behavior change) and 4 (achieve results) relate to the achievement of business-related results, has been criticized by Brinkerhoff & Apking (2001) and Donald Clark (2020b), among other things that it puts the responsibility of achieving business results in the hands of the learning function. According to Brinkerhoff and Apking this must be a shared responsibility between line management and the learning function.

The insight that the Kirkpatrick approach is insufficient to achieve business results were confirmed in the methodology parts. It was done explicitly by with Ericsson (section 4.9) and Promote (section 4.12) and implicitly through the underscoring of the importance of partnership between line management and the learning function expressed by Professor

Ellström (section 4.6), SEB (section 4.9) and by ICA throughout the development of LearnDesignCheck. Professor Ellström elaborated on the historical challenges of achieving this partnership, with the problem of learning functions being regarded as a ‘side-wagon’ to the main business.

When developing LearnDesignCheck I encountered a challenge, however, in not making the Brinkerhoff approach too complicated and theoretical. I chose to reduce the three critical elements promoted by Brinkerhoff and Apking (2001) – create focus and learning intentionality, support performance improvement and provide learning solutions, see section 3.6 – to two: Management and supporting functions and individual/team performance support.

Regarding data gathering that supported the follow-up of business-related goals, as was shown in section 4.5 (meeting with data analyst at ICA) and 4.9 (Interviews with SEB and Ericsson) there are clear limitations in achieving it. Most existing systems provide data on the way employees interact with learning sources, but do not register neither the extent to which learnings are achieved nor their possible effects of business results. When defining what data should be gathered, the data analyst meeting with ICA underscored the importance of having clear hypotheses regarding what kind of results that were to be achieved and followed-up by data.

6. Analysis

The aim of my research project has been to find a solution to the problem of how mature, service-oriented organizations might secure, using data-driven methods, that investments in learning and development contribute to business goals, such as profitability and growth. My research has focused on two aspects of organizational learning, first on what methods are effective from a micro level perspective – i.e. individual or team level – to achieve learning goals that contribute to business goals, and second, how businesses should work on a strategic level to link learning goals to business goals. Adding to both perspectives I have been on the lookout for how data could be gathered and used to support the reaching of business goals.

Regarding the first perspective, my analysis is that on one hand organizations need to be more aware of the inertness that true, long-term learning entails, and on the other hand that microlevel factors that enhance this kind of long-term learning, such as supervisor support, feedback and retrieval practice, could be used in a much more systematic way than is currently done. With the strong pressure for learning agility that the digital transformation implies, a systematic approach is critical.

Regarding the second perspective, my analysis is that a close partnership between line management and the learning function on synchronizing learning goals with business goals is not only fundamental, but also strongly dependent on two things: First, that the partnership goes all the way from the point when a learning or change need is detected until the learning or change process has been completed, and second, that identifying and dealing with concrete situations where learning is either promoted or prevented – ‘enablers’ and ‘blockers’ – is a make-or-break part for securing that learning goals are achieved.

When it comes to data gathering, and the use of digitals tools and systems in general, for securing that learning contributes to business goals, my analysis is that the opportunities are immense. But if there is no clear methodology, well-anchored across organizations, in applying both perspectives above, the digital technologies will be of limited use.

7. Conclusion

I have spent most of my professional life in and around the IT sector, striving in different ways to make IT solutions better. Like most people who do not have a background in education I have regarded the access to skilled people as a side issue, for ‘somebody else’ to solve: HR/recruitment departments or, on a wider scale, the educational sector – schools, universities and vocational educational institutions. Only recently has it dawned upon me that this ‘somebody else’ perspective does not longer work.

Being active for a long period in the IT sector I observe an obvious parallel. Suppliers of IT solutions did for a long time complain that they did not get proper attention from corporate management, that issues related to IT development were delegated to ‘IT departments’ with no clear business responsibility, leading to the development of solutions that were ill matched with business needs. With digital solutions becoming more and more business critical, this situation has changed. Chief Information, or Digitalization Officers are now natural parts of top management, and the awareness that the development of digital solutions has to be aligned with the business needs at every part of an organization is now general.

The parallel here is that learning is still to a large extent regarded as a side issue for a ‘learning department’ to solve. It is about time that this perspective changes, that Chief Learning Officers are natural parts of top management and that effective, business-related learning permeates every part of an organization. I hope to be part of that process.

References

Agile Alliance (2019): Agile 101. Accessed on 2020-11-06 at https://www.agilealliance.org/agile101/.

Baldwin, T.T., Ford, J.K., Blume, B.D.: The State of Transfer of Training Research: Moving Toward More Consumer-Centric Inquiry. Human resource development quarterly, 2017, Volume 28, Issue 1.

Blank, S. (2013): Why the Lean Start-Up Changes Everything. Harvard Business Review, May 2013

Bloom, B.S.: The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring. Educational researcher, 06/1984, Volume 13, Issue 6.

Blume, B.D., Ford, J.K., Surface, E.A. and Olenick, J.: A Dynamic Model of training transfer. Human resource management review, 06/2019, Volume 29, Issue 2.

Brandrup-Wognsen, E, Industry leader lectures at Hyper Island:

- (2019a) How to lead change, 23 March 2019
- (2019b) Design Metrics: Measure value creation, 24 March 2019

Brinkerhoff, R.O, and Apking, A.M. (2001): High Impact Learning. Basic Books, Cambridge, Massachusetts.

Brinkerhoff, R.O. (2005): The Success Case Method: A Strategic Evaluation Approach to Increasing the Value and Effect of Training. Advances in developing human resources, 02/2005, Volume 7, Issue 1.

Brown, T.C., McCracken, M. and Hillier, T.L.: Using evidence-based practices to enhance transfer of training: Assessing the effectiveness of goal setting and behavioural observation scales. Human Resource Development International, 2013, Vol. 16, No. 4, 374–389.

Brown, T.C., Warren, A.M. and Khattar, V.: The Effects of Different Behavioral Goals on Transfer from a Management Development Program. Human Resource Development Quarterly, vol. 27, no. 3, Fall 2016.

Business Insider: Visualizing Moore's Law in Action (1971-2019). Published 2019-12-09, accessed 2020-11-01 on https://markets.businessinsider.com/news/stocks/visualizing-moores-law-in-action-1971-2019-1028748858

Carmeli, A., Brueller, D, and Dutton, J.E.: Learning Behaviours in the Workplace: The Role of High-quality Interpersonal Relationships and Psychological Safety. Systems Research and Behavioral Science 26, 81-98, 2009.

Carmeli, A., Tishler, A. Edmondson, A.C.: CEO relational leadership and strategic decision quality in top management teams: The role of team trust and learning from failure. Strategic Organization 10: 31–54, 2011

Carlgren, L, Elmquist, M, and Rauth, I (2016): The Challenges of Using Design Thinking in Industry - Experiences from Five Large Firms. Creativity and Innovation Management, Vol. 25, number 3, p. 344-362.

Centrum för näringslivshistoria, ICA and ICA-handlarnas Förbund (2017): ICA-skolans tillkomst (The establishment of the ICA School). Accessed on 2020-12-11 at https://www.ica-historien.se/artiklar/ica-skolans-tillkomst/.

Chesbrough, H.W. (2003): The Era of Open Innovation. MIT Sloan Management Review, Spring 2003.

Clark, Donald (2020a): Artificial Intelligence for Learning, How to use AI to support employee development. Kogan Page, London.

Clark, Donald (2020b): Kirkpatrick – 4 levels of evaluation, blogpost 2020-03-17, accessed on 2020-11-22 at https://donaldclarkplanb.blogspot.com/2020/03/kirkpatrick-4-levels-of-evaluation.html

Donovan, J. and Radosevich, D.J.: A Meta-Analytic Review of the Distribution of Practice Effect: Now You See It, Now You Don't. Journal of Applied Psychology 1999, Vol. 84. No. 5, 795-805.

Dunlosky J., Rawson, K.A., Marsh, E.J., Nathan, M.J and Willingham, D.T.: Improving Students' Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology. Psychological science in the public interest, 01/2013, Volume 14, Issue 1.

Ellinger, A.D: Contextual Factors Influencing Informal Learning in a Workplace Setting: The Case of “Reinventing Itself Company”. Human Resource Development Quarterly, vol. 16, no. 3, 2005.

Ford, J. K.; Baldwin, T.T. and Prasad, J.: Transfer of Training: The Known and the Unknown. Annual Review of organizational Psychology and organizational Behaviour, 01/2018, Volume 5, Issue 1.

Friedman, S. and Ronen, S.: The effect of implementation intentions on transfer of training. European journal of social psychology, 06/2015, Volume 45, Issue 4.

Golio, M.: Fifty years of Moore’s law. Proceedings of the IEEE, 10/2015, Volume 103, Issue 10.

Hoffman, R., and Yeh, C. (2018): Blitzscaling.

ICA (2018): ICA Learning Ambition, April 2018. Internal steering document.

ICA (2020): ICA Gruppen Annual Report 2019, published on 25 May 2020 on https://report.icagruppen.se/en/, accessed on 2020-11-12.

Ismail, S., Malone, M.S. and Van Geest, Y. (2014): Exponential Organizations. Diversion Books, New York.

IT&Telekomföretagen (2017): The IT skills shortage, a report on the Swedish digital sector's need for cutting-edge expertise. Accessed on 2020-11-13 at https://www.almega.se/app/uploads/sites/2/2018/06/ittelekom_rapport_brist_pa_it-kompetens_eng_webb.pdf

Kazbour, R.R., McGee, H.M., Mooney, L.M, Brinkerhoff, R.O.: Evaluating the impact of a Performace-Based Methodology on Transfer of Training. Performance improvement Quarterly, 26(1) 2013.

Kelly, K. (2016): The Inevitable, Understanding the 12 Technological Forces That Will Shape Our Future.

Kirkpatrick, D., and Kirkpatrick, J.D. (2005): Transforming Learning to Behavior, Using the Four Levels to Improve Performance. Berrett-Koehler Publishers, Inc. San Francisco, California, USA.

Kostopoulos, K.C., and Bozionelos N.: Team Exploratory and Exploitative Learning: Psychological Safety, Task Conflict, and Team Performance. Group & Organization Management 36(3) 385–415, 2011.

Lycke, K: Industry leader lectures on Design Thinking at Hyper Island, Stockholm, 4-6 October 2018.

Malmer, C. (2019): Guest lecture at Hyper Island in conjunction with presenting SEB Exploring Innovation Brief, Stockholm, 2 May 2019

Manuti, A., Pastore, S., Scardigno, A.F., Giancaspro, M.L. and Morciano, D.: Formal and informal learning in the workplace: a research review. International Journal of Training and Development 19:1, 2015

McKinsey & Company (2017): Digitally-enabled automation and artificial intelligence: Shaping the future of work in Europe's digital front-runners.

McKinsey Digital (2018): Why digital strategies fail. Accessed on 2020-12-04 at https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/why-digital-strategies-fail

McKinsey Global Institute (2018): Skill shift, automation and the future of workforce.

Mesmer-Magnus, J., and Viswesvaran C.: The role of pre-training interventions in learning: A meta-analysis and integrative review. Human Resource Management Review 20 (2010) pp. 261-82.

Noe, R.A., Clarke, A.D.M. and Klein, H.J.: Learning in the Twenty-First-Century Workplace. Annual Review of Organizational Psychology and Organizational Behaviour, 2014 1:245-75.

Ouweneel, A.P., Taris, T.W.; van Zolingen, S.J. and Schreurs, P.G.: How Task Characteristics and Social Support Relate to Managerial Learning: Empirical Evidence From Dutch Home Care. The Journal of Psychology; Provincetown Vol. 143, Iss. 1, Jan 2009.

Ries, Eric: The Lean Startup, Crown Publishing Group, Division of Random House Inc, 2011.

Roediger, H.L.III and Butler, A.C.: The critical role of retrieval practice in long-term retention. Trends in cognitive sciences, 01/2011, Volume 15, Issue 1.

Rouse, M (2019): Definition learning management system (LMS). Tech Target/SearchCIO, accessed on 2020-11-24 at https://searchcio.techtarget.com/definition/learning-management-system.

SEB (no date): SEBx. Accessed on 2020-11-13 at https://sebgroup.com/career/sebx

Sharma, A., Central Dilemmas of Managing Innovation in Large Firms, California Management Review, Vol. 41, No. 3, Spring 1999.

Sitzmann, T.: Meta-analytic examination of the instructional effectiveness of computer-based simulation games. Personnel psychology 2011, 64, 489–528a

Sitzmann, T. and, Ely K.: A meta-analysis of self-regulated learning in work-related training and educational attainment: what we know and where we need to go. Psychological Bulletin 137:421–42, 2011

Skoglöf (2019): Digitalisera lärandet del 3 – adressera kompetensskiftet (Digitalize learning part 3 – address the competence shift), published 26 September 2019, accessed 2020-11-24 on https://futurelearningorganisation.com/digitalisera-larandet-del-3-adressera-kompetensskiftet/

Sparr, J.L., Knipfer, K., Willems, F.: How Leaders Can Get the Most Out of Formal Training: The Significance of Feedback-Seeking and Reflection as Informal Learning Behaviors. Human Resource Development Quarterly, 2017, Volume 28, Issue 1.

Swift, P.E., Hwang, A.: The impact of affective and cognitive trust on knowledge sharing and organizational learning. The Learning Organization, Vol. 20 No. 1, 2013 pp. 20-37

Van der Heijden B., Boon J., Van der Klink M. and Meijs E.: Employability enhancement through formal and informal learning: an empirical study among Dutch non-academic university staff members. International Journal of Training and Development 13:1. p19–37, 2009.

Villado, A.J., and Arthur, W. Jr: The Comparative Effect of Subjective and Objective After-Action Reviews on Team Performance on a Complex Task. Journal of Applied Psychology 2013, Vol. 98, No. 3, 514–528

Wernberg, J. (2019): Människor, maskiner och framtidens arbete (Humans, machines and work of the future), Entreprenörskapsforum. Accessed 2020-11-13 on https://entreprenorskapsforum.se/wp-content/uploads/2020/05/Rapport_Wernberg_Maj-2020_Web.pdf

Wise IT/Human Growth Award: ICA gruppen CoE är årets bästa hr team! (The ICA group Center of Excellence is the HR team of the year!). Published on 2019-11-27, accessed 2020-11-13 on https://www.humangrowthaward.com/ica-gruppen-coe-ar-arets-basta-hr-team/#hem

World Economic Forum (2018): The Future of Jobs Report.

List of appendices

The appendices listed below can be found in these documents:

- Fredrik von Essen_IRP_Appendices excl 4d and 6.pdf
- Fredrik von Essen_IRP_Appendix 4d_LearnDesignCheck 0.4.xls
- Fredrik von Essen_IRP_Appendix 6_LearnDesignCheck 1.0.xls

Appendix 1: Project Plan

Appendix 2: Supplements to Project plan

a. First version of conceptual design
b. Revised version of conceptual design

Appendix 3: Interviews [Not openly shared]

a. Interview with Per-Erik Ellström, Linköping University
b. Interview with Kristina Bixo, SEB
c. Interview with Stefan Gunnarsson, Länsförsäkringar
d. Interview with Peder Laitamaa, Ericsson

Appendix 4: Meetings, workshop and test session with ICA [Not openly shared]

a. Meeting with Kristian Nordlund
b. Workshop on LearnDesignCheck templates
c. Testing of prototype
d. LearnDesignCheck version 0.4 (Excel format)

Appendix 5: Interview with Karin Plith, Promote, including demo of Promote platform [Not openly shared]

Appendix 6: LearnDesignCheck version 1.0 (Excel format)