Digital Learning for Blue-Collar Workers in a Producing Major Enterprise

Master Thesis
to obtain the academic degree of
Master of Science
in the Master's Program
General Management – Master's Program
STATUTORY DECLARATION

I hereby declare that the thesis submitted is my own unaided work that I have not used other than the sources indicated and that all direct and indirect sources are acknowledged as references.
This printed thesis is identical with the electronic version submitted.

Florian Hochhauser, BSc 23.08.2018
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Abstract

Digital transformation has led to more complex working conditions; because of this employees have to be trained in order to fulfill the increasing and transforming job requirements and to handle the rising complexity. In order to retain and strengthen their position companies have to adapt their learning culture. Scientific research is mostly focused on the management level. So this thesis deals with the topic of corporate learning and development especially with digital learning for blue-collar workers. Furthermore, the thesis figures out how the digitalization changed the way of training how the role of Human Resource Development changed in this regard and what has to be taken into consideration for the implementation and the further care.

The empirical research of this thesis was executed in the voestalpine Stahl GmbH and its subsidiary company voestalpine Böhler Bleche GmbH & Co KG in form of 17 interviews, which were subdivided in three main groups. The qualitative content analysis was done according to Mayring (1994). This research identified that DL enables an autonomous deepening in the content, which results not just in an improved learning result, but similarly relief superiors from their additional work elicited by additional organisational and administrative efforts. However, in guaranteeing an unproblematic training it has to be ensured that users have a simple access besides a comprehensible uncomplicated and adapted - to the users’ needs and skills - content editing.

By implementing DL, HR has ensure that the benefits going along with DL of the learners are communicated so that they realize that it is introduced for them and not for other stakeholders, like management. Trainings for the usage should be structured so that all-important factors are enlightened and not only individually with regard to the specific skills and competencies of the certain employees.

HR tasks competencies and modes of operation have to be adapted to circumstances in order to react more flexible. Three main tasks of HR in the assembling three competences among the staff concerning DL are:

- Handling with the change or rather the accompanied uncertainty
- Handling the process of learning with DL-tool and systems
- Handling the change due to the topic of DL in a team

In order to strengthen the internal position HR has to generate maybe inexistent knowledge and competencies in exchange processes with external but also especially internal sources. So, there has to be certain willingness to cooperation.
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<tr>
<td>BL</td>
<td>Blended Learning</td>
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<tr>
<td>CBT</td>
<td>Computer-based Training</td>
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<td>CHRO</td>
<td>Chief Human Resources Officer</td>
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<td>CTL</td>
<td>Circle Team Leader</td>
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<td>DL</td>
<td>Digital Learning</td>
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<td>EL</td>
<td>E-Learning</td>
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<td>HRD</td>
<td>Human Resources Development</td>
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<td>ICT</td>
<td>Information and Communication Technologies</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>LA</td>
<td>Learning Analytics</td>
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<tr>
<td>Macro-Learning</td>
<td>Opposite of Micro-Learning</td>
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<td>Micro-Learning</td>
<td>Small learning units and short-term learning activities</td>
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<td>mmb-Institut</td>
<td>Michel Medienforschung und Beratung</td>
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<tr>
<td>n. s.</td>
<td>not specified</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-Operation and Development</td>
</tr>
<tr>
<td>PV</td>
<td>Process Owner</td>
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<tr>
<td>QR</td>
<td>Quick Response</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
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<td>WBT</td>
<td>web-based Training</td>
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1. Introduction

Due to the digital impact in our fast moving world different and also radical processes findings information and tools are introduced every day (Spitzer, 2014, 15). The digital impact influences our daily lives no matter in which respect. Furthermore, digitalization machinery is not stoppable anymore due to the cross interlocking in all areas of life. The digital transformation has not just found its way into private life but also into business life - We are all “digital consumers/citizens”. The advancing digitalization influences our daily work routine and consequently, the working conditions (Ernst et al., 2015, 8). Bersin et al. (2016 a, 2) claim that the “digital technology is now everywhere disrupting business models and radically changing the workplace and the way work is done.” So humanity got used to it respectively dependent on it although, paradoxically there are still some reservations about this trend or even fears. One of these fears regarding the influence on the working world is that computer and computer-controlled machines may threaten or even replace the human workforce (Stettes et al., 2017, 9). The uncertainty of the digital future the risk of job losses and the constant refusal of these technologies are just a few to name.

However, the digital transformation is no longer just a niche interest based on the assumption that it is a steppingstone in the evolution that leverages the exponential use of technology in different departments. This fast pace in the digital age transforms fundamentally the way organizations and their departments operate not just externally but also internally. No matter if departments operate in the private or in the public sector they have to adapt to this development and the new way of thinking and operating (Deloitte & Touche, 2016, 2). Big Data- information-, communication-, and digital-technologies gain more popularity and become more important in daily business due to their great potential (Prinz et al., 2016, 113). Moreover the incorporation of information and communication technologies (ICT) changed business just as production activity (Batalla-Busquets & Pacheco-Bernal 2013 41 referring to Valdaliso & López 2000) while speeding up the global economic processes in a reciprocal way (Batalla-Busquets & Pacheco-Bernal 2013, 41). This trend is an interplay based on the varying circumstances on world markets due to globalization the raising volatility of them (Prinz et al., 2016, 113) the increasing competition influenced by consistent shifts of customer or market requirements and also numerous developments respectively improvements of technological innovations (Lanza et al., 2016, 136). As shown in Figure 1 (p. 10) there are several reasons why companies are investing in so-called “Industry 4.0”- projects.
Digitalization forces all kind of companies - also conservative manufacturing ones - to adapt to this development. Although, companies feel an increasing pressure change the digital change can also be seen as an enabler and driver of corporation transformation, which creates new possibilities in various aspects (Anderson et al. 2016 2). The new possibilities and chances that come along with the digitalization “…are changing the way companies design manufacture and deliver almost every product and service…” (Bersin et al., 2016 a, 2).

But what actually is digitalization? In this regard it is necessary to define what is meant by digitalization. According to Bendel (2017) the term digitalization has several meanings, which range from digital transformation to representation respectively to execution of information communication or even the digital modification of machines equipment tool or vehicles. Furthermore, it can be used as a synonym for the digital revolution. While focusing the IT of the 20th century more on automatization and optimization modernization of the workplace and the private households the generation of computer networks and software-products the introduction of enterprise-resource-planning-systems and office-programs the focus since the beginning of the 21st century has been a completely different one. It tends more to disruptive technologies and innovative business plans as well as automation, individualization, and flexibility. This development ends in the “fourth industrial revolution”, which is also known as Industry 4.0. The German language area mainly influenced this medially frequently discussed hype-term. This revolution will lead to a fundamental development in the current production (Bendel et al., 2015, 6). In addition to that digitalization in the course of Industry 4.0 aspires to increase not only the connection or networking but also the effectiveness and efficiency (in production) (Bendel, 2017, 162 referring to Bendel,
According to Freith et al. (2015, 79) the continuous enhancement of productivity quality and flexibility in production is an essential indicator for safeguarding in the international competition (for the German producing industry). So the importance of Industry 4.0 to the new predominant situation can be pointed out in Figure 2. This chart shows the consistent rising investments of Industry 4.0 technologies in Germany or rather that this trend is not just an ill-founded hyped trend but rather legitimate.

![Figure 2: Investments in Industry 4.0 in Germany between 2013 and 2020 (in billion euros) (Source: Statista.com)](image_url)

The gradual automation of all business sectors over the last years has led to this status quo. According to Reinheimer (2017, V) the intension of Industry 4.0 is an integrative approach between machine and human - a symbiosis or an interaction of all parts no matter if it is of human mechanic or electric nature. It can be seen as the fourth industrial revolution that, according to Ernst et al. (2015, 19), can be synonymously used for complex adaptable and flexible processes. The connected industrial workforce is a mixture of machine and man, which may reinvent the production and service (Berger & Wahrendorff, 2016, 3). According to Berger & Wahrendorff (2016, 3) such a workforce will not just exponentially boost the manufacturing productivity but also improve the operational efficiency risk management and safety within the production cycle. This requests radical internal changes; especially like in the way people are trained. Methods in corporate training continuously changed over time but nowadays the digitalization offers new and especially innovative opportunities to it (OECD, 2016, 3).
Although, the corporate digital transformation is prevailing and predominant not all companies are aware of that as several studies figured out. However, successively more and more companies realize the increasing need and importance of it. The corporate Learning and Development (L&D) industry has a size of over $140 billion and is still expanding (Bersin, 2017). According to Bersin et al. (2017, 13) the survey of 2017 Deloitte Human Capital Trends detected that 83% of the CEOs and HR leaders would evaluate this topic as important. Digital Learning is not a specific type of learning but more a way of it (Bersin, 2017), which offers a lot of different possibilities. However, without an appropriate strategy provided by the HRD and the willingness of employees all these possibilities and advantages that go along with this corporate learning transformation are senseless. HRD has to fulfil a balancing act in order to leverage this transformation. This master thesis tries to find out based on the research questions how learning per se has changed for blue-collar workers due to the digital change and what such tool may look like respectively what has to be taken into consideration on the part of HRD. Regarding the role of HRD it tries to find out how it changes what the future functions of HRD will be the empirical research of this thesis was executed in the voestalpine Stahl GmbH and its subsidiary company voestalpine Böhler Bleche GmbH & Co KG. On the basis of the research questions the empirical research was conducted. So the main research question was:

**How does training change for workers in a major manufacturing enterprise due to the digitalization (of learning) and what influences the implementation of digital training tools?**

Furthermore, the following sub-questions should be included in the research:

- What does HRD have to take in consideration by implementing and executing DL?

These questions also attempt to take following points into consideration:

- The needs and demands of blue-collar workers in order to implement DL in a corporation
- The role and functions of HRD
- Aspects that have to be considered by implementing DL

This single case study bases on a qualitative research approach. For this reason 17 interviews subdivided in three main groups were conducted. In order to generate the picture as heterogeneously as possible these groups have various social backgrounds ages, functions, knowledge, and expertise. This means that different perspectives due to their diverse functions deal with the same process and accompanying problems. These different points of views provide insights
into the same problems. One group consists of blue-collar workers another of HR and CTL (superiors) and one of experts.

The qualitative content analysis according to Mayring (1994) will be the basis of this masters’ qualitative research. In the first instance the theoretical background should give an overview of factors implications alterations and innovations, which can be found in literature. Ensuing the practical related part deals with the content of the interviewees. In the discussion the theoretical and empirical parts are being compared in order to find new findings, which were stated in the contribution. In the following some of the findings are briefly illustrated.

This research found out that DL enables an autonomous deepening in the content, which not only results in an improved learning result, but also similarly relieves superiors from their additional work elicited by additional organisational and administrative efforts. However, in guaranteeing an unproblematic training it has to be ensured that users have a simple access besides a comprehensible uncomplicated and adapted - to the users’ needs and skills - content editing.

By implementing DL HR has ensure that the benefits going along with DL of the learners are communicated so that they realize that it is introduced for them and not for other stakeholders like management. Furthermore, users have to be informed about the intended use. Trainings for the usage should be structured so that all-important factors are explained and not only individually with regard to the specific skills and competencies of the certain employees.

DL and the implementation process do not largely influence the role of HR. Though its tasks competencies and modes of operation have to be adapted to the circumstances. Furthermore, they have to be aware that the corporate culture has an impact on the implementation strategy. However, three main tasks of HR in the assembling three competences among the staff concerning DL are:

- Handling the change respectively the accompanying uncertainty
- Learning with DL-tool and systems
- Handling the change due to the topic of DL in a team

In order to strengthen the internal position HR has to generate maybe inexistent knowledge and competencies in exchange processes with external, but also especially internal sources. So, there has to be a certain willingness to cooperate. Flexibility and the ability to react are also important during the implementation process.
2. Theoretical Background

2.1. HRD

Finally even the human resource departments or rather the human resource development departments (HRD) were hit by this wave because according to Bersin et al. (2016, a., 2) “...the digital disruption and social networking have changed the way organizations hire manage and support people”. They also call this new approach the “digital HR”. This shift of course alters the way HR serves and supports employees because the HR department has an essential - a bridge - role in this transformation.

But in order to understand the digital impact in conjunction with HRD and its tasks it is important to define its basic roles. As the name Human Resource Development already explains HRD’s all-embracing intention is the development of employees by combining development and learning. By quoting Neuberger (1994) Klötzl (1996, 2) explains HRD, as the competence to determine and satisfy learning needs ranging from knowledge to motivation and skills, which are essential for fulfilling current and future tasks. This implicates training further education organisational development and leadership development.

![Figure 3: Impact of Digital in HR (Source: Spitzer, 2014, 15 based on Capgemini Consulting Analysis)](image)

Besides several other descriptions Klötzl (1996, 2 referring to Mentzel, 1983) defines HRD as the epitome of all measures that serve the individual occupational development of employees considering personal interests in order to guarantee fulfilment of present and future tasks.
With a variation of several definitions he shows that there is no consensus at all in this regard. Bartscher & Nissen (2018) mentioned such a missing consensus, too. According to them the tasks of HRD are among other things vocational training qualification measures learning on the job continuing education knowledge transfer coaching seminar participation or career planning. Nonetheless the HRD adapts its mandate to act on the basis of the strategic aims of the corporation. These processes are examined with various competence development measures like trainings, seminars, advanced trainings (Kauffeld, 2016, 3). Corporate learning however, is defined as “…the capacity of an organization to acquire apply and share knowledge for the purpose of exploiting new solutions and exploiting them to improve efficiency and competitive advantage” (Imd, 2011, 1). The organization and its employees should be able to learn and adapt constantly (Imd, 2011, 1). According to Stöger (2012, 13) about 67.3 % of all corporate trainings in Austria were seminars or rather courses. So this form of corporate education is quite popular because it enables the trainer to convey plenty of information to a bigger group of learners with the help of speech and audio-visual devices (Kauffeld, 2016, 3). According to Kauffeld (2016, 4) there are doubts regarding the effectiveness of seminars although, they play an important role (in Germany).

However, it is also necessary to define learning and the process of it in general to know how it works or which factors are influencing it during trainings. According to Wache (2003, 4/5) learning is the act of humans in acquiring and processing information in order to generate mental structures based on knowledge ability and feelings. The learned information is not consumed in a passive way. The acquisition of knowledge can be described as a ceaselessly monitoring expanding structuring and confirming of mental structures. So humans realize their active mental performance directly in the process of learning. Learning can be carried out specifically organized in institutionalized environment or incidentally integrated in all kinds of life activities (Wache 2003, 5). But how does learning work?

According to Wache (2003, 6) the process of learning is:

- An active process
- A self-directed process (learner realizes control- and management process)
- A constructive process (without individual experience and knowledge background and own interpretation there is no learning)
- A situational process (in a specific context)
- A social process (it is not possible without any social exchange)
The process of learning should be in an authentic context which means that the content should be oriented on problems, which are relevant for the learners while the integration of multiple contexts requests, the learner to use the information for various problems. On the other hand, learning in a social context respectively with instructional support (information resources and tutor) help to create a constructive learning process (Wache, 2003, 6). Digital tool like forums chats or virtual classrooms could additionally (besides face-to-face exchange) respectively independently (of time and location) help to exchange knowledge (social process). These processes of learning should be triggered by those trainings. They are drafted by HRD, as it is their task to do so. Trainings in the combination with the advanced progress of digitalization which finds its way into it HRD has to adapt itself to these circumstances. So the next chapter gives an overview of the digital influence of HRD to understand the typical measures on the part of the company the implications of the digital transformation.

**Digital HRD.** The role of HRD in the context of the digitalization may be seen as an adjustor between employees and the digitalization because “*digital is the world our employees live in and if we do not become part of it then we cannot really do our jobs.*” (Bersin et al., 2016, b. 10) So according to Petry (2017, 19) HRD has a significant value in establishing a digital corporate culture based on this bridge role between these two “parties”. Furthermore, Bersin et al. (2016, b. 10) assert that HR should create “experiences” instead of “programs”. One of Deloitte’s surveys in 2016 which had more than 7,000 responses from more than 130 countries claims that only 38 % of the companies are thinking about digital HR and only 9 % of them feel fully ready whereas 72 % think that is an important priority and 32 % define it as very important (Stephan et al., 2016, 99). This survey shows that it is still apparently an underestimated trend. Nowadays a lot of HR business processes are outsourced with little added value. Even two years ago a study sponsored by Accenture figured out that most of their participants expect to execute a wide-scale transformation of their processes. A greater use of the technology within the next two years was the aim (Goldstein, 2014, 28). The HR realized that they had to be more pre-emptive concerning the digital transformation because HR plays an important but also challenging role in shaping the organization’s future digital identity and “*…a real complexity to plan future capabilities of a workforce in the digital economy...*” (Deloitte & Touche, 2016, 2). This is essential for the organization’s future success (Pelster et al., 2017, 29). According to Ulrich & Brockbank (2005, 3) a transformation needs new agendas processes and thoughts. Figure 3 (p. 14) reproduces the impact of digitalization in HR and the growing importance of it due to the essential HR topics that are influenced by it.
The continuous rising of the digital aspect also changes the way employers interact with employees - no matter in which regard - from using social media platforms or apps for recruiting new employees to digital learning (DL) and development systems (Spitzer, 2014, 15). On the other hand, this is the organizational development a core competence of HR. The HRD has to find a new role concept to get away from command and control to be more a HR business creator driver and enabler. Consequently, a considerable willingness for change and innovation is necessary (Nickel, 2016, 3-4). Although, 85 % of the interviewed manufacturing executives believe that human-machine-centric environments are essential and seminal few companies are yet doing enough to make this vision reality (Berger & Wahrendorff, 2016, 3).

2.2. Digital Learning

2.2.1. Overview
The preceding expositions try to give an overview of the process of learning and the digital transformation, which influences HRD, and in the further context the corporate learning. The following chapter gives a review of DL and its’ implications.

The difficulty in defining what Digital Learning actually is. There are various definitions while DL and E-Learning (EL) are often synonymously used in this context. Due to the use of a variety of diverse tool or hybrid forms of EL and the introduction of the term digitalization in the context with learning it is hard to define the terms (Kerres, 2016, 159). Additionally it can be stated that the goals respectively the purposes of EL and DL are equal which is to contribute effectively to the development of the skills and knowledge of workers in order to support their career (Batalla-Busquets & Pacheco-Bernal, 2013, 43 referring to Pantazis, 2002; Ong et al., 2004).

The expansion of teaching and learning possibilities due to electronic media especially on the Internet and Computer since the 1990s has been coherent with the term of E-Learning which supports the life-long learning approach (Kimpeler, 2010, 364-365). The evolution of the original E-Learning to the current one (E-Learning 2.0) is also based and adapted to technical enhancements of e.g. the Web (2.0) technological innovations or on theories like e.g. “Connectivism”. E-Learning 2.0 is rather adjusted on the current technological possibilities comparable with digital learning and a transformation of E-Learning 1.0, which was just a digital supply of content between teacher and learner.
Stephen Downes (2005) mentions this modified term based on the technological conditions like e.g. web based systems compared to conventional Learning-Management-Systems (LMS) - which are still relevant in major enterprises according to the study of Michel & Miez-Mangold (2014, 14) - but also implicates the transformed user behaviour of the “digital natives” (Bernhardt & Kirchner 2007 20/21). However, most of the time authors do not explicitly differentiate between E-Learning 1.0 and E-Learning 2.0 by means of an explanation or definition.

A very common definition by Michael Kerres (2001 cited by Schnücker & Ebinger, 2014, 1) of E-Learning-media is that they are electronic or digital media for the distribution and the presentation and/or for the support of interpersonal communication. Kimpeler (2010, 365) explains the functions of EL as a media for winning information, mediation of didactic and structured learning units, collaborative learning, and the composition respectively production of content and content related communication (between trainer and learner). The scientific community admits that EL is a valid as well as an efficient strategy (Batalla-Busquets & Pacheco-Bernal, 2013, 43 referring to Nisar, 2002).

<table>
<thead>
<tr>
<th>Digitalization of education</th>
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<tr>
<td>Programs/ Planning, developing and organizing of courses</td>
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<td>Informing and coaching learners</td>
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<td>Making a diagnosis and acknowledge competences</td>
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<td>Providing learning architecture and learning environment</td>
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<td>Supplying learning material and learning tasks</td>
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<tr>
<td>Executing online-events</td>
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<tr>
<td>Exchanging and communicating with each other</td>
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<td>Supporting via coaching and mentoring</td>
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<td>Organizing of examinations</td>
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<tr>
<td>Capturing and documenting competences</td>
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<td>Evaluating programs and courses</td>
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<td>Building of communities and networks</td>
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<td>Saving sustainability and the transfer into practise</td>
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**Figure 4:** E-Learning vs. Digital Learning (Source: Based on Kerres, 2016, 4)
Referring to Wheeler (2012) Ifenthaler et al. (2014, 121) on the other hand, define DL as “…any set of technology-based methods that can be applied to support learning and instruction.”

Although, this definition is not quite precise it expresses the main purpose of it. By comparing these two definitions one can state that they are very similar and so it is not surprising that they are synonymously used most of the time. The definition of EL comprises quite all aspects of DL but Kerres (2016, 171) explains that the digitalization of education results in a changing process, which overlaps the EL in the narrower sense, too. This means that EL focuses on teaching and learning in a narrower sense, while digital technologies percolate and irritate the educational work in a broader sense (Kerres 2016 159) like illustrated in Figure 4 (p. 18). The broader sense maybe can be explained among other things like e.g. with Mobile Learning which is an extension of E-Learning in other words a mobile E-Learning and focuses even more on the frequently named “anytime & anywhere” learning approach (Rohs 2013, 78). Furthermore, Kerres (2016, 159) also claims that the digitalization of education is pervasive and that it has just begun. By referring to Kerres (2016) and Wildi-Yune & Cordero (2015 b) Niemeier (2016, 11) mentions that DL beyond EL has diverse new possibilities. Bersin (2017) however, asserts that DL is an enhancement of EL. The definition of EL from Batalla-Busquets & Pacheco-Bernal (2013, 42) is quite conformable to the one of DL. They are referring to Ruipérez (2003) Taylor & Osorio (2005) or Sangrà et al. (2012) and are specifying EL “…as the distance training methodology based on the use of information and communication technologies that allows interaction and asynchronous communication amongst participants as well as the access to a broad set of teaching resources.” However, by citing Meier (1998) Lach (2016, 286/287) tries to explain multifunctional learning media as a technical additive which designs exchanges or spreads. In addition to that she also refers to Tulodziecki (1997) who explains media as a technical aid, which allows presenting certain content with technical support that can be transferred stored processed reflected and illustrated in various forms. On the other hand, Lach (2016, 287) amplifies that these definitions may not fit to new technical developments of the future so she consequently, quotes another more flexible one by Schmidt (2000) who explains such media as a self-organizing system of communication-instruments technologies social systemic orders and range of media products. All in all DL tool should support the lecturer as well as the learner in the particular respect (Lach, 2016, 287). The various characteristics of Digital Learning like visualisation, animation, communication, cooperation, simulation, structuration, and so on support a multifunctional approach (Lach, 2016, 290).

Due to the fact that digital learning tool may also enable blue-collar workers to communicate,
discuss, and to exchange knowledge EL (equally to DL) can be linked to the theory approach of “Connectivism” (Kimpeler, 2010, 374) a theory for the digital age developed by George Siemens and Stephen Downes (2005).

One can state that it is a networked social learning because the learner is not isolated anymore. Downes explains it as: “...the thesis that knowledge is distributed across a network of connections and therefore that learning consists of the ability to construct and traverse those networks.” (Downes, 2007 cited by Duke et al., 2013, 6) The theory is based on the assumption that society gets more complex global socially connected and mediated by an increasing advance in technology so as a consequence individuals are connected to each other and are able to exchange information, experience, and see connections between information sources which facilitates continual learning. This supports a more dynamic learning experience and a new climate of thinking (Duke et al., 2013, 6). Moreover according to Stein (2015, 5) “there is a need for learning tool that apply digitalization and new media for example e-learning platforms digital learning success monitoring and mobile learning apps.” This extract of variable definitions and overlaps should demonstrate the difficulty of finding a consensus. Figure 4 (p. 18) shows that E-Learning can be seen as a part of DL, which is due to newer innovations, and the digitalization aspect a new term for the DL approach. Like many others also mmb-Institut (2017) or Michel & Miez-Mangold (2014) do not differentiate between EL and DL in their surveys. So all tool shown in Figure 8 (p. 27) are not really differentiatedly categorized either to DL or to EL because it is similar. According to Witt (2013, 15) E-Learning comprises all types of electric or digital media and so one can state that they are identical despite the two different terms. However, based on the similarities of these two abstract concepts and the fact that both influenced respectively transformed the classical learning approach EL and DL will be seen as equal in this thesis. Consequently, the definition of DL in this thesis is: any type of learning which is based on various forms of multimedia and technology in order to support and facilitate the employees’ learning by providing updated information, mediating of didactic and structured learning units, collaborative learning, the composition and production of content, and content related communication.

Learning in the corporate context. Already in the Global Human Capital Trends survey of 2015 where more than 3.300 business and HR leader of 106 countries participated up to 70 % of the interviewees of the manufacturing sector agreed that learning is important (Bersin et al., 2015, 7). Eighteen et al. (2015, 25) also showed that 8 out of 10 (85 %) - no detailed information regarding industry - believe that it is “important” or “very important” which is an increase by 21 % compared
to 2014. Referring to the *Global Human Capital Trends* survey of 2016, it is still a very important topic. The survey showed that in the manufacturing industry the importance of corporate learning is about 83 % (Bersin et al., 2017, 13), which is an increase by 13 % within a year. According to Senderek et al. (2015, 283 referring to Deuse et al., 2014) in general, science and practise agree on the increasing importance of learning to manage the challenges of Industry 4.0.

They refer to the survey of the Fraunhofer IAO where more than 80 % of the interviewees stated that additional qualifications occur based on the flexibility requirements. Significant for the success of the future work arrangement will be the self-reliant and continuous learning which is included in the daily life and work routine (Stettes et al., 2017, 14). The preconditions for adult education are not just the duty of the state but also of the companies and even of the individuals.

According to Stettes et al. (2017, 14) acquired competencies will be more important than traditional certificates of a formal proof. The change of the organizations the global circumstances and the cost pressure - like costs for external trainers for travelling expenses for external services which could be internally processed etc. - equally influenced the way of learning. Occupational advanced training and further education will play an important role for employees in the future (Ernst et al., 2015, 36). Pelster et al. (2017, 29) note that in the past employees learned in order to gain skills for their career while now the career is rather a journey of learning. Pelster et al. (2016, 58) claim that high-performing companies incorporate their employees in a centre of new vision and architecture, which handles the process of learning rather as a continuous one than an episodic event. Beyond that refreshment and revision of knowledge is important, too.

Welling et al. (2016, 8) take the increasing complexity of the corporate operational procedure into consideration. Against this background employees should have informed knowledge of these procedures so that they are e.g. able to put machines into operation handle or even to repair them. Mobile digital media may support these enterprises by assisting directly in the activity area or provide appropriate solutions to certain problems. If, extensive process knowledge is established, it is easier for employees to take discrete and quality ensuring decisions (Freith et al., 2015, 80). Additionally, employees should be trained to be deployed on various work places which means that the changes and future requirements presuppose more flexible applicable workmen without long training time (Freith et al., 2015, 80) in order to fulfil the demands like e.g. continuous enhancement of productivity quality and flexibility in production (Freith et al., 2015, 79) from markets.

Consequently, companies have to adapt their (corporate) learning strategies supporting the digital
change (Haufe Akademie & Crossknowledge n. s. 5) the corporate culture and the future organizational direction (Petry, 2017, 9) to these circumstances. The shifts demand more openness from the companies with regard to modification its pace and to actively shape it (Vernau & Hauptmann, 2014, 18). Many authors (Pfeffer, 1998; Piore & Sabel, 1984 etc.) mention various ways increasing the companies’ flexibility by focussing the organizational innovations on the worker enhancing productivity and intensive training. This gives them a feeling of security and belonging to a team (Batalla-Busquets & Martinez-Argüelles, 2014, 69 referring to Carnoy, 2000).

By referring to FuTMaN (2003) and MATAP WG Educations (2003) also Mavrikios et al. (2013, 474) claim that the future “knowledge worker” needs new skills. - This means that not just content for new training but also new delivery mechanisms are required. According to them manufacturing education should be concerned in a continuous supply of engineering competencies and of multi-disciplinary background. Stettes et al. (2017, 13) also emphasize the importance of developing new organizational designs within corporations, which are enabling flexibility in all kinds of ways. According to them such structural developments are demanded especially in the context of education and training. Furthermore, they mention that the ambidexterity on the personal staff cultural and structural level in order to increase effectiveness and creative development is rising (Stettes et al., 2017, 13 referring to Münchner Kreis 2016). For this reason it is necessary that these flexible education concepts are easily and straightforwardly accessible for everyone (Stettes et al., 2017, 14). The digital transformation modifies and changes employees’ tasks and requires new competences in order to fulfil these tasks (Stettes et al., 2017, 4). So because of the permanent changes of technologies and job requirements (e.g. customer or market requirements), but also based on Industry 4.0, it is necessary that employees are be in a continuous learning process with regard to the statements by Pelster et al. (2017, 29 and 2016, 58) that the career can be seen as a journey of learning and that learning is a continuous process. In this context research has shown that e.g. DL is a perfect way in order to achieve qualitative outcomes in a brief time frame (Piccoli, 2014, 6).
According to Pelster et al. (2016, 57) the importance and the topicality of corporate learning and training for HR is based on several facts. One fact is that the continuous increasing demand of developed skills is higher than the supply. They (Pelster et al, 2016, 57) mention that learning is an essential tool in the current business environment in order to attract and retain top talent engage employees and even to develop long-term leadership for the corporation. Another one is the factor of digitalization - in this regard they explicitly mention mobile devices.

**Figure 5:** Sphere of activity of industry 4.0 in education and advanced training (adapted from Heimann & Ressel, 2016, 30)
Furthermore, by referring to Bersin (2014) Pelster et al. (2016, 57) state that employees identified the need of learning because the learning curve is correlated to the earning-curve which consequently, lead them to demand an improved access of dynamic learning offerings. Figure 6 shows three main areas for companies, which are influenced by lifelong training respectively on-going education. This chart results from a survey conducted among about 200 employers in North America and Canada ranging from small to large companies and all kinds of industries.
In this regard companies with dynamic career models outstrip competitors because of facilitating continuous learning chances, which are deeply integrated in a culture of development (Pelster et al 2017, 30 referring to Johnson, 2016). Stettes et al. (2017, 12) mention that digitalization has a main position in training and lifelong learning. This learning aspect is also mentioned by Mavrikios (2013, 474) in order to “…assist in keeping up with the pace of change”. The lifelong activities of the industrial programs are focusing on the continuous building of knowledge skills and supply of integrated engineering competencies. According to Mavrikios (2013, 475 referring to OECD 2004) four key features comprise this approach. These four characteristics are compatible to DL because “first it offers a systemic view of learning since it examines the demand for and the supply of learning opportunities as part of a connected system covering the whole lifecycle and compromising all forms of formal and informal learning.”
Secondly, the learner is centralized and emphasizes individual learner needs. Furthermore, this approach includes the motivation in order to learn a self-directed and self-paced learning approach. “Fourthly it stresses the multiple objectives of education policy which include economic social or cultural outcomes; personal development and citizenship.” Picciolo (2014, 6) mentions in this context that e.g. DL “keeps the workforce appraised of their job functions' developing requirements.” in order to create a positive effect within the organization which in the broader sense enables the organization to achieve its goals. Yet another one is that the learner is centralized and it involves the diversity of learner needs, which represents a transformation of attention from the supply to the demand side. Furthermore, it emphasizes the motivation the self-paced self-directed learning approach and also brings out the multiple objectives of education policy. Furthermore, Stettes et al. (2017, 12) claim that jobs will not be disappearing but primarily changing. So as a consequence the capabilities and knowledge have to be technologically up-to-date (e.g. shown in Figure 5 [p. 23]). Consequently, the strategies of training and education have to be adapted (Niemeier, 2016, 9) to the upcoming conditions.
Implications due to DL. HR is demanded to find a possible easy innovative sustainable or rather efficient way of training workforces so they are able to handle new (digital) technologies to stay qualified or to fulfil the new job-requirements (Senderek et al., 2015, 282). Changes influence developments in employees’ labour activities so they have to adapt to modifications of their responsibilities within companies (Batalla-Busquets & Pacheco-Bernal, 2013, 41) or even to cope independently with new or even maybe unknown situations or complex problems (Lanza, 2016, 136). Stettes et al. (2017, 4) remark that lifelong learning the ability and the willingness to change are the key for a successful transformation.

DL facilitates new possibilities for corporation’s Knowledge Management and it should not be seen as problem but rather as a solution approach (Schmid et al., 2016, 33). The technology-enabled education is according to Intel Corporation (2015, 25) generative, which means that it creates new understandings ideas ways of learning teaching and sharing information. So corporate training departments have to become “learning experience architects” in order to build a dynamic and fascinating experience for the employees which should also help them learning how to learn (Bersin et al., 2016 a., 59).

Web-based solutions and other DL technologies facilitate Knowledge Management systems (Asgarkhani, 2004, 34). Reasons of the digitalization mentioned by Bendel (2017) - automation, individualization, and flexibility - could be identified as the basis of the (digital) learning approach.

This approach caps these new circumstances and requirements of the working world, which postulates a faster production of knowledge and otherwise declares it faster as old-fashioned compared to former times. Furthermore, the flexible adjustment of competencies and skills - is more important than in the past (Senderek et al., 2015, 282 referring to Schat, 2011). The possibility of individual learning is one of the capabilities of DL that displays it. DL would be another step in the right direction to equal opportunities within the society although application-oriented research in this regard is unfortunately, missing (Schmid et al., 2016, 33). However, Ifenthaler et al. (2014, 121/122) predicate that there are many opportunities for research in order to improve the learner’s experience to generate an optimized outcome from learning and to promote deeper engagement to accomplish “high-order thinking skills”.

Theory vs. Reality. Unfortunately, there is also a gap between the knowledge of the importance of
and the actual readiness for digital learning in companies as shown in Figure 7. A study conducted in 2015 among about 181 corporate learning experts and practitioners depicts a sobering picture. Although, about 80 % of the companies change their structures and processes based on the technological development just about 7 % of interviewees are of the opinion that companies’ areas of education are sufficiently prepared. About 16 % of them believe that the education experts have appropriate competencies for planning implementing and chaperonage regarding innovative learning concepts. Besides, the study found out that just 9 % of them believe that companies have initiated the required change processes of the business models of corporate education learning concepts and the learning culture (Niemeier, 2016, 9 referring to Sauter, 2015).

Figure 7: Change in learning and development capability gap between 2014 and 2015 (Source: Deloitte University Press, 2015, 6)

As shown there is a gap between the importance and the readiness. One can state that there is also an apparent increase in popularity/importance, which in turn led to various offered and especially different systems. Furthermore, this increasing leads to a development of a new market that pushes this trend further.

The difference, which is still not negligible, may occur because of the application of classic media that slows down the complete transformation and may be associated with industry or the companies itself. The following chapter explains DL tools, how learning changed, due to the digitalization and these tools respectively the variety of DL tools.

2.2.2. Explanations about Digital Learning

DL-tools. But what are DL tool? When people when people refer to that term it is not always clear how they define it and which tool or systems they are thinking about when hearing the word “digital”. In a representative German study from Gensicke et al. (2016, 23) among more than 3.000 German corporations of all industries the most frequently mentioned digital device was the PC or Laptop as well as even Tablets or Notebooks. To come a close second smartphones were stated.

However, other digital devices like digital cameras 3-D-printers CNC-machines robots or measuring instruments Wearables Whiteboards etc. were rarely mentioned (Gensicke et al., 2016,
On the other hand, a lot of digital tool were already used in working processes like software for actuating proofing or improving machines for inventory control videoconferences simulations online forums social networks etc. (Gensicke et al., 2016, 21-23). This implicates a quite broad portfolio and reflects differences among companies and maybe industries but also the gap between the status quo and the knowledge of digital tool, which is also in correlation with the use of them. Innovative companies in a digital leader position may have a better position in future because they face the change and accept the fact that they have to instruct their employees so that they are qualified enough.

Besides several positive characteristics (Chapter 2.3.3) that go along with the use of digital learning tool which are, according to the article of Intel Corporation (2015, 7), learner-centered they may support the employees’ discreteness (Ernst et al., 2015, 19) and would give workmen an understanding of using digital technologies by using them for learning. In the survey of Haufe Akademie & Crossknowledge (2015, 8) the authors argue that learning how to use digital tool also supports the development of collaborative forms of working and a conformable corporate culture. Furthermore, Gensicke et al (2016) mention several classic (non-digital) learning media, like classroom training, workshops, textbooks, and presentations. However, they also named some digital tool like videos learning platforms, simulations, specific software, MOOCs (Massive Open Online Courses), podcasts, software for examinations etc. This enumeration illustrates the heterogeneity of the possibilities offered. They differ significantly from each other as they do from the conservative classic ones (Sterten et al., 2016, 170).

**How digitalization changes learning.** DL facilitates the recording and the identification of the worker training needs, which furthermore, enables the people in power to develop “...tailor-made training processes based on each work feature and the business priorities.” (Batalla-Busquets & Martínez-Argüelles, 2014, 69) The main aim of the didactic design should create an improved (compared to pre-digital era) learning environment to support and motivate learners. This can be seen as accomplished when potentials with additional benefits are maximized (Wache, 2003, 8). On the one hand, users should be able to apply the learned knowledge while on the other hand, to variegate it situationally (Lach, 2016, 289). DL tool and systems are multifunctional applicable due to their flexibility in e.g. the learning process and their independence of the content as well as in the scope of design. They should help to generate knowledge expertise trust in the digital transformation and also productivity with according to Hofmann & Jarosch (2011, 12 referring to Bauer et al., 2010) the help of continuous and job-related learning. Bersin (2017) differentiates the
tool in two groups depending on the purpose. On the one hand, there is Micro-Learning and on the other hand, there is Macro-Learning.

![Diagram](image)

*Figure 8: Categorized forms of digital learning (adapted from Böhler et al., 2013 based on mmb-Institut, 2013)*

Micro-Learning is mostly a short-term learning approach which is topic or problem based which in other words means learning on demand and can be satisfied by videos articles forums/social networks or other tool (e.g. smartphones tablets or QR-Codes [Lach, 2016]). The Macro-Learning approach is for learning something new, which lasts long-term for several hours or days in order to learn concepts principles or practice and can be processed by e.g. MOOC courses or programs. Figure 8 gives a good overview of the various opportunities and helps to classify the context of the study. It illustrates that Micro-Learning tends more to be an informal way of training while on the other hand Macro-Learning is more formal. The combination of informal and mobile learning changed the way of learning and training. Although, mobile and informal learning are unlocking new learning areas they also establish a connection of several learning contexts and create the basic structure of lifelong learning (Rohs, 2013, 75). Bernhardt & Kirchner (2007, 24 referring to e-teching.org 2007) state that besides formal learning cycles in terms of workshops or training programs informal learning has an essential role, which will be considered as unmethodical regarding the learning aim duration and support. Equally, Niemeier (2016, 9) claims that the technological development would transform the corporate learning from formal learning (classroom training/E-Learning) to a more informal learning (on the workplace and social learning in communities). The technological developments and innovations increased the variety among the digital learning possibilities.
As early as 2008 the blue coloured learning forms (Figure 8 [p. 27]) were inserted while in 2013 due to the increase of innovations about 23 different systems or tool were available (Böhler, et al., 2013). Informal learning could also be initiated from the company and be mixed up with formal learning. Böhler et al. (2013) note that due to the changing target orientation of corporate training technology-based learning gains importance. So, far especially the knowledge transfer and the qualification have been the driving forces. Now the development of competences, which means the ability of finding self, organized solutions to problems in practise are the aim. In this context the progressive integration of working and learning processes and the rising informal learning approach e.g. communities of practice are supporting this development of competence approach. Since 2006 companies more and more have made use of Web 2.0 (the “social web”) instruments and E-Learning 2.0 in order to support corporate training respectively informal learning. User and learner are able to exchange knowledge in order to learn from each other with the help of social media platforms specific systems or even platforms, like Wikipedia and YouTube. This means that learner and user can act as teachers (Seufert & Meier, 2016 b., 548/549). These new technologies enable learners and users to exchange knowledge and to be closely connected to workings and learning processes (Böhler et al., 2013 referring to Hart, 2011). Consequently, collaborative working and learning is possible because of the Internet, which in turn means that working and learning move closer together.

The versatility of DL. Exemplary for a mixture of online a learning platform learning on the job (on-the-job-training) and informal learning which was conducted by the corporation itself, is the Adidas Learning Campus (Niemeier, 2016, 12) Stettes et al. (2017, 14) note in this context that the attention of training and further education will be on more flexible qualification paths. They call formal education into question and even argue that it could be an obstacle for change. Niemeier (2016, 10) mentions that boundaries between learning and working are blurred which implicates that learning-on-the-job gains more popularity. As a result of that it is comprehensible that traditional forms of corporate education reaches its limits quite fast. In this context it is interesting that the survey of mmb-Institut (2017, 5) shows the popularity of video portals, like YouTube, which is on the second place (93 %) (mmb-Institut, 2017, 5). Another study (1.800-plus employees) conducted by BizLibrary in the summer 2015 figures out that online videos are number one with regard to three categories like preparing for future improving performance and teaching new things (Freifeld, 2015, 9). These platforms are especially utilized for informal learning. Already in 2014 a
German quantitative study with about 193 HR experts (95 small and medium-sized enterprises and 98 major enterprises) figured out that video based learning tool are on the rise (79 % in major enterprises).

Another way of informal learning, which can be named in this regard, is learning with social media networks. According to the German survey this approach gains importance in major enterprises and makes up about 75 % (Michel & Miez-Mangold, 2014, 10). A lot of companies also use components of various learning-strategies e.g. Blended Learning (Wildi-Yune & Cordero 2015 a, 7) or several in juxtaposition. On-the-job-training is one option that can be combined with such systems or tool. Although, on-the-job-training on its own is not a new concept of training it is flexible and adaptable enough to use it in this context. It can be categorized into two groups like formal and informal on-the-job-training (Jain, 1999, 283/284). It is the most common necessary and widely accepted training method to increase the employees’ skills (Jain, 1999, 284 referring to Tracey 1971/Jones 1988). Referring to Creth (1985) Jain (1999, 284) pointed out that the benefits of on-the-job-training range from an increase in quality and quantity of work over a confident flexible staff with low fluctuation to job satisfaction and high morale.

Implementing DL tool into on-the-job-training fosters the possibility of using the learned content directly in practice especially in order to be able to realize the resulting effect. This additional benefit of working process-oriented learning also may motivate employees to deal more with the content (Hofmann & Jarosch, 2011, 12) Niemeier’s argumentation of a switchover in corporate learning from formal to informal is compatible to the on-the-job-approach.

Moreover an amalgamation of learning and working will become increasingly popular because of the flexibility of content time and place (Niemeier, 2016, 11). In combination with digital learning this approach similarly may support the usage of the (anyway) scare time resources more efficiently and helps to glance beyond one’s own nose in order to increase competences with the help of selective learning tool which can be better integrated into in-plant processes (Vernau & Hauptmann, 2014, 3). Batalla-Busquets & Pacheco-Bernal (2013, 43 referring to Lim & Kim, 2003; Brewer et al., 2008) assert that on-the-job EL has already been in use for several years with a constant growth. Teaching communities agree that EL is an efficient and valid training approach respectively strategy with several benefits for on-the-job-training (Batalla-Busquets & Martines-Argüelles, 2014, 69 referring to Nisar, 2002).
On the one hand, the Fraunhofer IAO study forecasts an increasing demand of qualification in order to transpose Industry 4.0 while on the other hand, the study figured out that the future further education has to be in general more on-the-job (Senderek et al., 2015, 283 referring to Spath et al., 2013) According to Stettes et al. (2017, 4 referring to Göbel & Zwick, 2010) empiric research figured out that learning in the direct work environment (see e.g. on-the-job-training) with regard to elderly employees also has a high effectiveness. Similarly the European benchmark study regarding DL which conducted an online survey with 114 of the 1000 biggest European companies from all industries figured out that adult education in the context of DL is much easier respectively more effective when it is directly integrated on the workplace (Haufe Akademie & Crossknowledge, 2015, 24).

However, in order to generate the highest chances of success of the Digital Learning approach several factors which were identified in the course of the European Benchmark study have to be taken into consideration. One of these crucial success factors is the engagement of the employee which has to be predominate. On the contrary this factor can be influenced by diverse others, like integrability of training and learning into the work routine appropriate communication measures especially during the introduction process the job relevance of the content or rather the quality of the learn-systems (Haufe Akademie & Crossknowledge, 2015, 24).

**Figure 9**: Most important factors of success (self-provided chart in dependence on Haufe Akademie & Crossknowledge, 2015, 24)
2.2.3. Types of Digital Learning

There is already a wide range of different digital learning tools or media. They can be used in all kinds of combinations and modifications. Senderek et al. (2015, 287) differentiate between the two categories: technologies and hardware illustrated in Figure 10 (p. 44). On the one hand, technologies are well established in daily routine. By reason of the integration of sensor technology like Radio-Frequency-Identification (RFID) into the learning environment information can be collected and used for supporting the learning effect. Consequently, it is possible to give direct feedback to the learner or to optimize motion sequence (Senderek et al., 2015, 287 referring to Specht et al., 2013). In addition it is possible that applications can be controlled through body movement gesture and language. On the other hand, one can realize a development in the hardware. While mobile phones e.g. were used for calls and short messages in the past they now can be utilized for live broadcasts conferences or several other applications due to the increasing development of various apps (Mobile Learning). This enables a plurality in possibilities for (corporate) learning. These developments have led to new technology-driven learning methods. Computer-based-training (CBT) was the first methodologically didactically prepared and self-contained learning unit and included texts video pictures audio simulations or even animations. Web-based-training (WBT) was the further development based on CBT which provides content via the Internet and offers the possibility of communication and interaction (Senderek et al., 2015, 288). In her research about Tec2Screen Lach (2016, 296) identified that this tool involves not just simulations, videos or text displays but also functions for QR-Code scanning. These scans transmit the information for example in form of a data sheet. The possibility of scanning QR-Codes on the particular workplace enables on-the-job-training to some extent informal learning time and place independent learning.

Furthermore, some of the interviewees specified that this tool also promote the interaction and communication among learners in order to compare solutions or to find collective approaches for experiments and exercises. Below some important respectively relevant DL tools are described to get an overview of the possibilities.

2.2.3.1. Blended Learning

Blended Learning (BL) takes place online and in the classroom (Sterten et al., 2016, 170) because it is a mixture of classroom training E-Learning and self-learning and combines he advantages of both
(Senderek et al., 2015, 289). Although, BL has been used for centuries the digital impact redesigned it. According to Wildi-Yune & Cordero (2015, b., 12/13) the classic BL was a mix of projects teacher time textbooks experiments or field trips. The combination of informal and formal learning enables a time- and location-independent, respectively a more flexible option (Neubauer 2016, 4). As shown in (mmb-Institut, 2017, 5) it is most important compared to other tools. It is already common in modern schools/universities and also in big corporations.

Besides the supply and administration of the content these platforms enable the organization of the blended-learning-courses (Haufe Akademie, 2016, 15). The face-to-face classes and the tutors play an important role in this regard (Petry, 2017, 15) because the dialogue before and after the class has additional benefits for all participants like clarification of unclear issues the enrichment of teacher and student’s experience personally and professionally (Sterten et al., 2016, 171) that also may lead to better results in the job and social capabilities. However, by implementing BL it is necessary to know that there are two types of knowledge the tacit and the explicit knowledge. The second one can be verbalized or readily verbalized and codified into E-Learning while the tacit knowledge cannot be shared without human experience. It involves reflection intuition creativity and conversation.

The case of Toyota, which achieved competitive and real cost advantage in the 1980s, clearly demonstrates the importance of personal ties, social knowledge, and shared habits (Wildi-Yune & Cordero, 2015, b. 12/13).

### 2.2.3.2. Simulation/Gamification

Simulations are multifunctional so they can be integrated in different manners like e.g. driving, flying (Höntzsch, et al., 2013), or welding (Hensel, 2013). What is crucial for learning with simulations is the interaction with the learning matter besides content other users and context. Input devices and environment should be very realistic. According to Burdea & Coifett (2003) three words are able to explain learning with virtual realities: immersion, imagination, and interaction (Höntzsch, et al., 2013). In the survey of Lach (2016, 297) the interviewees stated that the simulation was a good additive to combine practice with theory. It is a more realistic learning process and may enable an easier start of work with real machines. According to a survey of
eCademy and mmb-institut (2014, 8) especially the use of simulations in the industrial-technical training is well established (66 %). It conveys complex processes and problems in a helpful way (Kimpeler, 2010, 369). However, although, simulations may help in training people it should not be a substitute to reality. It is meaningful to work 20-25 % of the training period on the simulator in mixture of simulation and reality. For example, by using welding simulations the functions of direct feedback and the evaluation support the activity-oriented learning (Hensel, 2013, 23). Besides the safety factor for learners should also be mentioned. Something that is similar to simulations is serious games.

Using video games for the purpose of learning (Serious Games) Game-Based-Learning has become very prominent over the last years and was highlighted by Prensky (2001) and Gee (2003) (Simões et al., 2013, 345/346). This digital learning tool tries to teach employees in a more entertaining or playful way (Petry, 2017, 15). Tasks or exercise could be converted into exciting challenges. Furthermore, learners could be rewarded for their commitment (Vernau & Hauptmann, 2014, 13). The principles of gamification enable companies to learn/train employees in a collaborative way (e.g. collaborate online with peers) (Spitzer, 2014, 16), to improve productivity, and the satisfaction of employees in the workplace (Saunderson, 2016, 78) as well as to stimulate creativity among learners (Intel Corporation, 2015, 54). These factors could especially improve skills like creative problem solving and teamwork, too (Vernau & Hauptmann, 2014, 13).

According to Saunderson (2016, 78) it supports learning with the help of immediate or delayed feedback, which enables the learner - in an efficient way - to reflect upon own skills. Moreover Simões et al. (2013, 348) claim that positive feedback may lead to learners who keep trying to improve their skills while accepting failure as part of the game at the same time. In this regard measurement is an essential element, too (Saunderson, 2016, 78).

He also mentions a game for children suffering from cancer who had an increased intrinsic motivation because they wanted to overbear the pain. The intrinsic motivation may also be possible in a corporate regard because blue-collar workers could be motivated to get actively involved (Vernau & Hauptmann, 2014, 13) due to the enjoyment, which is triggered by the activity itself and not by extrinsic motivators (Simões et al., 2013, 348) in order to win the competition. According to research gamification can improve the ability to learn by about 40 % (Spitzer, 2014, 15). However, due to the fact that costs of production for a complete game are still quite high the success of them is limited nevertheless, it is possible to integrate single gaming elements in the learning process.
(Petry, 2017, 15). In almost the same manner Gensicke et al. (2016, 56) note that virtual learning forms like simulations virtual classrooms or educational games currently play rather a subordinated role.

2.2.3.3. Mobile Learning

The survey of mmb-Institut (2017, 8) showed a transformation of the market compared to the past years. Mobile applications reached the first position in comparison to commercial success with about 86 % while they are still in fourth position in terms of importance for corporations (Figure 12 [p. 49]). Mobile learning is a learning method for a mobilized society and can be seen as an advancement of E-Learning. It supports the approach of Micro-Learning due to the possibility of fast and specific help which also significantly encourages the motivation of networked learning and working (Witt, 2013, 13).

This sort of learning supports the “anytime and everywhere approach” of DL to 100 % due to location- and time-independent availability of content and knowledge (Witt, 2013, 20).

Four characteristics are essential in order to describe mobile learning situations - context devices location and mobility (Bertrand et al., 2009, 2). The focus of technology changed over to the subject who gains these personalized service with the help of mobile applications. Beyond that another perspective of this approach was stated - the context. This enables a context sensitive respectively situated learning (Rohs, 2013, 78 referring to Frohberg, 2008; Specht & Ebner, 2011).

However, some criteria for the usage are important like the disposability usability possibility of displaying or personalization (Rohs, 2013, 82). Due to the inventions and innovations, this approach has a huge range of different technological functionalities like e.g. Smartphones, Tablets, VR glasses, etc.

Mobile learning is a so-called “mediated learning” (Rohs, 2013, 79 referring to Winter, 2006) and can be seen as a bridge between informal and formal learning (Rohs, 2013, 79). Due to the rising success of this approach it is comprehensible that a development from formal to informal learning is perceptible (Niemeier, 2016, 9). According to Rohs (2013, 80) informal learning happens in all contexts of mobile learning.
2.2.4. Possible positive changes and possibilities due to Digital Learning

As mentioned above digital learning systems have several advantages and positive characteristics compared to the conventional way of learning. The listed general advantages of digital learning have neither a specific order nor are they categorized if they are good for the company or the user (employees) or even which type or system they are related to. It is an overall overview of advantages based on literature and studies. Basically by reason of several studies four main benefits (flexibility and adaptability cost reduction personalized attention and permanent updating) of DL/EL were identified (Batalla-Busquets & Pacheco-Bernal, 2013, 43 referring to e.g. Wang et al., 2006; Hodges, 2009). However, even some of the advantages could equally be named with respect to digital learning for employees of management and strategic levels.

<table>
<thead>
<tr>
<th>Possible positive changes and possibilities (selection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faster and easier storage/distribution of knowledge (up-to-date)</td>
</tr>
<tr>
<td>Individual way of learning adapted to learning types</td>
</tr>
<tr>
<td>Autonomous and self-determined way of learning</td>
</tr>
<tr>
<td>Cost factor with regard to several aspects</td>
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<tr>
<td>Independence due to time and location</td>
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<tr>
<td>Side-effects influence principles of operation</td>
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<tr>
<td>Time- and location-independent social factors like e.g. knowledge/information exchange and storage</td>
</tr>
<tr>
<td>Quantity (but also quality) of knowledge/information receiver</td>
</tr>
<tr>
<td>Control/analysis of learning progress also for further improvements</td>
</tr>
<tr>
<td>Flexible use (possibility of combination with other forms of training)</td>
</tr>
</tbody>
</table>

Table 1: Possible positive changes and possibilities (self-provided)

Firstly, due to digitalized content distribution storage the subsequent processing of it and the protection respectively safeguarding of (in-house) knowledge is much easier than before. Furthermore, it is easier to combine various functions within the system (Lach, 2016, 289).

It also alleviates the customized learning enables the trainer to support the learner with an enhanced continuous faster easier and instant actualization of the content through the network (Batalla-Busquets & Pacheco-Bernal, 2013, 43 referring to Shankar, 2007; Grollman & Cannon, 2003). The factor of actualization also enables to inform of e.g. modified regulations and react more flexibly to new requirements. Furthermore, DL learning tool and systems enable organizations to train employees faster compared to classical seminars or workshops (e.g. preparation agreement of
appointment etc.) (Haufe Akademie & Crossknowledge, 2015, 10). These points regarding flexibility (87.1 %) and being up-to-date (58.0 %) are supported by the results of the online survey conducted by Batalla-Busquets & Pacheco-Bernal (2013). In the study of Gensicke et al. (2016, 42) seven of ten companies predicted that digital media would facilitate the handling with regard to topicality of the teaching material.

Secondly, the content can be to a certain extent learned in a very individual way due to permanent access. Digital learning creates a more individual way of learning, which means that it does not matter how fast or how slow a user is or even how many repeats he or she needs because these systems mostly support an infinite recall of the provided data. This is one of the main arguments of the digital learning supporters because it enables learning at an individual pace (Lach, 2016, 290). Cognitive plausibility the facilitation of constructive learning and the theory of cognitive flexibility that go along with the flexible access of the learning materials are frequently mentioned reasons for the promotion of (digital) learning. The training of cognitive flexibility increases the ability to develop a flexible and utilizable structure of knowledge that adapts to varying situations and tasks (Lach, 2016, 292 referring to Ruf, 2014). These factors could cover the demand of more flexible employees. Additionally the multimedia component that enables to show several contents at the same time and in a number of ways (video simulations experimentation etc.) (Lach, 2016, 290 referring to Petko & Reusser, 2005) possibly leads to an increase in the learning success. Working with digital technologies not only respects the storage of knowledge but also the processing of it on the device also various sensory channels (Lach, 2016, 290).

It allows a customization of learning with reference “…to each worker’s needs choosing the most suitable learning materials...” (Batalla-Busquets & Pacheco-Bernal, 2013, 43) As a consequence there may be the opportunity of transferring knowledge in various ways to address several types of learners (e.g. Figure 11 [p. 45]). Maybe the factor of individual learning results in the finding of the study conducted by Ruiz et al. (2006) where they suggest “…that [of] e-learning is more effective in the acquisition of new skills and attitudes than face-to-face methodology” (Batalla-Busquets & Pacheco-Bernal, 2013, 44).

According to the survey of Michel & Miez-Mangold (2014, 5) for about 41 % of the major enterprises see this as a reason for an implementation.

Thirdly, the cost factor (23 %) of digital learning tool is after the wide range (32 %) of DL formats according to Wildi-Yune & Cordero (2015 a, 12) the second most important factor for digital learning tool of their survey. Böhler et al. (2013 referring to BITKOM, 2009) also mention this
argumentation in their paper. In this context however, they also report that few companies are able to prove their RIO of the digital learning supply (Böhler et al., 2013 referring to Käpplinger, 2009). Combined with the following advantage DL decreases opportunity costs like times absent or even travel expenses. Referring to Grollman & Cannon (2003) Batalla-Busquets & Pacheco-Bernal (2013, 42) claim that an EL course, which is well designed, is as efficient as classroom training but is on contrast less costly for large groups. This may lead to a minimization of lost working time and consequently, to a decreased loss in productivity (Batalla-Busquets & Pacheco-Bernal, 2013, 44 referring to Wurtmann & Galli-Debicella, 2008). Training in servicing repairing or bringing into service may also save money because of the external experts that were not required and long standstills of machines (Freith et al., 2015, 80). In Michel’s & Miez-Mangold’s (2014, 5) study 53 % of the major enterprises hold that saving time is crucial while the saving of costs reached about 49 %. Piccioli (2014, 6) points out that the cost factor and the lifelong training in the context of DL decreases the costs of training and development of external human resources with regard to “recruitment, election, and on-boarding”. The survey of the Haufe Akademie and Crossknowledge (2015, 8) figured out that 68 % of the European companies rate the decreasing training costs and the optimizing of the training itself among the most important factors.

Fourthly, another essential advantage is the location- and time-independence that digital learning systems bring about (Hofmann & Jarosch, 2011, 7). Tablets, Smartphones, Wearables, or other electronic devices with e.g. learning Apps enable workmen to learn everywhere in the company and at any time no matter what their next individual operation is. They are not bounded anymore to a specific working space or an office. They are able to integrate their tool (e.g. Tablet or Smartphone) in their work routine like e.g. near a new machine, which is very important for German companies (Haufe Akademie & Crossknowledge, 2015, 24). In the broader sense this may help to save time and money resources. Above that, is enables the user to learn whenever or combined with the second argument as often as he/she wants to. Another advantage in this regard is that a multiplicity of employees could have access to the learning content at the same time. Moreover employees all over the world could have access to the particular content he/she needs because web-based trainings and videos can be designed internationally, whereas social and cultural differences should be taken into consideration. With regard to that it is easier to gain more homogeneity within global corporations (Wildi-Yune & Cordero, 2015 a, 12). The temporal and spatial flexibility gained about 91 %, in a representative study conducted by Michel & Miez-Mangold (2014, 5)

Fifthly, as already mentioned above some systems could help by learning self-organization (of learning) (Vernau & Hauptmann, 2014, 18) and discreteness due to the fact that users have to
occupy themselves with the content in order to learn on their own (Lach, 2016, 287). They have to deal with the content and set their own learning targets and to select knowledge (Lach, 2016, 292) to pass the modules/courses or even as a kind of support between the units of classroom teaching (e.g. Blended Learning). Maybe practice and training of self-organization - no matter in which respect - leads to a decrease of the continuously rising demand of respectively search for self-reliantly operating employees (Ernst et al., 2015, 19).

Sixthly, the interactivity of the tool that offers the opportunity to respond to the users’ actions to a certain extent whereat the learning path designs that the learner is more integrated in the learning process (Lach, 2016, 291 referring to Osterhoff, 2003). It can be seen as a communication between the user and the learning media. Some learning tool also offers communication functions for sharing knowledge and experience (see Connectivism). According to Niemeier (2016, 11) the aspect of networking and exchanging knowledge with other learners will get more crucial.

Seventhly, the storage of knowledge makes the Knowledge Management within a company much easier and also independent of national borders (see second advantage). Corporate-intern or expert knowledge could not be lost anymore due to for instance withdrawal of employees (Hofmann & Jarosch, 2011, 12). It is easier faster and more efficient to retrieve the saved information and knowledge for new work processes or tasks like the maintenance of machines.

Eighthly, is the fast and mostly uncomplicated transfer of content. Furthermore, digital learning enables the spread of knowledge for a high number of employees. According to the survey of Haufe Akademie and CrossKnowledge (2015, 8) about 67 % of the European and 62 % of German companies appreciate the fast knowledge transfer while 69 % of the German and 61 % of the European companies value the high rate of employees that can be reached. Above that, employees know where to find the information they need.

Ninthly, the possibility of utilizing learning analytics (LA), which enables HRD screening the learning progress of the workmen more easily in order to support them to reach the desired “goal” through e.g. guidance (Haufe Akademie & Crossknowledge, 2015, 8). The possibility of learning analytics also enables the trainer or the HRD to check if the learning materials are efficiently designed in order to fulfill the intended purpose. If not they could adapt the content so that it better fits the needs. This approach generates an additional benefit because with the help of indicators and characteristic factors learning will be measureable in order to give a better support to screen and
document the output respectively the results of the learning progress. It is comparable with the analytics of Google or Amazon and the entry of Big Data in education and training (Vernau & Hauptmann, 2014, 17). Beyond that the individual learning success or the examination of it (with the help of LA) plays an important role - for the corporate governance - because of increasing legal regulations or tightened risk management (Vernau & Hauptmann, 2014, 5). Furthermore, DL enables push and pull effects. On the one hand, employees are able to utilize self-directed trainings (pull) while on the other hand; due to the analysis of learning activities they can be counselled individually on the basis of their demands and needs (Haufe Akademie & Crossknowledge, 2015, 8).

Other positive characteristics may be the increasing motivation of the users due to the additional benefit of the practical mediation in conjunction with an intensive discussion of the content (Hofmann & Jarosch, 2011, 12 referring to Bauer et al., 2010), which can be initiated with the combination of on/off/near-the-job-training and digital learning tool. According to Vernau & Hauptmann (2014, 18) online learning technologies promote intrinsic motivation, which may lead to more self-reliant actions on the part of the employees, which is according to Ernst et al. (2015, 19) a driving force for (future) companies. Although, Batalla-Busquets & Pacheco-Bernal (2013, 40) claim based on their survey that they figured out that face-to-face training is more motivational they state that academic literature recognized workers’ intrinsic motivation taking part in training activities (Batalla-Busquets & Pacheco-Bernal, 2013, 44). They refer to a study of Bonk (2002), which concluded that the feeling of belonging to the company besides personal growth is essential indicators that increase intrinsic motivation. Additionally they also draw attention to Doo & Hyunjoong (2003) who identified emotion as a motivational variable, which has an impact on the attitude in regard to training.

The emotional factor depends on the culture and the corporate atmosphere the personal attitude to change the viewpoint of management or even fellow workers etc. Because of the flexibility of digital learning tool and systems these tool and systems are also combinable with a classical learning approach (e.g. Blended Learning) but the wide blend of tool and systems used like games, practise, exercise, tests, etc. and the greater control of the learning process lead to 50-60 % better results compared to face-to-face training (Batalla-Busquets & Pacheco-Bernal, 2013, 44 referring to Bachman, 2000; Shankar, 2007). For HRD a categorization due to certificates of graduated courses is more easily to verify (Haufe Akademie & Crossknowledge, 2015, 10).
2.2.5. Possible negative changes and Challenges due to Digital Learning

The listed general disadvantages of digital learning neither have a specific order nor categorized if they are good for the company or the user (employees) or even which type or system they are related to. It is an overall overview of disadvantages based on literature and studies. Some of the mentioned obstacles are part of the area of responsibilities of HRD. As already mentioned they have to overcome these challenges as soon as possible because on the one hand, they are the ones who could be able to do so and on the other hand, they point the way to the future (Haufe Akademie & Crossknowledge, 2015, 28).

<table>
<thead>
<tr>
<th>Possible negative changes and possibilities (selection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing flexibility</td>
</tr>
<tr>
<td>Challenging and complex administration respectively technologies</td>
</tr>
<tr>
<td>Possible technological problems</td>
</tr>
<tr>
<td>Up-front capital and effort expenditures</td>
</tr>
<tr>
<td>Less motivation or engagement among group of users</td>
</tr>
<tr>
<td>Feeling of being left alone</td>
</tr>
<tr>
<td>Learning-on-the-job can be influenced by various disturbances</td>
</tr>
<tr>
<td>Loss of important tool on the part of the trainer due to missing personal contact</td>
</tr>
<tr>
<td>Uncontrollability of own personal data</td>
</tr>
<tr>
<td>Resistance on the part of HR or trainers</td>
</tr>
</tbody>
</table>

Table 2: Possible negative changes and possibilities (self-provided)

Firstly, according to the findings of Wildi-Yune & Cordero (2015 a, 31) a very frequently named challenge is the missing flexibility of these systems and the problems that come along with the partially very challenging and complex administration. Above all technical problems like available (electrical) bandwidth missing or not working plug-ins or even problems based on various system versions are in general a main topic in this regard (Wesp, 2003, 176) similarly to technology complexities (Asgarkhani, 2004, 33). Technical obstacles like bandwidth or missing prerequisites of e.g. PCs were observed as challenges for DL in companies.

About 35 % of the German companies have to deal with these technical problems with regard to IT-systems or networks (Haufe Akademie & Crossknowledge, 2015, 28).

Secondly, the necessity of up-front capital expenditures (Asgarkhani, 2004, 33) high costs in matters of the implementation in order to establish the proper frame conditions and the invested
monetary and time resources for the connectional design and the design supply. Conditions are crucial and basically presupposed by e.g. the need for accession to technology (Asgarkhani, 2004, 33) and crucial (Senderek et al., 2015, 285). In this context they comprise the (technological) infrastructure within the corporations ranging from a trivial Internet access to a fast Internet connection access to a PC tablet or similar tool etc. In this regard Niemeier (2016, 9) mentions that the digitalization of corporate structure and processes are frequently in progress but among other things infrastructures are missing. About 30 % of the major enterprises were according to the study of Michel & Miez-Mangold (2014, 7) of the opinion that DL systems require, too high initial investments. In this context Mavrikios (2013, 476) similarly noticed that costs for DL systems in industrial settings could be sometimes quite high. Above that, missing knowledge in technology and media-pedagogy (Gensicke et al., 2016, 73) could equally be a factor with regard to increasing expenditure costs because of the necessity in generating internal or external knowledge. According to the European study of Haufe Akademie & Crossknowledge (2015, 28) about 54 % of the German interviewed corporations claimed that a restricted budget is the main obstacle.

Thirdly, less motivation or commitment among the group of users (Wildi-Yune & Cordero, 2015 a, 31) could even lead to denial of the systems. This could have various reasons but could also arise from an excessive demand due to a given autonomy and freedom in the use of these systems (Bauer & Philippi, 2001, 151). So consequently, for a successfully utilization self-discipline is essential.

Fourthly, due to the fact that learning with e.g. E-Learning happens directly on the workplace it can be disturbed or influenced by interruptions or more important tasks that have more priority at a specific time (Seufert & Mayr, 2002, 77). This could be based on lacking support of supervisors that in turn maybe arise from a lack of cultural acceptance (Asgarkhani, 2004, 33) or even a lack of rules for learning in the workplace (20 % in major enterprises Mavrikios. 2013, 476).

Fifthly, according to Wache (2003, 4) the teacher or trainer maybe loses important tool in order to influence or even to evaluate the behavior of the individual learner respectively the whole group of learners especially with rising numbers of participants. Furthermore, maybe motivating or supporting signals for the understanding will get lost which are given in the classroom or in a face-to-face training. In addition to that Wache (2003, 4) also mentions that a simultaneous execution of
a group-communication could be cognitively very challenging for all participants (misunderstandings or even misinterpretations of the content can be the result of that).

Further disadvantages are the speedup and consolidation of communication superficiality of virtual social relationships uncontrollability of own personal data (Witt, 2013, 22/23) or even the complex implementation (42 % German companies) (Haufe Akademie & Crossknowledge, 2015, 29). Furthermore, also a resistance on the part of HR- and trainer-teams just like a deficit of methodological knowledge (31 % in German corporations) are influencing or penalising factors in this regard (Haufe Akademie & Crossknowledge (2015, 28/29).

The next chapter deals with aspects that have to be taken into consideration in such an implementation process besides trying to define the role of HR in this process. These two aspects virtually go hand in hand so it is necessary that both have to be treated in this regard.

2.3. Aspects for implementing Digital Learning

Böhler et al. (2013, o. A.) mention by referring to Reinmann (2010) several criteria respectively questions that have an influencing effect on the application of DL technologies some of them are e.g.:

- **Learning strategy** - Which long-term goals should be supported by this approach and which approach should be strengthened - informal or formal approach?
- **Learning goal** - Is the intention of it to inform short-term about products or processes or is it to build up competences in the long run?
- **Target group** - What is the target group and what is its size? Which needs and requirements has this group with respect to DL?
- **Technological infrastructure** - How is the internal network built up? Which devices are made available?
- **Financial resources** - Is the development insourced or outsourced?

- **Organisational frame conditions** - What is the period of time and which departments or decision-makers are involved?
These questions are just an extract of the huge amounts that have to be taken into account before implementing DL during the process of the strategy conception. They roughly include the same topics like the five rules of Haufe Akademie & Crossknowledge (n. s.), which are treated subsequently.

Although, these criteria and questions appear to be quite easy and comprehensible it is essential for the responsible participants to deal with them. The processes of transformation are leading to a displacement from building up knowledge to focusing on the development of the skills of decision-making and responsibility due to the necessity of the evolution of skills knowledge and capabilities of employees. HR has to add value to their employees. In order to do so their work has to help employees reach these goals (Ulrich & Brockbank, 2005, 2). Competencies like these are important in dealing with challenges and their implicated problems that come along in e.g. projects - self-organized and in a creative way (Niemeier, 2016, 10). Furthermore, individual, intelligent, and adaptive knowledge in work process is in demand. So the knowledge and skills of individuals should be modelled. Three main dimensions could be considered in order to support such a procedure (see Figure 11) (Freith et al., 2015, 81):

- Professional experience
- Level of competence
- Type of learning

The professional experience has to be divided in three categories like young professionals experienced professionals and those who are older than 50 who need another form of learning or less information depending on their experience.
The second dimension - level of competence - is equally subdivided in three categories. The first one has the theoretical but less practical knowledge while the second one has both, theoretical and practical knowledge, in versatile application experience, which is expressed in being able to react in different situations. The expert has a very broad spectrum of competencies and is able to identify even new solution approaches. This categorisation is not just quite important for the actual usage but also for the intended implementation because it ensures that employees are not equalized due to the diverse group requirements.

The third dimension in this regard is the classification of the various learning styles and their preferred access in generating knowledge. Freith et al. (2015, 82) subcategorise this dimension in three main groups like kinaesthetic, visual, and auditory. While the kinaesthetic type is a mixture of a theoretical and practical learning approach the visual one is more focused on learning by copying illustration or demonstration the auditory approach however, is more tending to convey the content based on an acoustical mediation. According to Welling et al. (2016, 9) varying preferences with regard to media equally to (outward) circumstances respectively frame conditions, like e.g. noisiness, due to industrial production infrastructure (Niemeier, 2016, 9), a lack of access to PC or other devices, or even, too weak access to the Internet, provided time for learning etc. (Haufe Akademie & Crossknowledge, n. s., 6) have to be respected in the learning strategies, which are also frequently missing (Niemeier, 2016, 9).
A consistent DL-strategy and a change-management concept are essential in order to exploit the whole potential of DL because the transformation from analogue to digital learning methods for corporate training and further education is not achieved (casually) (Gensicke et al., 2016, 73). Especially a differentiation within a group of learners and the adaption to predominated conditions enables to respond more to individual aspects and requirements. This in turn probably increases the success of such an implementation or rather the DL itself that depends on the readiness of the staff using it actively (Welling et al., 2016, 8).

According to Haufe Akademie & Crossknowledge (n. s.) at least five rules are game changing for a successful implementation of DL-systems and tool. In the first instance as already mentioned it is important that an analysis of the current situation has to be carried out. For this status analysis HR has to implicate factors ranging from current corporate learning models to users resources and processes and predominated frame conditions.

Especially in becoming acquainted with the needs of users and their frame conditions HR has to get in an open discourse because answers could not be found in the systems or figures. They could rather be found directly by the people. Implementing such a new learning strategy means that processes are changing and that typical learning approaches (e.g. formal learning triggered by the superiors) have to be neglected. In the DL approach users should have more self-responsibility for their further education while supervisors still play an important role (Haufe Akademie & Crossknowledge, n. s., 56).

The next step after examining these indicators defining the proper strategy with regard to accomplishing the aim is essential (Haufe Akademie & Crossknowledge, n. s., 9). The existence of a DL-strategy enables the reactivity on challenges in a more detailed and coherent way, which to this effect implicates the amount of the investment. In this case it is especially important because the investments, which are approved of by the leading management, are influenced by the quality of the strategy (Haufe Akademie & Crossknowledge, 2015, 30). Although, the technological/digital aspect mainly defines this approach it has to be clear that basically humans are in the centre of interest because the tool should primarily be implemented in order to support the users in an individual and flexible way to guarantee an optimal degree of assistance for their professional training. This must be included in defining a proper and concrete strategy. Furthermore, also obstacles and risks have to be respected so that no unexpected appearances occur that could harm the implementation process.
These risks affect a huge range of fields like e.g. technology organization humans or budget (Haufe Akademie & Crossknowledge, n. s., 9).

As already mentioned above it is quite important that HR gets in an open discourse respectively communication process with the involved stakeholders. According to the study of Haufe Akademie & Crossknowledge (2015, 24) about 35 % of the European interviewees mentioned that certain communication measures are demanded in the course of the implementation in order to accompany this process. The success of the whole project is not just closely connected to the acceptance of the employees but also to their willingness of engaging with it (Haufe Akademie & Crossknowledge, n. s., 11). Primarily this is quite a challenging undertaking but moreover it is hindered also because of various characters among the labour force and their varying attitudes. As demonstrated in Figure 11 (p. 45) Batalla-Busquets & Pacheco-Bernal (2013, 40) determine three different main attitudes of main groups regarding digital training. One group consists of those who are more social and affective. The second group are those who show poor adaptability or even fear regarding these new forms of training. The third group has links to the knowledge society.

Creating value assumes to know what it is - “defined more by the receiver than the giver” (Ulrich & Brockbank, 2005, 21). As a reason of that HR has to find out about helping their stakeholders addressing the matter that is most important to them. So, HR has to understand the fundamental external realities of the business, which act influencing on industries and the companies. Ulrich and Brockbank (2005, 21), identify three main headings, which are shaping business:

- Technology
- Economic and regulatory issues
- Workforce demographics
- (Globalization, cuts across and influences all other three headings)

HR has to be informed about the trends of each area, the facts behind them, and where they may be accessed.

According to Gensicke et al. (2016, 73), it is important that trainers and lecturers are demonstrating a fundamental readiness to engage with the approach of digitalized trainings. However, according to Haufe Akademie & Crossknowledge (n. s., 12) the timing of publicizing and communicating in order to be transparent should be strategically well considered and should be considered dependently on the involvement respectively the role of the certain (group of) persons or one’s own readiness of knowledge. Ignoring these factors fears adverse the change and denial due to own
uncertainty could be increased.

So consequently, the way of communication should be a part of the strategy. Nevertheless, the work council has to be informed quite soon because of its power in order to be able to reject the whole project.

So without informing this certain interesting party at the same time the risk of losing invested money time and effort increases due to their power of veto. Above that, discussing and agreeing on various topics and alterations with this party should be respected (Haufe Akademie & Crossknowledge, n. s., 13). Another suggestion of Haufe Akademie & Crossknowledge (n. s., 14) is that a strategy of smaller arrangements based on acute demands in combination with familiar topics should be the aim of the implementation start. In this regard HR has to enlist superiors’ help in order to gain broader support (Haufe Akademie & Crossknowledge, n. s., 16).

After the implementation was more or less successful HR has to assure the success. Therefore a willingness to conduct evaluations should be present- equally from positive but also from negative occurrences - in all kinds of corporate levels. Such an evaluation is only meaningful after using the tool for a certain period of time or if the mediated knowledge is transformed to an utilized competence in daily routine. Such an evaluation helps to figure out possible changes but also to measure a cost-benefit consideration (Haufe Akademie & Crossknowledge, n. s., 19).

According to Neubauer (2016, 2) there is no master plan for companies when dealing with digitalization. Against this background companies have to realize that this transformation entails a required cultural change. Although, these five rules of Haufe Akademie & Crossknowledge are quite extensive there are several other approaches that should be taken into consideration. However, some other rather individual and company related factors could have some influence. The survey (Figure 12) conducted by Michel & Miez-Mangold (2014, 20) shows some other potential and interesting implementation concepts for DL.
The role of HR. For several years DL in most instances was applied to the IT due to missing competencies of HRD and the unrealized importance of the topic, which was mostly dispatched as a niche topic. Although, there is still a lack of knowledge among the different HR departments as mentioned above the tenor has continuously changed. Now DL is a topic of HRD though coordination respectively collaboration with IT (and other departments) is necessary because technological aspects have to be taken into consideration although, they are no longer in the centre of the consideration (Haufe Akademie & Crossknowledge, n. s., 13). According to Neubauer (2016, 3) the digital change is a main task for HR by referring to the study “CSC Digital Agenda 2020” which identified among other things a missing digitalization strategy or cultural reservation as obstacles.

However, there is a thin line between success and failure. In the case of failure HR has to be prepared to assume responsibility but on the other hand it is a chance to strengthen the position within the organization and to gain further legitimization (Haufe Akademie & Crossknowledge, n. s., 10). According to Ulrich & Brockbank (2005, 2) HR will be respected, credible, and also increases it’s in influence by generating value through their work.

In their opinion this value proposition means a positive outcome for the key stakeholders. According to Pelster et al. (2016, 58) high performing companies fundamentally rethink their learning and developing approaches, which is expressed in adopting mind-sets to predominated circumstances in the context of the certain business. They state that the employee is placed at the centre of the new architecture and the implicated vision. The HR department of these companies considers their role as
an enabler to create an access to content from internal but also from external sources for employees in order to gain more individual learning programs instead of simply pushing out content developed by them. Although, the role model on the basis of Dave Ulrich’s (1997, 24) research is more than 20 years old it is still relevant due to its adaptability. This model suggests a quite central and important position of HR within the company due to its wide-ranging task area. Furthermore, he claims that HR has to operate in a value adding way (Ulrich, 1997, 18). The HR department is a connector between the leading management and all other departments towards employees. So, for a direct and sustainable support of DL, HR has to win the leading management over (besides all other aggrieved parties). The support of the management is embodied through the nomination as the strategic drop-in centre besides the concrete integration in strategic development processes. Furthermore, in order to communicate a more visible support DL can be linked with video messages or greetings of the management board (Böhler et al., 2013, n. s.).

As obviously discernible because reflected in the preceded tract, HR has not just to act strategically but also operatively, postulated by Ulrich (1997, 25), too. The role model combines these two approaches and probably offers the opportunity to explain the role of HR in regard to DL and the implementation process.

In the aspect of the **strategy management** HR aims at adjusting strategies and practices with the business strategy, which is nowadays and in this regard the digitalization and the triggered efficiency respectively life-long and further education due to globalization.
According to Ulrich (1997, 26) the translation of business strategies into HR practices could help the business strategy in three main ways because “…the business can adapt to change because the time from conception to the execution of strategy is shortened…the business can better meet customer demands because its customer service strategies have been translated into specific policies and practices…the business can achieve financial performance through its more effective execution of strategy.”

The Managing of the firm infrastructure has always been a traditional function of HR. By creating the organizational infrastructure HR has to design and deliver efficient processes in order to enable “staffing training appraising rewarding promoting and otherwise managing the flow of employees through the organization.” (Ulrich, 1997, 27) In the context of DL training the main focus is on training appraising and promoting.

The managing of the employee contribution includes the involvement of needs concerns and day-to-day problems - which can equally be related to DL. Furthermore, Ulrich (1997, 29) suggests that the HR of companies, which consider intellectual capital as critical source, have to be proactive and aggressive in developing it. According to him “HR professionals thus become the employees’ champions by linking employee contributions to the organization’s success”.

The fourth role of HR defined by Ulrich (1997, 30) is the management of transformation and change. A transformation is a fundamental cultural change within a company like it is the transformation from classical to digital learning approach. Ulrich claims that HR by managing such a transformation not just becomes a cultural guardian but also cultural catalysts. As mentioned above this tremendously improves the internal position equally due to the new acquired competences gained during such a process, which increases the information and expert besides the legitimated power. Furthermore, HR and their professionals receive the chance to form and improve the internal processes to gain more benefit for the firm, which could be interpreted as an honour.

The change itself is the ability of the organization improving the design and implementation of such initiatives mostly in order to reduce cycle time in all activities.

Ulrich (1997, 30) states that “HR professionals help to identify and implement processes for a change.” HR as a business partner has to ensure that all employees are relinquishing old forms by accepting the new culture. As Vernau & Hauptmann (2014, 5) mention it is important to react on requirements on the macro-level but also to consider needs and expectations on the micro-level.
Ulrich’s HR role model is also partially reflected in the description of Böhler et al. (2013, o. A.) who state that the HRD is responsible for the operative staff and education strategy defining educational standards supporting divisions in developing technology-based learning scenarios and determining “best practices” besides the involvement in purchasing and serving company-owned learning platforms.

Although, the role model of Ulrich (1997) is more than 20 years old one can determine that as a matter of fact it still has some relevance as stated above due to its simplicity. It can be related to DL, as shown in the two models - the theoretical as well as the practical model. This implicates the adaptability, which can be related to several points of views.

### 2.4. Summary

This summary should give an abbreviated version of all the previously mentioned theoretical descriptions. Figure 14 (p. 54) illustrates this theoretical part. The crucial part about the whole process are the basic reasons especially the increasing globalization respectively digitalization. This process increases the competitiveness not only among companies of all industries but also on the labour market. On the one hand, companies have to reduce factors of costs while simultaneously have to increase efficiency. On the other hand, global competition permits customers a broader selection of offerings, which implicates more power on the part of the customers. Consequently, they have the ability to demand e.g. special trainings or production processes in order to buy products. Technological innovations and the pressure based on these reasons more and more lead to fact that companies have to reinvent their internal processes besides technologies and processes to stay competitive. As a reason of that employees have to be trained.

Under the above-mentioned aspects like e.g. decreasing cost factors or efficiency new forms of trainings are constantly developed. A change in trainings is not just a factor of money or technology but also a cultural matter. Although, DL is an important approach to solve several problems companies are confronted with in this regard but in the end it should still be a tool that aims at supporting workers. So humans are the ones who use them so they should be in the centre of attention. Due to the fact that cultural aspects play an important role the implementation of DL-tool involves consequences that should be taken into consideration. Depending on how their characteristics are applied they can lead to positive as well as to negative implications.
On the one hand, DL is a fast and quite easy way to store and distribute knowledge in a quantitative respectively in a relatively qualitative way. The content is rather up-to-date compared to former forms of trainings. Decreasing costs, which are, related to time absent travel expenses the groups’ size losses in working time (consequently, productivity) or among others for recruitment elections and on-boarding are a decisive factor, too. Time- or rather location-independence and the possibility of choosing an individual way of learning due to the multimedia-based format, support an autonomous way of learning. Especially for companies that act on a global basis the former reason is very interesting in combination with information and knowledge exchange in form of forums or chats. Another relief is the possibility of learning progress analytics. Learning analytics is not just important to measure and to gain figures but also to develop improvements that help users. Several other positive factors were identified.

On the other hand, a missing flexibility is frequently named in the context of DL besides the complex and challenging administrative efforts. Although, the utilized technology should help to simplify processes especially these technologies are error-prone due to their complexity. Not just the elimination but also the whole change of training premises up-front capital and effort expenditures. The feeling of being left alone due to a newfound autonomy or denial from the outset due to e.g. demotivation is one of the most negative possible occurrences which could threaten the whole project. Without regulation on the part of the company it depends on the employees’ willingness and self-discipline. Disturbances, which could probably occur during learning-on-the-job sessions or the loss of the bigger part of personal contact, which is important for trainers, are further negative consequences that have to be respected. Another complex of problems that comes along with the distribution and storage of data for analytical uses is the decreasing controllability of personal data on the part of the employees.

Besides several other consequences HR in its crucial role has to take these implications into consideration. As a consequence, the role of HR results from these implications and the reasons for the change. The strategic management direction of these changes is one basic tasks of HR due to the management of transformation and change because there is no master plan when dealing with digitalization. The management of the firm infrastructure and the employees’ contribution are involved in training employees, too. So, the reaction on the heterogeneous requirements, predominantly competencies, and experiences of employees and their way of learning (learning types) is essential. In order to guarantee value proposition strategies for implementations have to include aspects of the learning strategy, learning goals, target groups, financial resources, organizational frame conditions, or technological infrastructure.
Research Gap. Digital Learning and development is a frequently discussed and current topic. Numberless papers and scientific research most of the time tends to deal with just DL for employees in strategic or management levels and less for blue-collar workers. This group was neglected most of the time although, these employees should have a main position within the organization, too. However, little by little it was realized that (because of the reasons mentioned above) to bring them in. A lot of surveys were conducted in order to find scientific evidence for the legitimation of digital learning systems and tool.
Although, some reasons may exhibit similarities between these two groups of employees there are still disparities ranging from technology frame conditions or purpose. The processes of change in the digital working world should not create losers. All employees on all qualification levels have to be taken into consideration in order to offer all of them an equitable chance of development (Ernst et al., 2015, 36). So it is important that blue-collar workers receive attention, too. Consequently, one of the main research aspects of this thesis is to find out how the training changes for blue-collar workers due to digitalization.

The role of HRD is also influenced by this transformation. They have to react on to the new circumstances. Without HRD it would not possible be to implement and to take care of such training tool in the long run. Consequently, HRD has to redefine its role. In this regard it is a research gap mentionable, too because the role of HR in the context of DL is less researched. Indeed without a long-term strategy and a notion of what is necessary this transformation will probably hardly be possible.

Furthermore, there is actually no research, which includes several angles of view regarding one topic. Most of them are one-sided so the results tend to be biased. However, these different opinions and aspects help to ease a comparison. After discussing the theoretical background of DL and its implications the research methodologies are specified in order to far better understand the research and its experimental field.

Therefore, the focus of the empirical study is on how HR has deal with this new challenge and how predominant circumstances are incorporated, based on the needs and demands of the blue-collar workers. In the following, the methodologies of this research are described in order to understand the scientific implications.
3. Research Methodologies

3.1. Research Question

The main research question of this master thesis is defined as following:

How does training change for workers in a major manufacturing enterprise due to the digitalization (of learning) and what influences the implementation of digital training tools?

Furthermore, the following sub-question should be included in the research:

- What does HRD have to take in consideration by implementing and executing DL?

These questions also attempt to take the following points into consideration:

- The needs and demands of blue-collar workers in order to fulfil the new requirements
- The role and functions of HRD
- The mediation of the subject matter

Comparable to a benchmark three blocks are the main construct of this research:

1. The actual needs of the workmen for a sufficient training and development.
2. The status quo of the already used systems processes and programs and the basic conditions within the enterprise. (on-the-job training)
3. The status quo of the current market products or of systems that could be appropriate for this purpose.

These three cornerstones are important for this research but also for the introduction in reality whereas the first and the second are more internal factors that influence such projects. It is necessary to figure out which systems are already used and what are the actual basic conditions. An analysis is important in order to build on the current conditions or to renew or to replace them if they are not adaptable or good enough for the future use.

By introducing Industry 4.0 - solutions - including work organization as well as training technology and software - it is important that the questions regarding the design are not prepared in an isolated way but rather seen and implemented as a sociotechnical system (Ernst et al., 2015, 19). As a reason of that it is also very important that the users are included in this process. One has to figure out what they need how they want to use the tool and for which requirements.
Another point on the research agenda will be the role of the HRD how it is influenced and affected by the change of the trainings. It is interesting to see how this important company-internal instance would develop and what its new or transformed tasks and challenges are.

3.2. Research Design

The research questions of the master thesis will be answered with a combination of the theoretical part and the empirical part whereat the empirical part has a monitoring purpose - if theory complies with reality - as well as an analysis purpose to illustrate further possible improvements and changes.

The voestalpine Stahl GmbH has provided some of the interviewees and their internal processes in order to answer the research questions. After the theory research and before conducting the interviews two or three days of observation will be necessary to elaborate the interview guidelines. The observation will take place in a direct form in the company. According to Kawulich (2005 referring to Erlandson et al., 1993) it enables “the researcher to describe existing situations using the five senses providing a “written photograph” of the situation under study.” All impressions of the organization and the involved participants will be collected documented and analysed for the interviews and for decoding the broader context. Qualitative research has been criticised for some time because of the criticism that it does not justify assertions in an adequate way (Gioia et al., 2012, 18). Furthermore, this form of research is highly time consuming due to a big scope of work steps like conducting, transcribing, and analysing the interviews it is a recommended and common method in research with a venerable and long history (Gioia et al., 2012, 18). Other attractive characteristics are the flexibility of interviews the insights of what the interviewee sees as relevant or important the opportunity of newer questions to follow up the interviewee’s replies (Bryman & Bell, 2015, 479/480) and that they are supportive in gathering information that may not be in a published form (Eriksson & Kovalainen, 2008, 94).

While, there are various types of conducting an interview in research, like the structured and standardized, the guided and semi-structured, and an unstructured, open, informal, and narrative interview (Eriksson & Kovalainen, 2008, 93) in this master thesis the semi-structured qualitative interview style is the preferred one with the intention of receiving not just real-time but also retrospective delineations by those who experienced “…the phenomenon of theoretical interest” (Gioia, 2012, 19). This arises from the fact that it is a combination of the structured and standardized and the unstructured, open, informal, and narrative interview.
On the one hand, this type has some guidelines but on the other hand, also gives the opportunity to react more flexibly to the interview partner ask as mentioned above questions that may not be in the schedule (Bryman & Bell, 2015, 480) and even to modify the order and wording of the used questions in the interviews (Eriksson & Kovalainen, 2008, 94). By trend this helps to understand the informants’ points of view respectively the lived experience. However, a main downside of this research approach is that the danger of adopting the informants’ view by “…losing the higher-level perspective necessary for informed theorizing” (Gioia, 2012, 19). According to Mason (2010) and several other authors (e.g. Baker & Edwards 2012) many researchers avoid or simply are not conform in giving recommendations with regard to sample sizes in qualitative research. A list of suggestions showed this big gap between authors and their opinions like e.g.: Morse (1994, 225) 30-50 interviews Creswell (1998, 64) 5-25 interviews or Bertraux (1981, 35) at least 15 interviews. For this master thesis 17 interviews were conducted.

Before the qualitative interviews were conducted pre-interviews were helpful in order to get to know the subject area. The test of the survey instrument is important if the researcher has to get to know the new research field. It also enables also the interviewer to rehearse the interview situation and to test the questions of the questionnaire (Kaiser, 2014, 69). The information of the pre-interviews could also be included in the analysis (Kaiser, 2014, 70), which will be the case in this thesis. The interviews will be executed oriented on the basis of the three pillars and the research questions. All interviews will be in German. The qualitative content analysis according to Mayring (1994) will be the basis of this masters’ qualitative research.

Figure 15 illustrates the steps of this analysis. This approach facilitates the generation of an intersubjective content analysis in order to be comprehensible. The central instrument is the set of categories, which should be as theoretical as possible and is called codification (Mayring, 1994, 162). In the first step the composed categories have to be tested for differences and similarities in order to generate a rather manageable number of them (Gioia, 2012, 20). After this, the steps of Figure 15 can be obeyed.
In the following the three-interviewee groups will be described. On the one hand, the external part experts will be interviewed. While after that on the other hand, the internal (company) part of interviews with process owners HRD employees and blue-collar workers will be interviewed. These different interviews should give a broad and good overview also with regard to the three main blocks mentioned in chapter 3.2 (of this thesis). In the large part the interview guidelines are on the basis of the explanations of the book “Das qualitative Interview” by Froschauer & Lueger (2003).

### 3.2.1. Interviews with external as well as internal views

Qualitative (expert) interviews are targeted at to understand on the basis of the systematic analysis of the case. Kaiser (2014, 71) claims that a generalisation is not the main aim, which in turn means that it is not necessary to consult a representative sample or all experts for this research. This means that the interviewees are selected on the basis of content-related considerations. However, the expert interviews of this thesis will be conducted at first.
This has several reasons, like gaining expert knowledge regarding the complex of problems, possibilities, and the requirements that come along with digital learning tool in order to ask the employees (HRD and blue-collar workers) about these topics later on. This may enable the interviewer to ask maybe more precisely without losing the objectivity. Additionally the expert knowledge itself is also important and can be compared to the literature review. The chosen experts are quite heterogeneous with regard to activity (lecturer, consultant, or developer...), place of location, and expertise, which is deliberate because this fact helps to generate a broader picture due to the experts’ knowledge. The focus of the expert interviews is on their expertise and experience due to their function as developer consultant or lecturer.

The first one (E 1) was employed in the voestalpine Stahl GmbH and is now an expert and a developer for EL systems in a subsidiary company. On the one hand, he/she is not only an expert but on the other hand, he/she is also familiar with the internal processes strengths and difficulties respectively complex processes of the voestalpine Stahl GmbH. During his function he generated a lot of consolidated knowledge and experience in working together with blue-collar workers. This internal sight is an interesting factor compared to the other experts. Beyond that he/she has a reference to Linz/Upper Austria and the voestalpine Stahl GmbH. One can claim that E 1 has a practical expertise.

Expert two (E 2) is an external expert, which means he/she has neither a relation to the voestalpine Stahl GmbH nor to the location respectively to this site. His/her view can also be very important and interesting. He/she has more than 20 years of experience has worked as a lecturer speaker coach and consultant. His/her expertise in digital learning tool and the long lasting experience may enable him/her to provide information on the change in (corporate) learning because he/she has witnessed it for himself. This interviewee may also be able to abandon information about the HRD role and about other companies and their operating experience with regard to implementation and strategy.

The third expert (E 3) has like E1 also a reference to Linz/Upper Austria but not explicitly to the voestalpine Stahl GmbH. He/she is the general manager of a company in Linz, which drafts DL solutions. Above that, E 3 is also a professor in a FH. So this interviewee combines theory and practise due to his/her profession and activity in a corporation. Due to his/her practical expertise the interviewee may have consolidated knowledge about the hurdles and challenges or even tips for implementing DL strategies tool and systems.
The further research was being conducted in the subsidiary company - Böhler Bleche GmbH & Co KG - of the voestalpine Stahl GmbH. The for the most part internal focus of the research may support the successful implementation of these tools and does not lead to the diversion of other incommensurable external factors. Besides that it is essential that even blue-collar workers have the occasion to express their requirements and needs of digital learning tool so based on the experience of the workers in this plant it could help to search how to successfully learn and work with them in order to be efficient and satisfied. In this plant blue-collar workers are already learning with DL tool especially with E-Learning courses.

This subsidiary has about 500 employees with different production processes respectively products for diverse industries ranging from aerospace power generation automotive or among others oil/gas. Furthermore, it has an annual turnover of about € 140 million and an approximate production rate of about 24,000 (Böhler-Bleche, 2018). The CHRO of this plant has intended to implement an EL for blue-collar workers for several years. Until when EL was implemented only office employees had the chance to learn with such digital tool. So it can be stated that the initiator was the HR department based on the demands of their master craftsmen (CTL) who were responsible for corporate trainings. They were overburdened with these additional (time) efforts so they more and more forced the HR department to change these trainings. This means that in the first instance EL for blue-collar workers was introduced mainly to save time in training them besides keeping or even improving the quality of trainings and gaining increased learning success especially in matter of periodic trainings. This pilot project was one of the first in the whole enterprise voestalpine Stahl GmbH.

Two main topics are conveyed by these EL courses. As it is common in other companies the voestalpine Stahl GmbH also trains occupational safety with the help of E-Learning. Furthermore, employees are trained to get certifications, which are demanded by a companies’ customer - Airbus. This market or customer requirements are important for production processes so blue-collar workers have to consistently be trained due to alterations in the processes or just to stay qualified enough for performing work. This means that workers have to be trained in order to pass these courses due to the necessity for their job exercise. All in all about 400 workers (possible discrepancy) are trained by this EL system. As a reason of those workers their process owners (POs) and employees of the HRD in this specific plant were interviewed. The case itself and the related occurred incidents are quite interesting. One main and interesting aspect in this regard was the technical problems, which happened and caused other disadvantageous occurrences. Neither the HR of the subsidiary nor the Personal Services in Linz were master of the situation.
3.2.2. Interviews with internal views

**Blue-Collar workers.** For the scientific examination of the impact of digital learning tool it is necessary that interviews are conducted with users who have already gained experience with such tool. In these interviews the focus will be on their experience. Furthermore, it will be interesting to see if they may have recommendations for improvements in order to boost their learning outcome regarding their needs and (job) requirements. In this regard it could also be an additional benefit for voestalpine Stahl GmbH for further introductions of digital learning tool if similar conditions are predominant.

One characteristic of the interviewees is the company affiliation, which should be at least five to ten years in order to see how learning has changed. Furthermore, the ten workers should be divided in two age groups. Five of them should be about 30 years (+/-5 years) while the other group should consist of five workers who are at the age of 50 years (+/-5 years). This enables a better age distribution.

**PO/HRD-employees.** The third group of this research that will be interviewed are the process owner and employees of the HRD. The process owner on the one hand, has the task of a personnel developer and on the other hand, a more close relation to the blue-collar workers’ tasks and in this context to his or her requirements. So the process owner has not just got the technical and vocational skills but is also responsible for the workers’ further training and education. This position can be seen as an in-between of workers and HRD person responsible. Due to their generalization of competencies they have a broader and clear view. HRD employees will also be interviewed due to their expertise and their crucial role within the organization. Among other things they are responsible for the corporate training and education so it will be interesting to see their point of view in this regard how they are involved and if their role has changed besides some other points that are related to the research questions.

Two HRD employees and 1-2 process owners were interviewed who are involved in this process. This group of interviewees is focusing on the superordinate view due to their function as coordinators and their expertise while cooperating with workers. The results of this master thesis are a combination of three different interview-groups to gain a broader picture. The main intention is to compare different perspectives towards one issue. The expert interviews may give a holistic overview which however, tend to be more abstract.
This means that on the one hand, they tend to be able to give a very good overview in nearly all interests but on the other hand, maybe are not able to give equally specific information as the other two groups can do. Generally speaking the experts are able to give a good oversight respectively could be seen as an encompassing check. Compared to the other two groups the experts are the specialists in the narrower sense and each one with regard to contents, experience, and expertise.

Two of the three expert interviews, took place in an office and in a conference room while one was carried out via Skype. All three experts were very interested in the interviews, which can also be stated by the interesting and constructive discussions respectively conversations related to this topic. They interacted in a very open and truthful way. These interviews were far more relaxed and easier to manage compared to the interviews in the subsidiary with the blue-collar workmen.

The second group was composed of different personalities mostly based on their age but also on their education and social background. One can even state that the education and the technological interests or knowledge is significantly related to the age or the corporation intern position. Although, some of them were quite awed they still tried to collaborate as much as possible. On the other hand some of the interviewees were neither interested in the interview nor in the DL-tool. The master craftsmen and HR-employees were in turn very accommodating and constructive. All interviews in the subsidiary were conducted in the first-aid post on a neutral und undisturbed place. While the experts were most of the time quite formal the majority of the interviewees in the subsidiary communicated (nonverbally/verbally) in a completely different way due to their personal involvedness. The experts showed a tendency towards being more reluctant which is maybe caused by the degree of involvement. A lot of emotions especially during the interviews in the subsidiary were ascertainable - no matter if HR or blue-collar workers.

Once again this arises from the involvement of these employees but on the other hand, shows the emotional impact that correlates with such types of changes. Consequently, the way of interviewing had to be adapted based on these given factors.
4. Results

With regard to the structure of the theoretical part this chapter reveals the results of the empiric research. It consists of four main chapters, which should ensure that all research questions are answered adequately based on the interviews conducted between December 2017 and January 2018. Although, there are three main groups HR/CTLs and blue-collar workers will be considered as one group while the third group the experts act as a control-group with a complement approach due to their broader overview based on their expertise knowledge and experience.

4.1. From Classroom to E-Learning

The first chapter compares the former way of training with the newest the current training concept. It should give an overview of the changes that have come along with the implementation of DL. In the first instance classroom training will be characterized while subsequently the new learning approach (E-Learning) and the implicated changes are described based on the three explained interview-groups.

<table>
<thead>
<tr>
<th>HR 2 Z. 80</th>
<th>“…da mus i des nebenbei machen net. Und ois was nebenbei is is dann net so intensiv vielleicht oder wird dann net so guad umabbracht…”</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 4 Z. 226</td>
<td>“…neiche kemmt wird meistens der Mitarbeiter eingeschult und natürlich ja nachdem wie viel Arbeit momentan is wird ma hoid mehr oder weniger intensiv geschult und dann kann si des dahinzahn…”</td>
</tr>
<tr>
<td>HR 3 Z. 182</td>
<td>“…hab müsn meine 40 45 Leit immer schulen und alle in an Raum zusammenhoin des geht natürlich net des heißt jetzt macht ma ah weil’s a andere Schichtigkeit haben und weil ma kane 40 Leit in an Raum bringt macht ma des über zwar drei vier Sitzungen des is natürlich für mi persönlich zeitaufwendig weil da sitzt jedesmoi a Stund oder anderthalb du muastas schulen…”</td>
</tr>
<tr>
<td>BC 9 Z. 51</td>
<td>“…aber wie gsagt i hab drei Stunden Schweindl zeichnet a da herinnen…”</td>
</tr>
<tr>
<td>BC 5 Z. 48</td>
<td>“Folder obengstanden was er hoid so vortragt aber dann schaust hoid grad amoi vielleicht in am anderen Bereich drüber was am ah mehr oder weniger nachand interessiert und nachand über des was derjeniger dann vortragt ah bist vielleicht grade net so bei der Sache weils da jetzt grade a anderes Thema anschaut.”</td>
</tr>
<tr>
<td>BC 8 Z. 140</td>
<td>“…weil wennst jetzt den Zettel mit heim gnommen hast ah ja dann war’s hoid a so dass der Zettel daheim war aber du kast dann hoid mehr auf den privaten Modus gschoit und ah ah gsagt „privat is privat und Firma is Firma“ und da lest dann net glei irgendwie daham durch…”</td>
</tr>
<tr>
<td>BC 6 Z. 148</td>
<td>“Da Vortragende hat des hoid vorbracht net und hat hoid oft so irgendwen gfragt hoid net. So stichprobenartig hoid net. Aber da hat’s net an jeden troffen net des is hoid einfach vortragen worden mehr oder weniger net.”</td>
</tr>
</tbody>
</table>

Table 3: Citations with regard to classroom training (self-provided)

**Classroom training.** Before E-Learning for health and safety respectively the quality training were introduced the classroom trainings with regard to this topology were training sessions in a formal way like it is common in schools. Every CTL (coordinating group leader) and his deputies trained their employees once a year.
These trainings required a lot of preparation ranging from administrative and organizational to conceptual extra work on the part of the lecturers (CTL and deputies). Besides the conception of these courses the administrative efforts, which are primarily bedeviled by the shift work, demanded a lot of time especially because trainings had to be split so that all employees could be trained. Drafting such annual recurring trainings besides the daily business is a huge extra pressure so they requested a substitute concept in order to gain relief. Above that, they argued that the quality of trainings might suffer due to this additional burden (HR 2 Z. 80). It could even lead to demotivation on the part of the trainers, which could lead to a reflection in the motivation of the learners. Furthermore, these trainings were not structured in a standardized way so it was up to the CTLs. Demotivation in combination with this fact-opened space for reduced quality of these trainings. Interviewees alike mentioned a reduced quality of trainings and instructions in the handling of machines caused by time pressure of the responsible person (BC 4 Z. 226).

Among the group of workers these training were seen as additional drain or even as coercion because in order to execute the classroom trainings all of them had to take time stop their work and shut down machines. This means that workers had no possibility to choose the time of the trainings on their own because it was mandated by the particular CTL. This coercion not only led to a demotivation adverse the content but also to a certain denial, which was expressed in a decreased interest on the part of the workers. By attempting to save time the CTLs organized classroom trainings with as many learners as possible (HR 3 Z. 182). This led to the phenomenon that learners were often just physically present but not mentally. They tended to be bored and just waited that time goes by (BC 9 Z. 51; BC 2 Z. 142) which in turn lead to boredom. Such a passive attitude, which can be in a large part ascribed to the big number of learners in one room, eliminates of course nearly any (positive) learning effect. A big number of participants in a classroom trainings leads to a not adequate concentrativeness among the group of learners. Beyond that employees were not able to increase the focus on specific topics based on their individual needs interests or even job requirements (BC 5 Z. 48). In this regard although, learners were able to ask their superior (which is still possible) once more about the content they had no chance to inform themselves or learn on their own aside from a sheet with instructions. However, this sheet was probably lost or taken home where they were not interested in learning for the job (BC 8 Z. 140).

The examination of the learned content was neither structured because learners were mostly questioned without any concept but rather sporadic. So this “control” was also not motivating to follow the preceded instructions.
Consequently, the CTLs had no evidence or proof for an evaluation if the workers dealt with the content. As a result of that it was possible that workers could have passed the test without gaining an additional benefit not to mention a learning effect (BC 6 Z. 148).

**E-Learning.** With the change of the training from a classical classroom to a digital training some transformations can be stated.

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**Figure 15: Summary of most important aspects regarding the change of learning due to EL (self-provided)**

- Traceability of course graduation
- Resource savings and relief of trainer (process owner and foreman)
- Didactic, qualitative high-grade, and updated content
- More people in less time
- Easy handling saves time
- Learning in dwell time, due to it’s pause possibility
- Organisational easier feasible
- Faster reaction on change in knowledge (due to it’s fast pace)
- Change in the worker’s attitude regarding technology

**Change of learning (Corporation):**
- Flexibility of learning besides a certain degree of uniformity
- Higher quality (standardisation of content, formatting, and handling)

- More entertaining
- Freedom within the system, due to independent organization of learning
- Autonomous deepening in the content
- Repeatable refreshment of content and possibility of passing small modules, new approach
- Increased power of concentration, also due to self-reliant learning
- Time- and location independence
- Recognition and appreciation of workers
- Improvement of training opportunities, at least same elsewise better
- Faster and easier access on content
- Reduction of the most important content
- Connection of content
- Linking-up of workers

**Change of learning (User):**
- Flexible way of learning
- Adaptability
- Freedom within the system
- (satisfaction of heterogeneous needs)
- Autonomous confrontation with the content
- Revaluation of blue-collar workers

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<table>
<thead>
<tr>
<th>Source</th>
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<tbody>
<tr>
<td>BC 4 Z. 224</td>
<td>&quot;...könnt i ma durchaus vorstellen...Lehrvideos für Maschinenbetätigung dass ma des a eigentlich weil jetzt werden auf die Maschinen wenn irgendwo a neiche kommst wird meistens der Mitarbeiter eingeschult und natürlich ja nachdem wie viel Arbeit momentan is wird ma hoid mehr oder weniger intensiv geschult und dann kann si des dahinzahn und wenn ma gleich gschide Lehrvideos im Vorfeld also wenn des glet in so Schulungen packt wird und so E-Learnings machen mus und si des a bissl anschau kann den Arbeitsablauf und Bedienung und so is des sicher hüfreich&quot;</td>
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<tr>
<td>HR 2 Z.230</td>
<td>&quot;Du lernst mehr wennst was selber duast net? Wenn da ana an Satz sagt merkstan sicher net so guad wie wennstan selber aufschreibst&quot;</td>
</tr>
<tr>
<td>HR 1 Z. 159</td>
<td>&quot;...ob die Arbeiter nu motivierter san diesbezüglich weil für die is mehr Aufwand des muss ma scho ehrlich sagen ja. Oiso die müssen ja hingeh die müssen si jedes Mal neu damit befassen die müssen eininden… eher neutral hinstellen:&quot;</td>
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<tr>
<td>HR 2 Z. 66</td>
<td>&quot;Aber klass is dass ma die Module also net auf anoi erledigen maus sondern dass ma si des eintakten kann wie’s wie’s zeitlich einpasst des is natürlich auch a großer Vorteil.&quot;</td>
</tr>
<tr>
<td>BC 8 Z. 221</td>
<td>&quot;...dass jede ah Maschine ah ah an Computer stehen hat oiso is da scho is des scho ah ah guad weil dann maus ma net von da Maschine weglaufen eben zum Computer...&quot;</td>
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<tr>
<td>BC 1 Z. 108</td>
<td>&quot;Direkt am Arbeitsplatz net weil wenns laut is kannst di eh net konzentrieren. Da is gschide irgendwie im Jausenkammerl da wo der Computer steht des is scho net so schlecht...&quot;</td>
</tr>
<tr>
<td>BC 5 Z. 42</td>
<td>&quot;...des mim Computer mach ah des is vi irgendwie ah persönlicher ois wie wennst des jetzt in am großen Raum mit sag i amoi mit 20 Leit drinnen sitzt und derjenige tragt hoid des so vor weil da ja. I find wennst des mim Computer machst einfach besser konzentrieren kannst...&quot;</td>
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"...damit wird a glaub i speziell im Arbeiterbereich...bissl a Vertrauen den Mitarbeitern ah
gegeben...manchmal schon da, den Arbeiter...Es löst wenig die Hierarchie auf...”

“...Wir erleben, dass dies ein enormes Incentive ist, für Arbeiter, das einfach klingt blöd vielleicht aber Abwechslung ist genauso wichtig wie unser. Es ist, wie ein Arbeiter schätzen würde, dass die jetzt weniger auf irgendwelche tollen Seminarhotels fahren dürfen, aber es ist eine Wertschätzung in dem Sinn, dass sie da integriert werden...”

“...Rahmenbedingungen müssen es geben, aber innerhalb dessen sollen die Leute doch das Gefühl haben, dass geraume Freiheit auch vorzufinden, wie die Dinge angenommen werden. Personen so haben wir erlebt, dass es nicht schätzen ist, dass sie zu restriktiv ist, dass es immer so im Sinne von Fernsehen ablauft und man keine Möglichkeiten mehr hat in irgendeiner Weise auch sich zu involvieren in dieser Sache.”

“...dass vielleicht auch weniger Synergieeffekte äh sagen, um verpuffen, dass jetzt der Mitarbeiter jetzt zehnmal Fragen muss seinen Kollegen, äh, wie das funktioniert weil er halt gleich angeleitet wird das zu machen...”

Table 4: Citation regarding learning with E-Learning (self-provided)

First of all, the trainers (CTls) recognized facilitation due to the abolition of the classroom trainings although, the effect is temporally delayed. This lag arises because they had to give instructions to the workers in using the E-Learning-system in an adequate way. This process should be individually adjusted to the particular technological knowledge of the workers based on their age, their willingness, and interest in technological devices like PC tablets smartphones or other devices.

Another effect of the transformation with regard to the content of the trainings is a relative high homogeneity so that workers have the same level of knowledge and that none of them is dependent on the motivation interest expertise or possible invested expenditure of time of their CTL or instructor. This implicates that with the help of such structured trainings it is more likely to be independent from the trainers' time, resources, and motivation. This option offers the opportunity to learn autonomously in a structured and qualitative high-grade way (BC 4 Z. 224). Formal learning systems also enable the learner to do a structured test with a consistent level of difficulty without requiring a checker or someone evaluating results due to the discreteness of these systems.

By using the E-Learning systems learners have to grapple with the communicated content on their own which in turn may affect a more positive learning result (HR 2 Z.230; BC 3 Z. 55; BC 4 Z. 57; BC 6 Z. 115; BC 7 127; BC 8 Z. 152; BC 10 Z. 89). The increased intensification of the self-reliant learning journey in combination with a more positive effect was the most frequently mentioned change in the learning experience of the workers although, it comes along with more time and effort expenditure (HR 1 Z. 159; BC 2 Z. 146). While on the one hand, this rise is often seen as an additional effort because of the extra resources they have to invest in order to learn which is again significant to the technical affinity and skills of the particular employee. Consequently, motivation is probably not always given. On the other hand, it leads to an improved learning success (HR 1 Z. 163).
While some mentioned that the digital trainings claim as much or even more time than the classroom trainings others see them as a saving of time correlating again with technological affinity skills and of course the learning ability. While some tend to see it as essential for the learning success respectively necessary for the job others rather tend to be more skeptical which is expressed through refusal. Again this is basically due to age and the willingness to continue education.

Workers tend to be more encouraged to learn if formal trainings are combined with an examination. No matter if it is seen as a positive or a negative incentive but they have another motivator to learn that is to say to pass the test. They have to actively learn on their own respectively reflect on the content due to their increased personal responsibility which goes hand in hand with DL. The rise of personal responsibility is also influenced by the chance of individual apportionments fitted by the worker’s needs. They have the possibility to distribute the modules and content based on particular e.g. motivation interest or just on available time capacity (HR 2 Z. 66). This means that it is up to the worker or the specific context how much or how long he or she is willing to learn until a specific above-mentioned deadline is reached. A deadline that purports a certain time frame is not just important but also definitely helpful otherwise it would maybe seep away. The system can be paused whenever the learners want to and is conceived to save the actual status.

Furthermore, the whole content is subdivided in (six) smaller modules so that a kind of (formal) Micro-Learning can be practiced. By using such dead time frames for the process of learning workers do not have to shut down machines or pause their work (E 1 Z. 454). They can decide on their own when to learn which can be independent of e.g. degree of capacity utilization. Above that, learners have the opportunity (freedom) to recall the mediated content numberless times so they have the chance to repeat it several times. Although, one of the interviewees mentioned that this is definitely not the case (BC 10 Z. 140). Others stated that they had already tried if it works. Yet others welcome this feature in order to refresh their knowledge to be up-to-date or to be prepared for the examinations or controls of labor inspector.

Another positive argument for using DL for corporate training is location-independency. A personalized Log-On respectively account enables workers to learn on each PC with a connection to the DL-system. This means that they can choose wherever they want to learn which offers the opportunity to adapt the process of learning based on the predominant circumstances. So they can decide where they want to learn e.g. in the (superior’s) office other rooms or even directly on their
workplace in the production shed near their machine where they are used to work. In this context independence is the keyword because they can learn whenever and wherever they want to. However, in order to use these positive effects it is essential that companies or the party responsible are aware of the frame conditions, which have to be taken into consideration during the development of the conception design. In order to learn wherever or whenever the specific person wants to it is necessary that sufficient especially easy and uncomplicated accesses in all kind of ways are available. This means that the technical infrastructure is essential to support DL; otherwise the approach is not accomplishable. But what is meant by technical infrastructure?

First of all nearly all of the interviewees agreed that an access respectively at least sufficient distribution of access possibilities are given in order to operate a PC Tablet or other devices respectively an own Log-On is just the basis (BC 8 Z. 221; BC 4 Z. 161; BC 3 Z. 126) to implement DL-tools in an efficient way. A fast Internet connection is important, too in order to make sure that learners do not have to wait, too long also concerning time management demotivation due to the feeling of wasting time or even discomposure of technically not so affine workers. Otherwise digital learning is not possible. The personalized Log-On can also be used as a direct communication-tool in order to communicate with employees or to inform them respectively to remind him or her to complete a formal training (BC 7 Z. 252). Beyond that a personalized Log-On ensures that personalized data is safe and not accessible for others. In this industrial context it is also important to include external circumstances like noise disturbances through colleagues or superiors or even dust. These factors have to be taken into consideration. So DL systems have to be adapted to them. Headphones or subheadings would be solutions against the noise outside the place of production. On the contrary another solution would be creating spaces for those who do not want to be interrupted by these factors so that the wherever-whenever-approach does not disappear (BC 1 Z. 108). Furthermore, it is important that the superior agrees with the wishes of the learner to a certain degree also to enable him or her to use the learning system as long as it is necessary (due to the different learning speed). For this reason superiors have to be incorporated. According to an expert a potential problem in this context could be a feeling of insecurity or fear on the part of the superiors adverse their staff. There is certainly the possibility that superiors could this kind of mood because employees have the chance to gain more knowledge, which could decrease the information power of CTLs. This transparency regarding information could threaten the legitimized position also with regard to expert power of superiors (E 2 Z. 461). This could be the case although superiors did not mention it.
However, this could arise from the fact that in this case, no process specific expert knowledge is mediated so far, but rather just health and safety briefing.

Although, the content of the trainings are homogenous the learners and their needs are quite heterogeneous. So the use of different multimedia technologies and especially the possibility to distribute as much time as required (depended on the demand) these systems tend to be more learner-centered (BC 6 Z. 137). Such a provided time-independent learning approach also conveys security and that learners are able to do it at their leisure, which reduces a feeling of stress that correlates with an improved result in the learning process (BC 5 Z. 253). In this context superiors should be sensitized how to trade the time for learning off against other time delays in the production that cannot be ignored or forbidden like a toilet break (BC 9 Z. 39) Applying double standards in such an extreme example could lead to the denial on a large scale. Basically time location and the permission for learning are fundamental conditions in order to be able to learn in an undisturbed concentrated not stressed and focused way.

Due to the change in communicating the content the DL approach enables other possibilities. This innovative learning approach is according to the workers not as boring as the classroom training due to the usage of different multimedia-based technologies. The majority of the interviewed workers prefers the DL-system because of this new approach and its possibilities. Because of different learning types companies have to react in order to accommodate them and their preferences. The discrete learning approach supports various learning types, level of competences or professional experiences because learners can repeat the trainings on their own as many times as they want or need to. Besides that the learning is supported via video, audio, pictures etc., this in turn provides a more focused learning experience. They tend to be more concentrated because they are not disturbed or distracted by the big group anymore. Besides that it enables them to be more focused on personal needs and interests. So they are of the opinion that this learning approach is far more personal than the former one (BC 5 Z. 42). Above that, a foreword of the business management (BC 4 Z. 124), a statement regarding DL or even internal corporate news can be arbitrated in form of an audio or video, data file. This suggests an increased interest respectively commitment of the management. Another important aspect in this regard is that it is secured that all employees are instructed without exception or that the handling and content mediation is more comprehensible besides a monitoring function - the exam at the end of the modules. However, it is not reproducible if workers have cheated with the aid of a e.g. colleague (HR 4 Z. 282).
To some degree “freedom” in other words independency within the system is important so that workers act out self-determination and react situational depending on the circumstances (the best case would be learning in a dwell times). The possibility of pausing the learning process whenever the learner wants to pushes this approach. A freedom to a certain degree within the system the usage of DL-tool and the increasing self-reliance equally conveys a feeling of appraisal and enhance the status of the workers. Such implementations also lead to gratitude and happiness because it is a change for workers, which is seen as an incentive for them. It conveys a sense of trust and could abrogate or at least ease the corporate hierarchy (E 1 Z. 289). Furthermore, it possibly maintains more commitment within the staff due to the shown trust and involvement in this digitalization topic (E 1 Z. 309). On the other hand, it could also be seen as a cultural topic within the company, which was not only mentioned by HR managers, but also by experts (E 1 Z. 269, E 3 Z. 106). Such a freedom may also tend to decrease a feeling of stress which is coherent to examination situations because they have enough time to finish the training and have the chance to repeat the test if it is necessary (E 3 Z. 345). This leads to a revision of the content with an additional learning benefit and is not dissuasive as a knock out test.

Although, multimedia have been inserted in the course of the DL-system the experts claim that learning should be even more entertaining in order to increase the learning benefit. For example, introducing educational games, other innovative digital technologies, or devices, like Tablets or mobile phones, could create entertainment. In the case of an educational game employees would learn in a more playful way, which is significantly funnier. Already a competition, took place with the aim of accomplishing the EL as fast as possible. This is an informal way of competition but speed is not a surety for efficiency of the system. Consequently, formal didactic games, which are drafted for competition would probably gain more benefit concerning the learning effect. Companies could control this competition better in a formal than in an informal way. In addition to that the entry of technological devices in work routine due to learning requirements maybe sensitizes workers and help them to understand the handling of such technologies as a side effect (E 1 Z. 287).

Furthermore, experts claim that already the (Austrian) school system especially the mediation of unimportant content is the wrong learning approach (E 1 Z. 129). So companies should get away from the school touch and should be more concentrated on an approach of learning on demand. A system for digital knowledge transfer or a performance support (E 1; E 3) would be an ideal way to support workers in Micro-Learning rather in an informal way. So useless information should not have to be learned anymore.
This would cause more efficiency because the content is reduced to the most important basics and the fast alteration of knowledge can be antagonized. Another option in this context would be a collaborative system in order to be connected to other workers colleagues or experts (all over the world). Referring to the prior topic of discrete learning DL mostly saves time and ensures that no synergetic effects get are lost. With the help of a support performance system workers are able to inform or even train themselves which results in a decrease of dependency on their boss or colleagues. They are able to try to find information on their own and do not have to ask others in order to gain the desired information. This on the other hand, involves a potential decrease of synergetic effects because of the reason that employees do not have to gather information primarily by asking colleagues or superiors (E 2 Z. 446). The problem solving orientation of the workers could be trained to be more autonomous. Above that, the fear of technologies may be decreased while the usage of them will be promoted. In matters of time experts mentioned that time resources have to be provided because learning in the leisure time especially in the industrial sector where learners are confronted with physical arduous work would not be a good option. It would not be well received, too. An additional possibility would be to distribute time credit voucher (E 3 Z. 186).

**Summary.** Basically on the part of the company there are several things to respect in order to guarantee an unobstructed access and application of DL-tool. Without these precautionary measures learners probably would be hindered to use these systems in an accurate way. They may not be able to see a change or a positive benefit in their learning process influenced by DL. Without an adaptation to given circumstances and frame conditions, the flexibility and potentials, which are forecasted will not be convertible.

The change of learning, which could be stated, is the own confrontation with the content, which triggers a distinctive learning success compared to former times (HR 4 Z. 314). Although, learners are able to use DL due to its small modules and pause-function in a more customizable way especially in dwell times also due to the freedom of completing formal trainings in a specific period of time they (in a large part) have not realized it. It is sometimes still seen as an additional expense and disturbing work stoppage by some of the users. Regarding DL they have another approach than HR due to e.g. infinite possibility to retrieve the content.

Furthermore, DL offers the possibility of focusing on the given information and on personal interests in a new innovative (learner-centered approach) flexible and especially in a structured way. Besides that a freedom in learning but also within the learning system should be given.
Compared to those classroom trainings, which are quite time-consuming for trainers (superiors) mostly depend on the motivation, time resources, and interests of the certain trainer. These lecturers of the specialist departments hold these classes besides the daily work routine so the quality probably suffers from a lack of interest due to this additional effort and stress. So it is also easier to bring forward positive effects even for superiors who possibly fear to lose expertise power because of far better trained subordinates.

Heterogeneous learning needs can be satisfied due to the flexibility of the multimedia content mediation equally to a more entertaining way like e.g. games competitions or videos. However, this mediated information should meet qualitative standards, so monitoring and controlling on the part of the company is advisable, according to experts. Above that, a personalized login besides data protection enables a location independent and focused way of learning compared to classroom trainings.

### 4.2. The training with Digital Learning tools

The second chapter deals with what has to be considered for the usage but also beforehand in order to guarantee a constructive handling of DL systems. Various factors depending on the certain circumstances can vary in importance. So it has to be respected that this is just an overview of the three interview groups with regard to their statements but also to their (subjective) experience needs and know-how.

| Training with DL: | - Adaptability on worker’s needs if individual system
- Analysis of customer and circumstances |
| Possibility of contributing by the compilation of the content |
| Systems off the rack are abstract, reference to the company is missing, so individual system is better (commitment,...) |
| No complicated access or mediation of the content |
| Incorporation of frame conditions |
| Combining work with learning |
| Analysis of customer |

![Figure 16: Summary of the most important aspects of the training with DL (self-provided)](image)
Frame conditions also play an important role as they did in the prior chapter. By implementing DL-systems HR and the other persons in power have to understand that the user group of these systems are a heterogeneous one. This is reflected in the specific and especially variable knowledge of the individual workers their technological knowledge how to use devices like PC smartphones or Tablets in a proper way or even their age and personal attitude with regard to alterations. In a major enterprise this is a huge range because of a huge accumulativeness of individuals so it is important that HR makes sure that learners have various personal approaches influenced by factors like e.g. technical knowledge expertise interest etc. By considering this factor it is essential that the handling of these tools is as easy and quickly comprehensible as possible. However, all in all depending on the cultural background of the company the interviewees mentioned that they helped each other if problems appeared (BC 7 Z. 97).
They try to support each other as much as possible because they are pulling together due to their distinctive solidarity (BC 8 Z. 91; BC 7 Z. 97). During this empiric research it emerged, based on some of the statements of the interviewees of experts and HR, that the target group - the blue-collar workers, especially elderly have a feeling of excessive demands in trainings for the handling of technological devices (HR 1 Z. 99). So, an easy handling potentially prevents users from their own errors misunderstandings and insecurity in the first place. Nevertheless, some elder workers mentioned problems and user errors they somehow where able to handle them anyhow.

Learners should not develop abashments or in the worst case fears towards DL or the used devices, too. They are simultaneously users and customers. Therefore, they have to understand their own benefits and advantages (which should be in line with the business strategy) triggered by HRD in using these DL-tool. So, it is important to communicate the benefits and advantages to them (E 2 Z.133). Thus special or more intensive trainings have to be additionally implemented in order to satisfy their demands that are based on insecurity and refusal especially by elderly employees or even deniers (HR 1 Z. 480). Unfortunately, there are always those who regret new things or changes (BC 9 Z. 211) - no matter in which respect - even though by recognizing potential advantages for others (e.g. younger employees) (BC 9 Z.170). This is a hurdle that cannot be eliminated because in such an industry processes and production steps are not subjected to dynamic transformations so people are not used to them (HR 1 Z. 548). Consequently, it has to be considered and respected while it is important to pay heed to negative attitudes as much as possible so they have no chance to spread or increase within the workforce (E 3 Z. 129). According to experts one possibility in order to fight them could be transparency in all kind of ways. So, an open and honest discourse on the part of the HR is advantageous but just at the right time (E 3 Z. 126).

One can state that in this specific case a majority (mostly) younger employees have a more positive way of thinking compared to elderly (BC 7 Z. 116) so HR is of the opinion that the employees see a benefit respectively appreciation in using this new way of learning (HR 1 Z. 147). However, fears in combination with potential technical problems could lead to bad/distorted feedback frustration or even demotivation in using DL. According to the HR but also to the experts technical problems per se would be an absolute disaster disregarding from discomposure they would also lead to a loss of acceptance (HR 4 Z. 142) or denial because it would communicate weakness and could arouse frustration (HR 1 Z. 102). HR and experts agree that technical problems or needless complexity in handling hinders the promotion of these systems thus as well as the successful implementation and
absorption because workers may forget their benefit due to their (first) impression which was negatively afflicted because of the problems that came along by using these DL-tool. This means the usage is rather clouded by the errors (HR 1 Z. 136). According to all experts respectively to HR-managers technical problems and errors should be largely avoided because employees are used to well-oiled technology so the company is in a tight spot (E 2 Z. 68). However, although, some mistakes and errors occurred workers mentioned that it was not as fatal as the HR thought it would be. The calm reactions of the workers regarding errors during the (first) implementation process are likewise converse to the statements of the experts. In this case they mentioned that they, took into consideration that this implementation of the system could raise problems because of its newness, which could come along with potential implementation challenges (BC 7 Z. 112). So for this reason HR should be able to learn not only from positive experience but also from its (own) mistakes and errors, too (HR 4 Z. 105). Unfortunately, this does not apply to this case because apparently some of the former errors reappear during recent implementation processes (HR 4 Z. 158).

Like the simple handling of the tool it is also very important that the content is easy and reproducible which means that it should be adapted to a plurality of certain users and their educational level (HR 1 Z. 197) avoiding a development of education gaps within the company. If not it implicates that some employees are not able to understand the applied information (E 3 Z. 805). Consequently, mentioned by workers as well as by the experts it is important to pay attention to the fact that the information brokering is as easy as possible and not unnecessarily elaborate or highly scientific but with respect to the users and their educational and social background (E 3 Z. 118). This means that the editorial processing should be adapted to the customer (worker) (HR 1 Z. 396). On the other hand, this implicates that for some learners the content processing is easy and that they have a feeling of sub challenge but it should be adapted as already mentioned to the mainstream as good as possible (BC 7 Z. 77). Besides the mediation of a comprehensible content an eased access to the content is important, too. Learners should not be kept back or hindered by long searches for the right content (BC 2 Z. 55).

Furthermore, also if kind of forums or communication platforms - for the (informal) knowledge transfer respectively exchange - would be implemented it should be respected that the rules for them have to be adapted to the user. So, that they would not have any abashments by exchanging information referring to freedom within the system (E 3 Z. 115). Unfortunately, it is not verifiable for this purpose if it is like that because in this case no forum was implemented.
With regard to the topic (which was treated in the preceding chapter) - the sensitization of bosses and the applying double standards in combination with the statement that it would be desirable that workers would learn in dwell time. It is important that the persons in power communicate this ulterior motive. Disregarding one of the interviewed workers none of them came up with the idea of learning in such a dead time frame although, they complained that they had to shut down machines (BC 1 Z. 134) because of learning with the EL. Of course such a learning system is new but one intention of the HR with regard to this topic was that such dwell times could be used meaningfully (HR 4 Z. 189 E 1 Z 450). Apparently this was not communicated to the workers or was forgotten due to the discomposure during the implementation process that was influenced by several negative factors. As a result of that it is important that the guarantors take care of communicating important aspects. Otherwise, if it is not communicated it would not fade into a lived corporate culture and coupled with a sensed coercion learners possibly tend to defer the completion of formal trainings which leads to a stress situation because of the defined deadline (BC 2 Z. 181). The actions of employees or rather the corporate culture can equally be influenced by the business management, which has to initiate certain steps besides acting as a role model. Furthermore, this business unit also has to react during the further procedure adaptation, based on their power within the company the company-internal circumstances on environmental factors.

But what does this mean? In this case the rigid corporate structure or just the missing willingness for an initiative hinders the adaption on external changes like technologies and cultural aspects. Exemplary the usage of mobile phones in the workplace should be highlighted. Although, employees are allowed to use mobile phones during breaks it is forbidden to use them during the working time, which is basically comprehensible. But in order to learn in a more flexible way which means time- but especially location-independent this ban hinders possible progress - also in relation to trigger informal learning - which could increase corporate success or generate further additional benefit (HR 4 Z. 406). Furthermore, workers mentioned that the usage of mobile phones as part of their daily work is increasing successive although, it depends on their function and work tasks.

This contradictoriness leads to incomprehension because on the one hand, they should work and learn with (own or corporate) mobile phones but on the other hand, the usage of them is forbidden (BC 8 Z. 173). Additionally Facebook Youtube or other (social) platforms, which could be also utilized for informal learning, are restricted, too due to management guidelines. Unfortunately, no alternatives that are regulated and controlled by the corporation for winning information are applied.
In the pre-interviews one interviewee mentioned that quite a lot of companies already have understood, how to use the collaborative learning approaches. However, according to E 1, the voestalpine Stahl GmbH has a quite conservative attitude towards social media so the management has not realized the additional benefits of such a way of learning. As a result of that, it is hard to change the corporate learning culture although it will be necessary, someday. Then the corporation has no chance to change its learning strategy successively or at least sufficiently due to its urgent necessity and pressure.

Another problem that is in the foreground for the management is the economical legitimization and reasoning. Crucial and economic indicators are maybe limiting a further development because as one of the HR-interviewees claimed comprehensive periodic respectively formal trainings are more meaningful (HR 4 Z. 441). Although, this explanation is comprehensible it is on the contrary not advisable if the so-called 70-20-10 approach is taken into consideration.

![Figure 17: 70-20-10- Model (self-provided)](image)

This assumption is that 70 % of learning happens during the working process. 20 % of it is basic because of informal knowledge exchange among colleagues and 10 % is relatable to formal training measures. While this point of view is not the latest it is still customary - in practice (also mentioned in the pre-interviews). So it is doubtful why to invest the whole education budget in 10 % (formal learning) of the education journey (E 2 Z. 356)? Investments in formal trainings can be the first step of this journey, which are comparatively more expensive and connected with a lot of effort. However, on the other hand, informal learning approaches can also exhibit negative side effects or hurdles as in exploiting the whole potential of informal - or even formal - DL-systems it is required that the (changed) corporate learning culture is integrated in the daily work routine also with regard to a suchlike infrastructure. Learning-on-the-job mostly in an informal way has great potential based on the above-mentioned assumption (70-20-10). In order to exploit it employees have to be trained and sensitized guaranteeing that they are able to differentiate between important and negligible content. Besides that they have to learn to recognize the right moment for learning, which in turn is correlating with their self-employment and self-responsibility.
So, HR respectively the people in charge have to believe that they are able to overcome these hurdles. Otherwise informal learning has, too little support and would not generate enough legitimation like in this case (HR 1 Z. 521). However, no matter if the learning approach is either formal or informal it is important to consider that - also with regard to the 70-20-10 approach - learning is working as well as working is learning. As a consequence it would not be advisable to separate them. This should be taken into consideration in the course of the conceptual design of the corporate learning strategy equally with regard to the tool-decision, which should take place in the last instance (HR 2 Z. 280).

The often-mentioned fear of losing personal or interpersonal contact due to the advanced digitalization (of learning) may lead to a reinforced insertion of Blended Learning (BC 6 Z. 186). This approach a combination of DL and classroom training enables the possibility to train people by utilizing the existing advantages of both. Consequently, DL is just an extension and no replacement of the face-to-face training (E 1 Z. 74). Classroom trainings can be used in a supporting way for dealing with specific cases topics or simply to offer a forum for personal discussions and question time (E 3 Z. 210).

**Summary.** Fundamentally it can be stated that an easy handling of the DL tool and systems a simplified access to the provided content and the simplified content processing itself are essential because it avoids several negative appearances that probably come along. These negative factors complicate not just the usage but also the process of changing the current corporate learning culture within a company. During the further process this could hinder the transition of DL into the corporate culture. In addition to that enough support should be provided for those who are not knowledgeable in using those devices informally (triggered by team spirit among staff) or formally (by superiors). The form of support has to be adjusted individually to predominated circumstances because this support probably leads to less fear and more acceptance. Freedom for users within the system possibly diminishes the often-felt force respectively pressure to use the DL-tool.

Overall HR has to consider respectively accept that there will be resistance among the blue-collar workers but they have to take actions in order to fight and curtail these obstacles via being transparent right on time communicating and showing the benefits to the users. The learners have to be convinced that this measure is good for them. This in turn is mainly possible if technical problems are avoided because users basically tend to remember errors instead of perceiving their benefits respectively how to handle the system. Preventing misunderstandings or contradictions frame conditions have to be adapted so that aims and corporate guidelines are balanced.
This requires a more open-minded attitude on the part of the management. Reaching such a problem-free usage the change process and the role of HR has to be prepared and strategically designed.

### 4.3. Preparation and implementation as role of HR

The third chapter covers the issue of the prearrangements the implementation and of course the role of HR. Due to the potency of these two processes and the importance of the understanding regarding the HR role these factors can be game-changing respectively trend-setting. So it is important to know how to handle this process and what the HR in its crucial and central position has to take into consideration by preparing implementing leading the certain target group (in this context blue-collar workers) through such a change in order to gain the best outcome. Furthermore, it is intended to examine how the role of HR changes during this process and what are their future tasks in regard to such a DL-system.

**Figure 18**: Summary of the most important aspects regarding the preparation and implementation (self-provided)
The implementation/Change process. Basically the HR has realized why a transformation of an existing corporate learning culture can have positive effects on their employees. DL no matter in which executions is already existing in quite a lot of companies but mostly reserved for white-collar workers who have points of contact or actually exhibit a certain degree of affinity relating to PC or other digital devices due to their day-to-day work. So implementing DL in the area of blue-collar workers who usually have less or even no experience in handling such devices or programs is definitely a different matter (HR 1 Z. 690).

Table 6: Citations regarding the implementation/change process (self-provided)

<table>
<thead>
<tr>
<th>Citation</th>
<th>Text</th>
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<tbody>
<tr>
<td>HR 1 Z. 690</td>
<td>“…dass scho dann auf’n Bereich dann drauf an kommt ob jetzt Angestellte oder Arbeiter dass da schon noch differenziert wird…san nu immer zwa Paar Schuach weil des is für mi scho sehr selbstverständlich und im Arbeiterbereich trotzdem neig…”</td>
</tr>
<tr>
<td>HR 1 Z. 37</td>
<td>“…kurzer Zeit die breite Masse erreichen…und des den koordinierenden Gruppenleitern und -führungskräften sehr viel Zeit nimmt…und zusätzlich is es so dass aufgrund der Tatsache dass nie jeder da is es a so dassd nie jeden erreichst und es is aber a wichtig dass des…jeder macht.”</td>
</tr>
<tr>
<td>HR 1 Z. 36</td>
<td>“…immer so im Hintergedanken kabt wo kennt uns wo kennt uns ahm ah a Lernsystem höfen wo ma söba erstens amoi vielleicht mit weniger Aufwand des betreiben kennan und aber auch gleichzeitig und des war für mich a immer wichtig mit am mindestens wenn nicht gleich guten Effekt…amoi a Bedürfnis und auch a ah ah der betrieblichen Führungskräfte ah des irgendwie organisatorisch administrativ zu verbessern ah weil de ham sehr vü Zeit verbracht mit diesen wiederkehrenden Schulungen ah ah und mit diesem Leid san’s immer wieder ah an uns herangetreten…”</td>
</tr>
<tr>
<td>E 1 Z. 550</td>
<td>“…die Dinge net deswegen macht weil man’s kann und weil’s cool is und weil ma jetzt weiß i net Digitalisierung macht oder sowas…sondern dass ma si anschaut wie macht des an Sinn und wo hab i denn jetzt ah welche Probleme um dann die entsprechenden Maßnahmen setzt und die richtigen Maßnahmen setzt ah um des entsprechend eben lösen zu können.”</td>
</tr>
<tr>
<td>E 3 Z. 234</td>
<td>“…nicht gleich flächendeckend ahm ein riesen Projekt aufzieht…sondern wirklich konzentriert ahm entweder auf eine Zielgruppe fokussiert mit einem bestimmten Thema sukzessive das aufbaut ohne jetzt ein mehrjähriges Projekt zu initiieren und dann eigentlich Leute äääh schon mit einem mit einer Masse mehr oder minder zu konfrontieren mit der dann alle überfordert sein könnten…Also eher diese Strategie zu fahren sukzessive Schritt für Schritt des zu implementieren natürlich nach orientiert nach Bedarfen die es im Moment gibt.”</td>
</tr>
<tr>
<td>HR 1 Z. 308</td>
<td>“…Schluss scho selber azipft dass ständig irgendwas net past…”</td>
</tr>
<tr>
<td>E 2 Z. 661</td>
<td>“…mehr den Menschen in den Mittelpunkt zu stellen und seine Bedürfnisse und weniger die Technologie anzusehen auch wenn da digitales Lernen steht es geht um Menschen die in ner Welt sind die sich extrem wandelt die extrem schnell sich wandelt das is das Neue der Wandel is eigentlich gar nicht das Neue sondern die Schnelligkeit is das Neue und mit dem einhergeht auch ne Unsicherheit bei den Menschen…”</td>
</tr>
<tr>
<td>E 2 Z. 290</td>
<td>“…die Toolfrage is eigentlich fast am Schluss zu stellen also man muss wirklich genau wissen was man eigentlich machen will und das was ich halt leider beim tool meistens erlebe ist dass eine Personalabteilung sagt „ich will meine Personalentwicklungsprozesse effizient abilden“ und dann wird die Toolfrage nach diesem Ziel ausgewählt…”</td>
</tr>
<tr>
<td>E 3 Z. 289</td>
<td>“…neben den Klassikern dass eine IT dabei sei eine HR-Abteilung…”</td>
</tr>
<tr>
<td>BC 5 Z. 93</td>
<td>“…von de Mitarbeiter aus und weiß net ob ob de da weiß Gott was Positives miteinbringen hätten kennan. Oiso i find dass des so recht guad gelöst worden is sag i amoi.”</td>
</tr>
<tr>
<td>HR 1 Z. 273</td>
<td>“…betrieblichen Führungskräfte…weil die san der Schlüssel zum Erfolg…”</td>
</tr>
<tr>
<td>E 3 Z. 442</td>
<td>“Wenn man amal mit digitalem Lernen startet kann es nicht sein dass ma jetzt so einmal hier einen Wurf macht und das war’s sondern es muss zu einer Strategie werden und Strategie heißt…dass i wirklich langfristig ah hier plane und immer wieder auch Inhalte Methoden Formen hier pflege um es wirklich in den Alltag zu bringen zu institutionalisieren… dass es einfach selbstverständlich wird. Aber des is a gewisse Bürde des is keine Frage…”</td>
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As a reason of that such implementation/change strategies have to be adapted to these predominant circumstances. A main reason for carrying out such a transformation is to relieve executives, save monetary and time resources, by creating a more flexible and independent process of learning. Such training is organizationally easier manageable, because it is up to the employees, who have to be (more) self-reliant (HR 1 Z. 37; HR, 2 Z. 40; HR 3 Z. 188; E3 97). In the case of this subsidiary an explicit demand was appreciable besides the advisement of a transformation in this regard (HR 1 Z. 36). Such a demand can be the initiator for the change process. Above that it has to be clarified if the implementation is sensible possible respectively to which degree (E 1 Z. 254).

Before further steps are initiated the decision has to be taken if DL-systems are individual or if it is a prefabricated system, which implicates no company-specific content. Although, this kind of system is less cumbersome and costly it mostly has no additional benefit for the company and its employees also with regard to their needs and its inflexibility (E 2 Z. 258; E 1 Z. 35; E 3 Z. 512). However, it should be necessary to react to needs by taking them seriously especially if they are incriminatory. Respecting these needs conveys appreciation and support on the part of the company. Furthermore, implementing DL-systems just because it is hype is not meaningful (E 1 Z. 550). This equally implicates that HR is not always the initiator of such processes but rather the party that reacts (E 3 Z. 580). However, if there is no direct demand due to dramatic changes based on digitalization or other factors an analysis respectively an evaluation is necessary to check whether these sectors exhibit enough innovation potential in order to implement such a tool or not. If the industrial production is perfected so that digitalization or alterations have no move in, it is senseless (E 1 Z. 732). For this and for the further processes specific expertise is inevitable - no matter if internal (if existent) or external. HR has to make sure about their implementation strategy especially beforehand to what extent this process should be carried out. So, another question is if the implementation of DL should be an area-wide or a successive implementation. The former could lead to an enormous excessive overstrain of all participants while a gradual introduction requires far more time and is additionally in correlation to the actually demand (E 3 Z. 234) which was actually the fact in this case especially due to the lack of experience. Latterly due to the rapid respectively radical changes and the fact that HR departments have limited skills and knowledge in this regard but also due to their possible rigid behavior and attitude towards their own readiness to adapt they mostly need external knowledge drafting such projects (E 2 Z. 584). In this case study the external experts were basically externs because they were plant-foreign although, they belong to the same concern.
In this regard depending on the corporate philosophy resources even play a decisive role because establishing internal competencies could devour huge monetary and time resources. Otherwise, companies nowadays are almost always cost-driven in order to stay competitive. So, persons in charge have to prove which path (of the process) is chosen (E 1 Z. 412). Acquiring external knowledge in turn implicates a dependency on third parties no matter in which concern (E 1 Z. 424).

A long chain of events and an enlargement of involved parties may lead to intricacies or even entail increased sources of errors (E 1 Z. 408). However, utilizing outsourced knowledge opens the chance to decrease the possibility of having become blind to shortcomings in company processes in order to gain new views. Especially intercompany collaborations have to be as transparent as possible among the collaborating parties. In the case of this specific case research this was not always given because shortages of manpower were neither included in the conceptual design nor deliberately communicated (HR 4 Z. 152). Lacks of capacity or insufficient (readiness to) communication mostly leads to significant troubles. They result in faulty implementation processes that lead to demotivation and frustration not just on the side of the employees due to (technological) problems but also on the initiator’s/responsible persons’ side due to additional expense and efforts (HR 1 Z. 308). So, one can state that in the first instance primarily the corporate philosophy plays a decisively role how the further process is going to develop.

After a possible evaluation of these circumstances the next step is the phase of the conceptual design of the strategy of the execution, which can be crucial for the subsequent outcome. Hence it is substantial that the approach is well thought out and that it includes possible unforeseeable factors and cases to play through different scenarios to be prepared for all eventualities that could accompany such processes. Such strategies have to incorporate alternatives to react more flexibly instead of being rigid (HR 1 Z. 257). This means that there should also be the chance to delay deadlines (HR 1 Z. 107) if it absolutely necessary in predefined exceptional circumstances. Otherwise important aspects - fundamental parts of the strategy - could be disappearing due to excessive demand like it was certifiable in this case. Failure in the course of such processes implicates damages ranging from banalities to drastic effects afterwards (HR 4 Z. 264). However, on the other hand it is significant to reflect the past (actions) in order to learn from failure improves subsequent processes. Consequently, processes can be arranged more professionally and in a more structured way (HR 1 Z. 362). Taking time and playing through several possible eventualities are essential in order to decrease the possibility of unwanted or even negative appearances because it is almost impossible to eliminate them all in advance - as already mentioned.
Losing flexibility within the process even could endanger the whole project so it is more important to respond to the needs of the customers/users (learners) from the outset because they are the most import factor. In other words humans have to be in the center of the contemplation (E 2 Z. 661). Everything should be led by this approach even the question of the tool itself which has to be answered in the last instance (E 2 Z.290). So there should be enough time available or focus considering the employees their environment/frame conditions and needs instead of rigid deadlines or strategies.

Without the acceptance of the users and their trust in DL-systems the whole project will not be as successful as intended. Equally to that egalitarianism within a company is not constructive because learning is an individual and not primarily a process for a target group (E 2 Z.315).

Further input of resources will be necessary because of the post processing in order to adapt these systems to the target group. The worst case would be a collapse of the whole project (E 2 Z. 124). The company has to honestly give the employees the feeling that DL is for them and that it is beneficial to them. One of the worker interviewees mentioned that the implementation of the EL implicates no benefit for him personally but rather for the company although, one of the HR managers mentioned that users had realized it. Therefore representatives of the labour forces should be included in this process. Although, there was a consensus regarding the compilation of the conception workshops ranging from members of HR, IT, specialist department (E 3 Z. 289), experts, or members of the work council (E 3 Z 291), another aspect emerged that should be taken into consideration in order to gain increased success due to transparency and clearness also concerning the (personal) data (E 3 Z. 256).

This can be seen as an appeal to invite a handful of employees in order to acquire additional knowledge and ideas that would support the implementation process (E 2 Z.161). Although, this was not the case, the DL-system gained recognition and positive feedback, which could be attributed to the corporate culture (HR 4 Z. 253) and the trust of the employees in the management. Beyond that several of the employees mentioned that they would not have been interested in such integration. They mentioned several reasons for that like e.g. not enough resources due to their degree of capacity utilization (BC 6 Z. 83), trust in person responsible (BC 5 Z. 85), or lack of interest respectively of required information knowledge (BC 5 Z.93). Just one of the blue-collar workers would have appreciated an expanded integration or employee participation (BC 7 Z. 67).

However, as already mentioned it is important that employees and especially elderly or deniers must be sensitized to gain awareness for appreciating such kinds of changes (BC 7 Z. 228).
So, in order to accomplish this communicating the potentials and benefits of DL-tool is rather constructive than refusing this step - because it could probably be seen as an additional effort on the part of the process group. Consequently, such an internal marketing campaign should be a part of the implementation strategy and not negligible (E 3 Z. 296). Furthermore, it has to be announced as soon as possible with regard to transparency so that there is no space for misunderstandings or myths (BC 9 Z. 30; BC 6 Z. 56; BC 8 80) that could eventually generate fear or uncertainty (E 3 Z. 300).

However, with regard to transparency and open discourse attention has to be paid to the timing of the announcement because it can be crucial and has to be strategically well considered. Proclaiming such a process without generated knowledge or information could convey own uncertainty and weakness, due to the own nescience and possible desultoriness.

Due to the complications and the resulting time delay/problems this communication process could have been kind of inadequate (BC 6 Z. 56) and could be improved, which was however, admitted by the HR people in power. On the other hand, it seems that there was no real communication strategy existent due to another statement of a HR staff (HR 1 Z. 223). Regardless, such an unstructured process could likewise implicate such dangers as the one evoked by implementation problems and is maybe far more a provocation to get in trouble due to confiding in hope. The reasoning of the HR was that employees had no clue about DL anyway so unnecessary communication would have generated no benefit (HR 1 Z. 220). Nevertheless, the shift work similarly bedevils such information processes. Certainly an additional systematic information process via info screens informative meetings etc. is probably a better measure than the previous internal conventions with the help of a sheet, which is on the noticeboard (BC 8 Z. 76). The main idea of the top-down communicating within the company via storytelling is that it should get people curious in terms of the change respectively DL-tool (HR 1 Z. 202). The strategy behind the accession process per se, which was intended for the initiation-process, was theoretically quite efficient because of the snowball system. The idea behind it was on the one hand that employees got an introduction/training in this new system by the CTL or colleagues while on the other hand it was required to do repetitions by introducing another colleague to the system (HR 1 Z. 237). Although, this method could have several positive effects HR got dependent on the employees and their willingness of cooperation (also due to the additional expenditure on the part of employees) their receptivity and comprehension. With regard to the last point there was a higher risk of passing misunderstandings and mistakes down to the colleagues (BC 10 Z. 59). Moreover negative attitudes that are referred from one colleague to another could result in a distortion that has negative influences on skeptics or even supports biased deniers in their negative opinions.
Aside from that it is not ensured that the order is executed as intended. Some of the interviewees mentioned that solely the CTL was their instructor. Some blue-collar workers (from the same department) even stated that there was nearly no instruction just the information that there will be a change in trainings. They were thrown in at the deep end. Especially this act should convey a feeling of support during the implementation respectively the change process (BC 10 Z. 49). The fears that have already been mentioned before or even a feeling of being left alone could be the result.

The other interviewees who mentioned a successful instruction especially those of an older age were happy about the provided help and support even though, they realized that it is not as complex as expected (BC 2 Z. 58). Even if there were still questions employees due to the corporate culture of supporting colleagues knew that they had the chance to gather the required information and help from others (BC 5 Z. 34). In the first instance, it can be stated that the CTLs are still the key to success (HR 1 Z. 273) because they are basically responsible for the process of instruction and its realization which implicates an abundance of work (HR 4 Z. 282) while the effect is time delayed besides their fundamental acceptance. Anyhow, informing the aggrieved party is essential for the whole process. Apart from that the meaningfulness and the efficient use of these tool are not given (headphones because of the noise learning in dwell times unlimited possibility of retrieving content [BC 6 Z. 191] etc.) due to the lack of knowledge on the part of the users. Nonetheless after the implementation is completed it is important to be aware of the fact that this is not the end of the project because such a DL is an iterative process particularly with regard to the administration, possible successive post-processing, and of course the content maintenance. In other words the project has to be kept alive (E 3 Z. 441). For this reason it would be good to obtain feedback continuously because of its potential in assisting a consistent improvement.

A DL-strategy is a project with a long-term focus mainly because this change needs time to be institutionalized and to get a part of the corporate culture (E 3 Z. 442). In order to guarantee this fact it has to be considered once more if the operational care is in-house or outsourced (E 2 Z. 607). These advisements entail quite a lot of questions that have to be answered (E 2 Z. 612). No matter to which decision it comes it must be well-thought-out because it is not just important to keep the project alive but also to serve a qualitatively high realization respectively content. - Otherwise it would be senseless (E 2 Z. 445).
It is the same complex of problems as before if competencies are outsourced the company has to cotton up to a certain degree of independence in quality practice and especially in regard to costs. Otherwise, if the way of the internal approach is chosen new skills have to be assembled besides the provision of additional resources because maybe the subject matter expert would not have enough time resources and knowledge to serve as a tutor (E 3 Z. 657) although, they could be ordered to deliver the content. Consequently, there has to be an implemented hub (E 3 Z. 660) or at least trained employees which are familiar with the treatment of these authoring tool and have the experience to develop didactic high-quality content so that employees feel certain that it is up-to-date and primarily correct (E 1 Z. 238).

Although, the whole process can be very extensive it offers the opportunity to generate an additional benefit for the company if everything goes well. By conducting such a change the HR has to be aware of their role functions and requirements in this context.

**Tasks of HR.** In this subchapter the main focus is on the role of HR in the implementation process.

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<tbody>
<tr>
<td>E 2 Z. 506</td>
<td>“…agil arbeitet nur da is ma eben heute normalerweise noch net in den Personalabteilungen meistens is wenn die IT vielleicht in die Richtung unterwegs aber HR noch relativ wenig…”</td>
</tr>
<tr>
<td>E 2 Z. 502</td>
<td>“…Design Thinking is eine eine Möglichkeit heute…dass zunehmend die Personalabteilungen auch agiler werden auch mit Methoden wie Scrum…in allen agilen Umsetzungen ist der Kunde immer Teil der Umsetzung.”</td>
</tr>
<tr>
<td>E 1 Z. 642</td>
<td>„...geht auch zu wenig auf uns zu ah um zu sagen da gibt’s die Spezialisten ah und mach ma irgendwas miteinander...De sagen macht’s und wenn jetzt aber des Kompetenzverhältnis ein anderes is...durch diverse Umsetzungen und dort fehlt die Kompetenz weil die Umsetzungen fehlen...hat sicher erkannt dass da was dran is aber ma hat glaub i nu net wirklich den den Einblick was es is…”</td>
</tr>
<tr>
<td>E 2 Z. 509</td>
<td>“…Funktionsverständnis das ich eben dort kleinschrittiger werde schneller werde flexibler bin ah dass ich auch viel schneller auf Herab ah Herausforderungen im Markt von der Geschäftsführung reagieren muss und kann ah und das sind ziemlich heftige Veränderungen für HR weil man doch im HR ne gewisse sag ich mal Stabilität bis dahin auch hatte…”</td>
</tr>
<tr>
<td>E 2 Z. 513</td>
<td>“…allerdings der Druck wächst meistens wenn halt die HR-Abteilungen sehr stabil gewesen sind und selber net wirklich sich verändert haben…”</td>
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<tr>
<td>E 3 Z. 588</td>
<td>“…Überblick behalten Vermittler sein zu den Fachabteilungen, Connector ahm Projektleiter...HR ahm muss sich in diesem Foi wahrscheinlich in Kooperation mit ana Kommunikations- oder Marketingabteilung über des Bildungsmarketing Gedanken machen…”</td>
</tr>
<tr>
<td>HR 1 Z. 585</td>
<td>“…Aufgabe zum an die administrative oiso wenn ma jetzt vom laufenden Prozess reden die die administrative Abwicklung Ansprechpartner wenn’s Probleme gibt und im Vorfeld natürlich ah an tz an Mitarbeit an der Konzeption... wird er immer zu HR gehen und von uns erwarten dass ma ois machen…”</td>
</tr>
<tr>
<td>E 2 Z. 487</td>
<td>“…diesen Wandel zu begleiten und da eigentlich die Mitarbeiter fit zu machen für die neue Welt”</td>
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</table>
As it was mentioned before that HR has recently not always been the initiator of such DL-systems (E 3 Z. 580) it should still have the power and legitimation within companies to trigger such a project. Though depending on the corporate culture it was stated that there are lacks in the competencies and skills due to on the one hand radical changes that require interdisciplinary competences and on the other hand due to rigid HR philosophies that hinder adaptation to all kinds of transformations. In other words this means that HR-structures are sometimes not agile enough to fulfill these requirements (E 2 Z. 506). By reason of that HR has to acquire such needed competences. It has to deal with new methods of operations and approaches like e.g. Design Thinking or Scrum whereas the customer (learner) of HR is always in the midpoint (E 2 Z. 502).

In the case of the voestalpine Stahl GmbH already developed competences are generated to a certain degree. The problem here is basically that inflexible corporate structures do not facilitate the abolition of the proportion of hierarchy and the internal roles within companies. The result of such structures is quite the contrary, which means that they bedevil collaborations, which could trigger positive learning effects on both sides. The urge of legitimization and the naturally developed hierarchy (E 1 Z. 579) probably hinder not just the communication (E 1 Z. 661) but therefore collaboration, too. This is especially the case, if the competences are unequally distributed among the strategic and operative corporate level, which has more competencies due to their task area and state of knowledge (E 1 Z. 642). Consequently, an exchange also with the help of e.g. a job-rotation (E 1 Z. 375) has to be initiated particularly because the departments within a company should have the same goal - to be more efficient and innovative in order to advance the whole institution to stay competitive in the globalized battle. Failing this they are working against each other instead pulling together.
The HR-managers see themselves as initiators of the project besides the responsibility of confidence-building measures whose role did not change during the whole process (HR 4 Z. 418). However, the understanding of the own (HR) role has to be changed in order to react more flexibly (as it was mentioned in regard to the implementation strategy) in order to react on internal as well as on external shifts (E 2 Z. 509). The less HR is willing to react to this transformation in order to break out of its habits the more the pressure for alteration increases (E 2 Z. 513) especially because of the role model effect (E 2 Z. 521). Due to the fact that HR has such an important role within a company it is seen as a role model. So it has to act accordingly. In many cases HR is a connector among different or nearly all departments of a company alike to the management. HR has to bring everything together (E 2 Z. 481).

Especially in such a kind of change process the role of HR is very central because as a mediator respectively organizer equally has to keep the overview between specialist departments, project managers, marketing- and communication departments (E 3 Z. 588), management, customers (blue-collar workers), and potential experts. This is equal to the understanding of the roles in this case study because HR is responsible in the first instance for the participation in the process of conception but also for the administrative issues and acts as a “contact person” (HR 1 Z. 585). In order to support the employees during this transformation process HR has to accompany or at least has to assure an adequate support in order to lead persons concerned through it (E 2 Z. 487). To do so HR has to get in contact with the employees, too. They have to learn the needs and requirements also with regard to the employees’ frame conditions (E 2 Z. 551). HR in its central mediator position has to get involved with all participants/representatives and especially with the target group (E 2 Z. 554). In order to generate such confidence building actions that were mentioned above HR has to be more sensitized, too in order to understand concerns and needs. According to one of the experts HR has to assemble three competences among the staff:

- Handling the change and the accompanied uncertainty
- Handling the process of learning with DL-tools and systems
- Handling the change due to the topic of DL in a team

(E 2 Z. 668)

Another main task in this process is that HR has to legitimize such projects and the costs involved in front of the management - the purchaser (E 2 Z. 480) so it should be able to measure the learning progresses (E 2 Z. 416). The justification has to be executed before the process is initiated during it and especially afterwards.
Financial organisational and administrative expenditures have to be comprehensible for the management also because of its other task - keeping DL alive. So, systematic data collection especially in form of formal learning is necessary (besides informal learning). HR in its central control/initiator position has to assure that the project lives on by initiating further and especially pursuing projects in this regard (E 3 Z. 621). Ensuring such continuative processes evaluations have to be implemented to gain feedback. In this case these processes were not systematically conducted. On the one hand, the HR relied on the CTLs to obtain feedback - so once more a dependency on someone’s willingness to execute this process. This however, could mainly be ascribed to the lived predominated corporate culture where employees are not shy in giving feedback (HR 2 Z. 123). On the other hand, technical problems, which are still occurring from time to time, would hinder efficient feedback for further development because HR is aware of some errors in the usage so it would have no effective sense in obtaining feedback (HR 1 Z. 339).

This exhibits another influencing factor that hinders the whole process aroused potentially by technological problems and a rigid implementation process. As mentioned above some of the same errors appeared once more so this could be ascribable to the missing evaluation process respectively feedback that was buried in oblivion due to them. These recurring mistakes that should not occur because of the additional expenditures that have to be invested and the bad image of an unstructured process that which is mediated can harm the preservation of DL.

In almost the same manner it is important that HR maybe has to adapt its role depending on certain occurrences like e.g. testing and proving due to its responsibility (HR 1 Z. 601). So it is possible that because of unpredictable events the role has to be adapted. HR as a tie due to their central, steering, and organization position has to deliver the content depending on the strategy from one party to the other or at least organize the transfer besides bundling all involved parties together (E 3 Z. 606).

With regard to the content care it depends if it is outsourced or not. An additional option respectively intermediate solution would be that internal authors are rather trained for smaller changes and that comprehensive changes are outsourced (E 1 Z. 723) like it is the case and in the parent company the voestalpine Stahl GmbH. This opens up at least the alternative to guarantee topicality and quality (E 1 Z. 671; E 2 Z. 582; E 1 Z. 223). Additionally, it is easier or rather faster to implement nuts-and-bolts real life cases in conveying the mediated content (BC 5 Z. 196). Above that, HR and their partner departments could solve technological problems more quickly based on potential user problems or changes of the content due to an offered local support.
This implicates a certain independence from central (or external) institutions in the administration and guarantees sufficient and especially fast enough support (BC 5 Z. 117). With regard to participating in producing learn videos there are different approaches. While some of the blue-collar workers and foremen were of the opinion that it would not be so good if employees were involved experts believe that this could be a chance to increase commitment to DL but also motivation due to the personal environment and connection (E 3 Z. 155).

**Summary.** The main statement that can be accentuated in this chapter is that the main focus should be on the humans. The question with regard to the tools should be answered in the last instance because of the necessity in supporting the needs and requirements based on the predominated circumstances and frame conditions of the workers (E 2 Z. 663). So, an evaluation of factors like e.g. frame conditions but also needs and meaningful demands are important in order to act as efficiently as possible. This evaluation has to be included in the strategic planning of the implementation process. During this process the involved participants have to determine the aims the course of action and the composition of the whole process also including, if it is a successive implementation based on demands or, if it is an overall and maybe overburden one. Above that, such an implementation approach enables the procession of the findings based on feedback evaluation and self-reflection - if this was carried out. As a consequence, further implementations on a successive basis can be performed in a more efficient and an error-free way. Reflecting with the help of evaluations can trigger the ability of learning from errors. On the other hand, an extensive one does not permit to learn, because of one main completion process.

Before but also similarly during the implementation process communication and transparency are fundamental in informing participants in order to decrease possible distrust denial or even fear. Users have to be sensitized to be more open-minded in an open discourse respectively a dialogue. They should have the feeling that this change causes additional benefits for their daily work routine for themselves and that the transformation is performed just for them. However, this transparency should be at the right time, which should be determined in advance, preventing exposure and uncertainty. For the implementation process per se it is significant that HR changes its principles of operations influenced by new flexible and agile courses of action in order to fulfil novel requirements that go along with such changes. Doing so on the other hand, requires equally new definitions of HR-roles that better fit these demands.
Consequently, HR has to adapt an own understanding of functions to this new challenge ranging from connector, communicator, organizer, promoter, role model, adjustor, decider (e.g. insourced/outsourced) to initiator, contact person, and carer (HR 1 Z. 584, HR 4 Z. 417, E 3 Z. 588). This palette of different functions should be expected although, they could be challenging. On the other hand, the generated skills of this process causes HR an USP within the company and widely strengthens respectively legitimates its position.

Furthermore, it is important that HR respects the importance of flexibility during the change process in order to react on meanderings of the tended schedule respectively plan elicited by sources of irritations like technical problems or other implementation problems (refusal time delays or delays based on additional expenses like effort or monetary investments). Ignoring or neglecting disturbances could harm the whole process simply temporally as well as in long-term with far more drastic impacts whereat they probably could not be categorized. So incidents have to be treated equally.

Based on their experience and personal opinion the interviewees had different views concerning the outlooks and development of DL in future.

### 4.4. Outlooks

<table>
<thead>
<tr>
<th>Outlooks:</th>
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<tr>
<td>Various topics dependent on position</td>
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<tr>
<td>Simplicity in all concerns is important</td>
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<tr>
<td>Decreasing of fears</td>
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<tr>
<td>More entertaining</td>
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Figure 20: Summary of the most important aspects regarding outlooks of DL (self-provided)

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Quote</th>
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<tbody>
<tr>
<td>BC 6 Z. 285</td>
<td>“…dass ma an Chip implementiert griagt…”</td>
</tr>
<tr>
<td>BC 4 Z. 50</td>
<td>“…i hoff es kummt mehr.”</td>
</tr>
<tr>
<td>BC 7 Z. 248</td>
<td>“…wie du a Facebook-Profil hast wirst so a eigenes voest-Profil ham und über des wirst du dann ois abschliäfl…”</td>
</tr>
<tr>
<td>HR 2 Z. 325</td>
<td>“Ohne a guade Ausbildung Fortbildung oder Weiterbildung wird gar nix mehr geh wirst kan Beruf mehr griang oder Arbeit schütz i amoi.”</td>
</tr>
<tr>
<td>HR 4 Z. 473</td>
<td>“…Datenschutz is a großes Thema... bin i sehr optimistisch oiso i hab ka Angst vor dem…”</td>
</tr>
<tr>
<td>HR 1 Z. 679</td>
<td>“Oiso von dem her glaub i dass diese dieser Entwicklungsstand oid und jung und gewisse Hemmschwellen immer geben wird nur san’s dann scho ganz andere Themen.”</td>
</tr>
<tr>
<td>E 2 Z. 661</td>
<td>“…Menschen in den Mittelpunkt zu stellen und seine Bedürfnisse und weniger die Technologie…”</td>
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</table>
This chapter examines the possible outlook based on the answers of the interviewees concerning the question “imagine you are in the year 2050 how does the process of corporate learning look like due to digitalization global changes and other influencing factors? What are your wishes how would you create the future if you had the power to do so?”

Summarized the statements were quite intermingled which means that they cover the full range of feelings and attitudes. One can state that personal opinion in regard to this topic primarily correlates with the age and on the other hand, on the level of education respectively interests and technological expertise of the particular person.

Generally speaking these four indicators can actually be seen as coherent in some way. They had a completely different way of learning and learning matter (BC 9 Z. 176) so it is no surprise that they probably have little or (almost) no expertise in these new technologies and learning approaches if they are not interested in them or because of few occupational boundary points (BC 9 Z. 152).

**Blue-collar workers.** Basically fears about the future and the blue-collar workers’ aftermaths due to technological changes were merely mentioned by the workers. Some of them were down on this topic because they are seriously afraid of being replaced by machines like robots (BC 9 Z. 240) and PCs or even treated and seen as robots with implanted chips or USB ports (BC 6 Z. 285). Of course, it is hard to forecast what will happen in 2050 but some of the statements were filled with fear maybe because of the abstract topic due to the education level and the interests. The main fear in this regard was that the interpersonal contact will disappear and that technological devices will take over the communication and work routine/way of learning because of the global pressure of cost reduction. They know that digital transformation is not negligible or even stoppable and that it is necessary to go digital in order to stay competitive but the human contact has to be kept up. Furthermore, one worker plead that an unnecessarily complicated content or access is not constructive. Especially in terms of efficiency so the party responsible should respond to the certain group of users.
Younger interviewees on the other hand, reacted more objectively and also enthusiastic concerning this issue. They are looking forward to having the possibility to learn intensively with the help of the DL approach. So they are hoping that more of these new learning tools will be implemented (BC 4 Z. 50). Similarly they are concerned about education gaps (BC 4 Z. 207). Most of the time they brought up constructive approaches like a boosted use of technology due to innovations (mobile phones VR holograms etc.) that helps to learn more efficiently. Furthermore, they could imagine a corporate internal Facebook (BC 7 Z. 248) for a formal and informal learning approach which means that the system reminds the learner to finish the training soon enough but otherwise also opens the opportunity to exchange knowledge information and to stay in contact. This reflects again that the younger generation is willing and used to learn collaboratively and informally with the help of the Internet. Consequently, it will not be hard to persuade the younger generation from using these learning approaches due to their positive characteristics. No disparity was discernible when they talked about an easy access and uncomplicated handling the simplicity of the content and the possibility of a certain level of personal communication within the workforce. Summarizing it can be stated that the opinions are extremely divided which is caused by age. However, all of them agree that humans have to be in the center of attention.

**HR/Superior (foreman).** They believe that DL but also the classical learning approach will become more individual and tailored to the target groups although simultaneously humans will gradually disappear in the background. Furthermore, they are afraid (although, it should not happen) that employees with poor or only little education or (advanced) training would be faced with difficulties and have to struggle in order to find an employment (HR 2 Z. 325). However, those who are working with such DL-tools should be able to do so humans should be in the centre that is why DL should be adapted to the actual needs. On the part of the HR another important issue is the protection of data privacy which has to be adapted to the predominant circumstances and topics that accompany digitalization like e.g. Big Data or stored data from examinations etc. (HR 4 Z. 473).

However, they even agreed that technological progress would contribute to a further change in the (current) learning approach also in order to ensure an accelerated learning procedure respectively an area-wide acceptance of all participants (HR 4 Z. 462). So, it will be unimaginable for the future generations how we are currently learning (HR 4 Z. 470). On the contrary, another HR-officer is of the opinion that this discrepancy between old and young will never disappearing but the younger generation will always be more open-minded compared to the older one. According to this HR
manager there will always be an inhibition threshold depending on the particular topic (HR 1 Z. 679).

The statements of this group were more objective rational and matter-of-fact oriented than those of workers’. This could be based on their expertise, which is rather expressed in confidence and trust than in fear.

**Experts.** Compared to the other two groups the experts were the most objective ones due to their overall position (and probably because they are not affected by it directly). They mentioned, too that technological development will trigger and influence future learning approaches, whereat employees should be in the center of interest (E 2 Z. 661). Therefore learning has to be more individually relating to situational problems and interests. Beyond that also a certain respectively increasing degree of interconnectedness will be crucial by reason of the increasing complexity of the future issues (E 2 Z. 634). As already mentioned above, the process of learning can be designed in a more efficient way, by improving it due to rationalizing of unnecessary knowledge, which is easily available due to an e.g. digital knowledge support. Learning details or unimportant content like it is still practiced in school or in other educational institutes will not be productive anymore because ties and interdisciplinary skills will be required in order to create sustainability. Such a support makes capacities available in order to set other focuses (E 1 Z. 765).

Technological alterations support and in the broader sense facilitate learning-on-the-job so that the learner is able to utilize the currently learned substance with a decreased chance of forgetting it (E 1 Z. 520). Sensitive learning should not take place in specific rooms but rather everywhere - directly where it is needed (E 3 Z. 777).

Another possible (additional) way of fostering learning which was equally mentioned by workers is to combine learning with an entertainment factor (E 3 Z. 747; E 1 Z. 141) like e.g. with the aid of quizzes or technological innovations (HR 4 Z. 357). Learning in combination with entertainment is an approach that conveys fun, which again enables an easier access to the mediated content.

**Summary.** Basically it can be stated that the reaction concerning the involvedness in the result is an interrelation between the certain interest’s skills or rather educational background and the age of the workforces. As a consequence this rather leads to increased emotional reactions, as it was discernible during the interviews with the workers. Learning something new or even to improve (technological) skills goes along with the capability of mental imagination and the interest of gazing beyond one’s own nose. Consequently, abstract topics could be understood in a better way.
Developing an accordingly corporate learning culture could help to prevent and decrease such emotionally loaded situations and potential fears. Furthermore, it is important that the future workforces are not be seen as or similar to a robot because it is a human being so the technological changes should support them in their way of learning in order to develop skills for situational problems directly in the situation of need.
5. Discussion

The change of the training within a company is expressed in many ways. In many cases relatively the same reasons in literature and practice are ascertainable although, some differ anyway. Among other things the independency of time and location due to a personalized login the independency in learning due to self-reliant apportionment, self-direction, infinite call-off orders, and the customized mediation because of multimedia application and the qualitatively high respectively structured and up-to-date learning approach are frequently mentioned reasons for DL. Above that, the interviewees added that mediating content in various forms creates a personalized, individual, and especially flexible learning experience on the basis of heterogonous needs, interests, and time resources, which is far more interesting and suggests an appreciation on the part of the blue-collar workers. Nevertheless, it involves more effort, because learners have to deal with the content on their own, while it could lead to improve learning results.

Especially the multimedia processing addresses different learner types (Figure 11 [left side]), which are explained and categorized by Freith et al. (2015, 82). They subcategorise this dimension in three main groups like kinaesthetic, visual and auditory. On the other hand, learners should be sensitized as far as possible being able to cope with such new autonomy respectively freedom (Bauer & Philippi, 2001, 151) besides the avoidance of developing a feeling of being left alone. Especially these two contrary aspects - autonomy and the feeling of being left alone - is a balancing act.

The interviewees mentioned that DL even suspends hierarchy within companies. Furthermore, education gaps could lead to problems, because employees do not have the same level of knowledge, although they have the chance to. Education gaps could hardly be wiped out for employees with less education or decreased willingness to continue education. This on the other hand, implicates that mediating information and knowledge can have effects on the position of superiors due to a possible reduction of their expert power. By reason of that and because of their task of supporting their employees (e.g. providing the opportunity to learn in terms of time premises or training in usage) in using DL they have a particular key role.
While literature and experts frequently claim that informal learning supports a situational learning approach in order to learn directly in the working process (learning-on-the-job) it is also due to informal knowledge exchange (collaborative learning), which offers the opportunity that learners could act as teacher, too or other approaches triggered by development in technological innovations to be able to solve situational problems by immediately applying the learned knowledge. Although, several interviewees especially elderly fear that the interpersonal contact could get lost because of technological developments they still support collaborative cooperation in a broader context even though these ways of collaboration are different or new compared to former ones (Haufe Akademie & Crossknowledge (2015, 8). (Informal) face-to-face contact has several borders like reachability especially influenced by shift work or time differences (internationally operating companies) while it can be faster in certain situations or easier for e.g. with explanations. In this regard combined with the rising number of participants Wache (2003, 4) explains that trainers in most of the cases disregarding virtual classrooms or videoconferences may be faced, as already mentioned, with the problem of losing the possibility of influencing or even evaluating individual behavior. The informal learning approach would link working and learning. So some authors (like Stettes et al., 2017) and also interviewed experts call formal education into question because it could be seen as an obstacle for further changes due to its naturally given boundaries and the fact that borders of learning and working are blurred more and more. One expert is of the opinion that learning is working and vice-versa also with regard to the 70-20-10 approach. Consequently, it would not be expedient to invest resources in just 10 % (formal education) of the whole learning journey. A digital Knowledge Support would help creating retrievable content so that the focus of learning is more on essential knowledge and would help supporting learning-on-the-job. HR-managers however, claim that now in the first instance periodic trainings are more meaningful in digital form than informal learning due to two reasons.

The first one is that such trainings tend to be easier (and cheaper) in editing and that especially after the change is executed people have to be brought close to this new learning approach in a steady way otherwise they would be overstrained and would probably have no clue what to do. For example they would have to search for the information and would have to decide whether it is suitable for a certain situation or not. They are not used to such a course of action. Furthermore, formal trainings are guided and controlled. Although, a certain freedom within a DL-system is appreciated it would be, too much and probably would generate a feeling of being left alone.
The second main reason is that some training is quite specific with regard to the topic so the cost factor is not in relation to the outcome. Widespread laid-out trainings for achieving qualitative outcomes in a rather brief time frame for a big crowd are consequently, more efficient in terms of a business point of view which is mostly a cost-driven business strategy. Above that, formal learning approaches can be analyzed more easily (Learning Analytics) because of automatically examinations without the need of a reviser. In turn these figures can be used for argumentation and legitimations in front of the business management. Learning is the process of acquiring and processing information in order to generate mental structures based on knowledge ability and feelings (Wache, 2003, 4/5). Without any examination this mental process is hard to measure. So Learning Analytics respectively the evaluation of the learning progress enables reviewing and identifying not just the results of the examinations but also gives hints for further support (of learners) or even for further developments and improvements in order to keep the project alive. They can gradually be adapted based on the learners’ needs. Another option in gathering information is with the aid of feedbacks, which actively suggest learners an interest in their opinions and recommendations because they are “practical experts”. By and by they have knowledge in using DL because they are those who (should) perform in their daily work/learn routine. So, feedback could help to improve DL, instead of integrating all workers in the first place, due to fact that this topic is quite abstract to them.

However, further advantages regarding cost factors mentioned by e.g. Freith et al. (2015) Böhler et al (2013) Batalla-Busquets & Pacheco-Bernal (2013) are a minimization of lost working time due to its time independence lower travel expenses decreased opportunity costs development of competences that do not require external support for e.g. servicing machines (as mentioned in pre-interviews). Due to the possibility of learning whenever the learner wants to opens up to learn especially in dwell times so machines do not have to be switched off. This implicates further savings regarding productivity compared to former learning approaches. Above that, superior, who had to hold lessons and trainings besides their daily business are relieved because of decreased organizational and administrative efforts. However, these savings are noticeable with a time delay also caused by initial investments that are probably high.

Furthermore, due to the change in training learners have to deal with the content on their own which correlates with an improved learning effect. This was the most frequently mentioned change of learning by the interviewees. In literature it was stated, too besides the reason that learners have the ability to plan their own portioning of the content.
Other participants, who attended classroom trainings, too were no more able to negatively influence learning habits. Above that, learners were not dependent on the motivation or time resources of the certain trainers. The flexibility that correlates with this way of learning is caused by the possibility of smaller modules and pausing the learning process. In addition the personalized login enables them to learn not just whenever but also wherever they want. So they have the flexibility to choose where they want to learn based on the predominant circumstances, which have to be taken into consideration especially in an industrial production operation. Implicating all kinds of frame conditions ranging from plug-ins bandwidth technical problems (Wesp, 2003, 176) noise distraction due to colleagues dust etc. (interviews) is fundamental for creating and developing an appropriate and efficient learning tool. Above that, such consideration demonstrates an appraisal of users and their working conditions they have to deal with every day. Frame conditions in terms of corporate guidelines should be adapted to alterations, which are based on technological developments (e.g. mobile learning although, mobile phone ban) because otherwise misunderstandings and non-understanding are the result.

Alike Bersin et al. (2016, 10) the interviewed experts claim that HR should create “experiences” rather than learning programs. Other interviewees mentioned that a form of competition is more motivating. Nevertheless, the competition should be in a formal context because otherwise it would not gain additional benefits concerning learning progress. Other forms of experience and entertainment should equally generate rather a kind of learning motivation among learners. Motivation could be increased with the help of a playful way so it is rather an intrinsic motivation than an extrinsic due to the enjoyment (Vernau & Hauptmann, 2014, 13; Simões et al., 2013, 348). Although, this was rudimentary the case due to videos animations and other forms of mediating content there could be further improvements. However, although, entertainment is good the handling of the tools and systems should not be, too complicated. An easy handling and the possibility that DL is straightforwardly accessible to everyone are essential for using it because otherwise a successfully application is not given which correlates with the readiness of the staff to use it actively according to Welling et al. (2016, 8) respectively the interviewees.

Additionally it should be ensured that the content is comprehensible. It should be as easy as possible, so that all users are able to understand it. According to the interviewed workers first of all especially elderly employees had problems although they realized little by little that it is not as complicated as imagined. The change in their opinion can be related to the introductory training provided largely by colleagues and superiors depending on the instruction and corporate culture.
These trainings should be individually related to the certain knowledge and skills of the person because of the central position humans take. In this regard it has to be respected that HR is once again dependent on the CTLs because without their commitment and interest it could result in a not adequate mediation of the intentions and utilization of the DL-approach. So they have to be instructed in an intensive way. Contrariwise external professional trainers could be confronted with a certain degree of denial due to a lack of trust respectively an increased discomfort on the part of the users. On the one hand, they tend to help decreasing fears and uncertainties among (elderly) staff. They more tend to accept such an alteration, which in turn results in the success of the project due to the readiness to actively, use DL (Welling et al., 2016, 8). On the other hand, an additional benefit could be generated, by to implicating technological devices in trainings, because learners get used to them. Evaluating these trainings could help in generating knowledge for further developments and adoptions of the system. Furthermore, even deniers can be influenced in order to change their mind by promoting their advantages and getting in an open discourse with them at the right time. Transparency and an open communication can be used in order to generate a positive effect on them. This implicates respecting their needs and requirements, too. If it is not possible to influence them it has to be at least acknowledged although, further active actions have to be established achieving this goal. The importance here is that they have to use it anyhow so there should be at least a certain willingness because according to Pelster et al. (2016, 58) all in all it is not just an episodic event but rather a continuous process with the focus on the long run. The willingness for a change, which is identified as the key for success of all participants, has to be existent.

In order to implement DL successfully several things have to be respected. Reasons and demands that arise for DL have to be identified because introducing DL just because it is trendy would not generate additional benefit in the long run - neither for employees nor for the company itself. Blindly following a new hype is not expedient. In production areas or working processes with no appearing changes or innovations an extensive respectively all-embracing introduction of DL probably would not be constructive because of its little demand. In this case other contents could be mediated so evaluating analyses have to be conducted in order to adapt DL to certain situations and demands (at the beginning). In literature it is named as the analysis of the current situation. These analyses incorporate factors like current corporate learning models, users, resources, processes, and of course the predominant frame conditions (Haufe Akademie & Crossknowledge, n. s., 56). In this
regard it should be reconsidered if DL is implemented based on these demands and therefore successive or if it is an extensive implementation process.

Introducing DL little by little provides the opportunity of a learning process due to evaluations and feedbacks so that errors or delays could be avoided which eases the marketing of such systems. On the other hand, the process could drag on due to its iterative successive process. However, in order to reach the aim of the DL strategy HR has to know the path (Haufe Akademie & Crossknowledge, n. s., 9).

In both cases high investments have to be made but an all-embracing process involves potentially higher post processing costs and the possibility to overburden all participants especially if no experience is existent. So this decision is among other things dependent on the allocation of resources also based on the executed analysis. These intended invested resources and the corporate culture are decisive regarding further decisions like e.g. implementing a prefabricated DL or an individual corporate specific individual DL or if expertise is generated from internal or external sources. Building up necessary competences could require not just money but also time resources respectively a distortion due to operational blindness. In contrast acquiring external expertise corporates extradite themselves because they emit their power position due to their dependence. This probably tends to result in a distortion of the original plan and equally to dependence in monetary aspects willingness in collaboration actual expertise and resources on the part of the outsourced knowledge source. Above that, building up internal competencies or exchanging knowledge could be hindered due to discrepancies among divisions and departments within the company especially if knowledge is unequally distributed (among strategic and operational departments). They could have the feeling of a must-see in defending their own position or in legitimating it probably caused by rigid corporate structures and no interest in a change.

The evaluation and analysis of users and their needs should be taken into consideration, too. Showing consideration and reaction to requirements, expectations, and needs on the micro-level is as important as on the macro-level (Vernau & Hauptmann, 2014, 5). In the end it’s the customers who have to work and learn with this DL-tool. They are a not just a heterogeneous group in regard to learning, but also due to their various needs, knowledge skills, and expectations. Egalitarism is not expedient so this stakeholder group, which is identified as customers, should not be ignored in conception workshops. HR has to look for a striking distance to the employees in order to prime them for the change or to gain insights in their needs demands and requirements. HR has to
convince learners that DL is mainly to target benefits (for them). This probably leads to an increased acceptance on the part of the employees. According to Ulrich’s model (1997) these are two subareas of HR’s roles.

Nevertheless, as mentioned in the interviews but also in articles like Haufe Akademie & Crossknowledge (n. s.) in order to guarantee a digital support in learning the focus should be predominantly on the humans and not on technology. Technology should be primarily implemented to support the users in an assisting flexible and professional way. So, as a consequence it can be stated that there is no generalized master plan for the implementation (Neubauer, 2016, 2). However, the difficulty here is that the blue-collar workers have, too little interest available capacity besides their daily work or at least not sufficient knowledge which correlates with a lack of interest personal attitude age etc. so that they are of the opinion that they could not generate an additional benefit. This topology is mostly, too abstract for them. As a result of that they confide in the parties’ responsible expertise, which is also an aspect of culture due to the predominant internal trust among each other. In other words this means that the party responsible has enough trust that superiors execute their order while blue-collar workers have enough faith in managers HR and other strategic departments. In dependency of the corporate culture they believe that premature information is enough. Such a communication process or even an open discourse should be though right in time after clarifying all important aspects guarantee enough knowledge to increase the confidence on the part of the users. Furthermore, transparency could decrease fears, unawareness, and uncertainty that go along with ignorance. Some elderly workers fear that personal contact is replaced or even that they are seen as robots or machines. Moreover, it seems that younger interviewees tend to be more open-minded respectively liberal compared to their older colleagues. They have realized that without continuous learning job opportunities are decreasing, which was especially mentioned by HR/superiors. Workers are aware of the fact that learning during the working life is more and more important than 20-30 years ago, where innovations were slowlier. Older workers are afraid of technological innovations so they see no coexistence due to their antediluvian approach regarding learning and advanced training. Besides their missing interest in such innovations they possibly do not see the importance of lifelong learning whereupon this is probably caused by the social context. Furthermore, they are not interested in such an incremental transformation, because they are used to certain activities. This aversion to changes could also be attributed to a lack of interest in transformation, due to the approaching pension. A discrepancy of the generations will always be picked out as a central theme. So a residual risk of a certain refusal has to be included in the strategic planning of such processes. Due to the differences of generations of those changes are not
only typical but also natural whereas these changes tend to be more frequent and faster. Summarizing, based on statements, it can be stated that the lived corporate culture has a significant effect on the implementation strategy.

Another aspect in this regard is the content maintenance. This process is dependent on the culture respectively on the guidelines of the management, too. Equally to the before mentioned actions it can be outsourced as well or it is internally served via authoring, tools. Another option would be the contribution of blue-collar workers in the preparation of the content whereas opinions are divided because some believe that it would increase commitment among all participants while others think that it will not be possible due to scare capacities or interest.

According to Stettes et al. (2017, 13) companies have to create more flexible organizational designs concerning the field of training and learning. So the same flexibility is requested for the implementation process respectively its strategy in order to not only to react faster and more flexibly but also to be basically capable of reacting to unpredictable events. Evaluations and analysis probably uncover potential risks and obstacles (Haufe Akademie & Crossknowledge, n. s., 9) that could help determine such events. By conceptualizing the strategy various scenarios should be played through so that predefined measures can be arranged like e.g. delaying deadlines or switching to alternative strategies. Otherwise the further process can be harmed or influenced due to entailed errors or problems caused by e.g. time problems or neglecting important actions that go along with inflexibility. So, maintaining flexibility and the possibility to react fast and efficiently enough is essential for success.
While, the HR role model of Ulrich (1997) (Figure 13 [above]) has parallels to the role of HR in the context of DL it has to be adapted. So, the four aspects of Ulrich’s model are applicable to the perspective of the mediator between e.g. the participating parties respectively employees and digitalization has to be complemented according to Bersin et al. (2016, b. 10) respectively experts and HR. Besides the role its’ usual methods of operation and procedures have to be transformed, too. On the basis of open-minded approaches rigid structures and processes have to be transferred to more flexible respectively agile efficient generating measures. Over the last years a shift in competences but also among departments was noticeable which could be related to these rigid operating approaches. Due to flexibility of organizational structures (and an increased willingness for cooperation) DL initiators are not basically IT or even HR anymore (Haufe Akademie & Crossknowledge, n. s., 13). Depending on the corporate culture new competencies has to be built up or if only possible to a certain degree tasks have to be distributed and assigned on the basis of the competencies and skills. Doing so various internal stakeholder groups of the different departments have to be able to collaborate gaining increased corporate performance. Especially HR in its role as connector should be able to do so but also because of being a role model (in all respects). The role model of Ulrich (1997) illustrates why HR has such a central role. Because of its four main tasks which are quite contrarian it’s strategic and operative approach the purviews are extensive. On the contrary this could lead to problems in the competence development because of excessive demand and heterogeneous operation fields like e.g. organizer mediator contact analyser administrator justifier (in front of business management) protector of collected data etc. However, during the implementation process, which is successively, executed new competencies can be assembled. This tends to result in a strengthening of the own position within the company due to new skills and power position.
Figure 21: Summary-model on the basis of the empiric study (self-provided)
6. Conclusion

6.1. Contribution

DL enables an autonomous deepening in the content, which results not just in an improved learning result but also similarly in alleviation for superiors from their additional work elicited by additional organisational and administrative efforts by these trainings. Above that, learners are no more dependent on the trainer’s motivation interest in teaching or time resources. DL is structured and mediates the same content of a certain topology (formal training), so the chance of developing differences in the employees’ knowledge is little. This on the other hand decreases the possibility of education gaps. However, in guaranteeing an unproblematic learning process it has to be ensured that users have a simple access which is as easy as possible besides a comprehensible uncomplicated and adapted - to the users’ needs and skills - knowledge transfer. The self-reliant distribution dependent on time resources interest and motivation respectively the time- and location-independence ensures a certain freedom within the DL-system. Blue-collar workers experience more confidence and an appreciation, which to a certain degree abrogates the corporate hierarchy.

By implementing DL HR has to ensure that the benefits going along with DL of the learners are communicated so that they realize that it is introduced for them and not for other stakeholders like management. They should have the feeling of being in the centre of the contemplation. They should be of the opinion that DL is for their support and that they have to support it so the question of the tool should be in the last instance after evaluating analysing defining and planning. Furthermore, users have to be enlightened about the intended use. Trainings for the usage should be structured so that all-important factors are explained and not only individually with regard to the specific skills and competencies of the certain employees. Otherwise they would not be able to utilize the tool in the proper way (e.g. learning in dwell times) due to their missing knowledge and skills concerning these learning measures.

DL and the implementation process do not largely affect the role of HR. Though its tasks competencies and modes of operation have to be adapted to the circumstances because they have to be more flexible open-minded and able to say goodbye to the rigid corporate structures/hierarchies they are used to. Furthermore, they have to be aware that the corporate culture has an influencing impact for implementation strategy. However, three main tasks of HR in the assembling three competences among the staff concerning DL are:
- Handling the change and the accompanied uncertainty
- Handling the process of learning with DL-tools and systems
- Handling the change due to the topic of DL in a team

In order to strengthen the internal position HR has to generate maybe inexistent knowledge and competencies in exchange processes with external but also especially internal sources. So there has to be certain willingness for cooperation. Flexibility and the ability to react are also important during the change process on the part of all participants (e.g. also of the management to be willing to adapt corporate guidelines) with regard to unpredictable actions because otherwise essential measures are buried in oblivion due to time pressure or discomposure. However, flexibility is not just important during the implementation process, but also in relation to (internal as well as external) collaborations and the willingness to accept new approaches or courses of action. So a certain degree of openness is fundamental.

The model in the following bases on the conducted case study and starts on the top. The listed reasons legitimate the development of new training approaches. In the following they are implemented by HRD. The consequences of this implementation could have positive as well as negative occurrences for both, learners and HRD/trainers. These described occurrences result from the above discussed interviews. By considering these findings, the chance of an increased success is higher. The additional implications are factors that influences the role and tasks of HRD during this implementation process even more. In this model the section “role of HRD” is in the style of the HR model by Ulrich (1997). The roles of HR arise from their tasks. These roles should not be seen as fixed, because they could change or transform, depending on the certain task or rather on the illustrated consequences of the implementation phase. So, the roles of HR could range from initiator, to innovator, connector, to promoter, ambassador, system expert, facilitator, or even to supporter, trainer to learning partner. One can state that the roles of HRD are an all-rounder department, due to its tasks and the four dimensions (focuses). As a result, the roles of HRD, like initiator, innovator, ambassador, sparing partner, supporter, trainer, administrator, or facilitator could be derived, whereupon it is dependent on the additional implications, like e.g. the corporate culture. The next chapter deals with the limitations of this research and gives an overview of further research, which could be quite interesting.
6.2. Practical Implications

Depending on the corporate culture, HR has to decide whether to involve workers or not or rather in which degree. However, one main aspect is a transparent and supportive approach, so that users are not just informed, but also are able to identify their benefits, while decreasing their fears. Users are able to see their benefit, when the intention of the implementation comprehensible, due to a direct improvement of a situation. In order to do so, HR has to be aware of the current situation in all-different issues, like e.g. frame conditions, learning situation, requirements, etc. So, HR has to stay in permanent contact. In order to improve, develop or learn new skills and operation processes, HR has to gain enormous amounts of information, not just from their customer, but also from other internal as well as external departments or experts (information sources). This implicates intensive collaborations and knowledge exchange or rather respectively the willingness to change. Most of the emerging tasks are not quite new, but they have to be adapted to new predominant circumstances. So, HR has to be reminded of their basic tasks, besides taught in new approaches, in order to fulfill them. Furthermore, set deadlines should not be, too rigid, because this could hinder reaching the target.

6.3. Limitations and Further Research

Limitations. Although, the interview groups are quite heterogeneous due to their social background age expertise departments and work areas the research bases on a single case study, which implicates a small sample size. Above that, the findings are based on a qualitative research so across-the-board statements for other industries or companies can hardly be formulated. Though two external interviewees were part of the research it reflects a quite homogeneous picture simply because of the fact that 15 out of 17 participants are members of one institution who are probably blind to shortcomings in company processes. This explains the main limitation of this particular study which is first of all a case based on the occurrences that happened in this particular company and secondly in a specific industry and its given factors that is not as dynamic as others. Furthermore, more or maybe even other findings could be generated by conducting a long-term research over a longer time period. The results would probably be different because of the fact that the EL has been introduced only recently. The users had only once the chance to learn with the EL before the interviews, took place. So the results could be distorted due to initial problems, which occurred, or changes, which could be realized and observed by users after a certain period of time or after several usages - time delayed. However, on the other hand, the retrospection regarding the whole process was easier because of the relatively short time period between the actual introduction and the interviews of the study.
Another point concerning the interviewed blue-collar workers the EL and the content itself is that most of them rather learned things about occupational safety or rather some of them even to gain a certification, which is demanded by a customer. This implicates that the whole DL-concept is rather rigid and unilateral because no other devices disregarding PCs were in use. The limitation concerning the learning approach was merely due to the structured formal learning system. Beyond that it is hard to say if the mediation of a different content (steerage of machines new operating processes situative learning based on real life problems…) would influence these uncovered results.

**Further research.** Furthermore, although, digitalization will be routine one day it is essential to start making it routine so it is better to start the transformation as soon as possible rather than, too late. These innovations on the one hand, try to ease daily life or business but on the other hand, push the volatility and complexity of it.

Due to the facts that the permanent learning and development will be trend-setting in combination with the demographic change and the requirements of the flexible applicable workforces (Freith, 2015, 80) companies are faced with new challenges. According to OECD estimates 25 % of the workers have jobs where tasks (50-70 %) can be automated consequently, the need for flexible and a broad range of skills is very important so that they have an extensive area of operation (OECD, 2016, 1 referring to Arntz et al., 2016). There are a lot of different technologies, which are handled in a different way and are also used for different tasks. Digital learning and development supports the strategy that allows the shift of workers to new tasks, which are probably difficult to automate (OECD, 2016, 1). Consequently, it is no surprise that only one-third of Millennials are of the opinion that their company uses their skills in the proper way and that 42 % tend to leave their organization because it does not offer fast enough learning possibilities (Pelster et al., 2017, 29).

Whereat according to OECD’s Survey of Adult Skills (PIAAC) more than 50 % of the adult population (about 50 % of national employees – Figure 23) can only execute the simplest set of computer tasks whereas younger people seem ready to work with newer technologies although, there is still room for some improvement and also “a large share of youth with low levels of proficiency” (OECD, 2016, 2).
So it is no surprise that Böhler et al. (2013, n. s.) indicate the demographic change besides globalisation and the technological alterations as one of the main challenges corporations are confronted with.

However, according to Stettes et al. (2017, 4 referring to Göbel & Zwick, 2010) empiric research figured out that learning in the direct work environment (see e.g. on the-job-training) with regard to elderly employees has a high effectiveness. Of course another influential reason for the ability to manage digital technologies is the social and educational background of the particular employees. Besides the challenge of introducing such digital tools it will also be important to familiarize elderly and technically not so affine or sceptical workforces with them. (Hofmann & Jarosch, 2011, 12) Furthermore, the HRD has to make sure that the older generation also acts as a model for the younger generation and that there has to be a dramatic change in this regard as soon as possible. Moreover elderly employees especially trainers with a pertinent and informed knowledge should be instructed and taught in handling digital systems and tools especially those who are working with trainees and young professionals and are training IT and technology competences to strengthen the future market position (Ernst et al., 2015, 16).

Otherwise this will lead to enormous problems on the job markets in the near future due to the rising requests of manufacturing technology on the part of the companies and a displacement of the
knowledge gap to the next generation.

Besides these arguments Senderek et al. (2015, 282) claim that the integration of elder people, economically as well as socially is not just a question of social inclusion but also a necessity for the security of the competitive ability of a country like Germany (or Austria).

Another interesting aspect in this regard would be a research how apprentices deal with DL. Some studies (e.g. Schmid et al., 2016; Krämer et al., 2015) have already been conducted but it would be interesting, if there will be any changes in two or three years when again a younger generation which is even more familiar with other technological devices joins professional life. Besides, it has to be clarified how to train under-qualified employees among this generation. For this purpose, longitudinal or follow-up studies could be conducted.
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Appendix

Interview Guidelines

Experts

- Was verstehen Sie unter Begriff „Digital Learning“ und wie sehen Sie diesen Begriff im Kontext mit Arbeitern?
- Welche Rahmenbedingungen müssen von Unternehmen geschaffen werden um DL für Arbeiter zielführend implementieren zu können?
- Welche DL-Systeme/Tool werden hauptsächlich in der betrieblichen Weiterbildung im Arbeiterbereich eingesetzt?
- Wie wird die Implementierung der DL-Lernsysteme (für Arbeiter) durchgeführt und was
verändert sich dadurch im Unternehmen?

- Wie werden die Arbeiter in den Veränderungsprozess miteinbezogen?
- Welche Probleme treten dabei auf und wie werden diese gelöst?
- Wie werden derartige Tool Ihrer Erfahrung nach eingesetzt?
- Wie hat sich Ihrer Meinung nach Lernen für Arbeiter aufgrund DL geändert wie kann es sich noch verändern und worin sehen Sie nach wie vor Schwierigkeiten?
- Wie lassen sich E-Learning/Digital Learning Systeme in den Arbeitsprozess oder auf den -platz integrieren? Inwiefern lässt sich eine Veränderung zu früher erkennen?
- Welches Rollen- bzw. Funktionsverständnis haben HRD im Bezug auf DL?
- Wie wird die Inhaltpflege abgewickelt
- Wenn Sie an zukünftige Veränderungen z.B. im Zuge der Digitalisierung denken wie glauben Sie wird sich das Lernen im Betrieb ändern um Kunden- oder Maschinenanforderungen gerecht zu werden?
- Stellen Sie sich vor wir sind im Jahr 2050. Wie wird die Produktion bzw. Tätigkeit von Arbeitern aussehen welche Rolle wird dabei digitales betriebliches Training spielen bzw. wie wird betriebliches Wissen weitergegeben? Was sind Ihre Überlegungen oder auch Wünsche dazu?
- Additional Question (internal expert)
- Worin sehen Sie bei der Implementierung die Problematic in der voestalpine und welche Lösungsansätze haben Sie?

**Blue-collar workers**

- Wie haben Sie diese Umstellung erlebt? Wie war des Ablauf?(Zeitstrahl) Erzählen Sie mir bitte etwas darüber.
- Wie war Ihre Erwartungshaltung gegenüber dieser Umstellung?
- Wie haben Sie erfahren dass ein solches System kommt und wie wurden Sie in den Prozess miteinbezogen?
- Wie wurde Ihnen dieses System näher gebracht? Wer war und ist in welcher Form nach wie vor daran beteiligt?
- Ich habe gehört es gab einige Probleme im Zuge der Einführung welche waren das? Was
würden Sie an diesem Prozess ändern wenn Sie könnten? Warum dauert etwas so lange?

- Was könnte eine Änderung bewirken?
- Wie unterscheidet sich Ihrer Meinung nach das klassische Lernen vom Lernen mit digitalen Medien?
- Wie hat sich das Lernen für Sie persönlich verändert? Wie war es davor und wie ist es jetzt?
- Welche Anforderungen bzw. Bedürfnisse haben Sie an so ein System? Was würden Sie verändern?
- Wie sehen Sie diese hier umgesetzt?
- Wie lässt sich das E-Learning System in den Arbeitsprozess oder auf den -platz integrieren? Lässt sich eine Veränderung zu früher erkennen? Wie könnte man Lernen am Arbeitsplatz noch gestalten (Was sind Ihre Vorstellungen)? Was müsste man verändern?
- Welche Veränderung in der Lernmotivation dem -aufwand bzw. dem -erfolg sehen Sie wenn Sie die zwei Lernsysteme miteinander vergleichen?
- Welche Vor- und Nachteile ergeben sich für Sie durch die Veränderung des Lernmediums?
- Welche Rahmenbedingungen sind in so einem Betrieb unbedingt notwendig um solch ein Lernmedium für Arbeiter einsetzen zu können? (Welche Hindernisse gibt es dabei?)
- Wenn Sie an zukünftige Veränderungen z.B. im Zuge der Digitalisierung denken wie glauben Sie wird sich das Lernen im Betrieb ändern um Kunden- oder Maschinenanforderungen gerecht zu werden?
- Stellen Sie sich vor Sie arbeiten hier im Jahr 2050. Wie wird die Produktion bzw. ihre Tätigkeit aussehen bzw. wie wird betriebliches Lernen praktiziert? Was sind Ihre Wunschvorstellungen bzw. Überlegungen für die zukünftige Generation?

**HR/Superiors**

- Erzählen Sie doch bitte etwas über den Ablauf bzw. den Prozess der Umstellung von Präsenzschulungen auf digitales Lernen. - Was waren die Gründe dafür?
- Wie wurden die Arbeiter an den Change-Prozess herangetragen bzw. wie wurden diese auch miteinbezogen?
- Welche Bedürfnisse und Anforderungen haben die Arbeiter an dieses Lern-tool? Wie werden bzw. wurden diese in Erfahrung gebracht und im Weiteren umgesetzt?
- Mit welcher Erwartungshaltung sind Sie dieser Veränderung entgegengetreten bzw. wie sehen Sie diese bestätigt?
- Wie gestalten Sie die Nachbearbeitung dieses Prozesses? (Im Sinne von z.B. Feedback)
• Wie waren die Erfahrungen des Implementierungsprozesses? Was würden Sie anders machen bzw. was könnte eine Änderung bewirken um die aufgetretenen Probleme zu vermeiden?
• Wie unterscheidet sich Ihrer Meinung nach das klassische Lernen vom Lernen mit digitalen Medien und wie hat sich das Lernen für Ihre Kollegen im Betrieb verändert?
• Welche Veränderungen konnten Sie im Lernverhalten bei den Kollegen im Arbeiterbereich bis jetzt konstatieren?
• Wie lässt sich das E-Learning System in den Arbeitsprozess oder auf den Arbeitsplatz integrieren? Lässt sich eine Veränderung zu früher erkennen? Wie könnten man Lernen am Arbeitsplatz noch gestalten? Was müsste man verändern?
• Welche Rahmenbedingungen müssen in einem Industriebetrieb geschaffen werden um derartige Lernmedien (noch besser) einsetzen zu können und wie sehen Sie diese umgesetzt? Was musst dafür geändert werden?
• Wie sehen Sie Ihre Rolle respektive Ihre Funktionen im Bezug auf das implementierte E-Learning (Lernsystem)?
• Wie findet die Inhaltspflege des E-Learnings statt? (Wer ist involviert in diesem Prozess?)
• Wenn Sie an zukünftige Veränderungen z.B. im Zuge der Digitalisierung denken wie glauben Sie wird sich das Lernen im Betrieb ändern um Kunden- oder Maschinenanforderungen gerecht zu werden?
• Stellen Sie sich vor Sie arbeiten hier im Jahr 2050. Wie wird die Produktion bzw. Tätigkeit von Arbeitern aussehen welche Rolle wird dabei digitales betriebliches Training spielen bzw. wie wird betriebliches Wissen weitergegeben? Was sind Ihre Wunschvorstellungen bzw. Überlegungen für die zukünftige Generation?
Quotations

Classroom

| HR 2 Z. 80 | "...da muas i des nebenbei machen net. Und ois was nebenbei is is dann net so intensiv vielleicht oder wird dann net so guad umabbracht..."
| BC 4 Z. 226 | "...neiche kummt wird meistens der Mitarbeiter eingeschult und natürlich ja nachdem wie viel Arbeit momentan is wird ma hoid mehr oder weniger intensiv geschult und dann kann si des dahirzahn..."
| HR 3 Z. 182 | "...hab måisn meine 40 45 Leit immer schulen und alle in an Raum zusammenhoin des geht natürlich net des heißt jetzt macht ma ah weil's a andere Schichtigkeit haben und weil ma kane 40 Leit in an Raum bringt macht ma des über zwar drei vier Sitzungen des is natürlich für mi persönlich zeitaufwendig weil da sitzt jedesmoi a Stund oder anderthalb du muastas schulen..."
| BC 9 Z. 51 | "...aber wie gsagt i hab drei Stunden Schweindl zeichnet a da herinnen..."
| BC 5 Z. 48 | "Folder obengstanden was er hoid so vortragt aber dann schaust hoid grad grad amoi vielleicht in am anderen Bereich drüber wos am ah mehr oder weniger nachand interessiert und nachand über des was derjeniger dann vortragt ah bist vielleicht grade net so bei der Sache weisst da jetzt grade a anderes Thema anschaut."
| BC 8 Z. 140 | "...weil wennst jetzt den Zettel mit heim gnommen hast ah ja dann war's hoid a so dass der Zettel daheim war aber du hast dann hoid mehr auf den privaten Modus gsooit und ah ah gsagt „privat is privat und Firma is Firma“ und da lest dann net glei irgendwie daham durch..."
| BC 6 Z. 148 | "Da Vortragende hat des hoid vorbracht net und hat hoid oft so irgendwen gsfragt hoid net. So stichprobenartig hoid net. Aber da hat's net an jeden troffen net des is hoid einfach vortragen worden mehr oder weniger net.”

E-Learning

| BC 4 Z. 224 | "...könnt i ma durchaus vorstellen...Lehrvideos für Maschinenbetätigung dass ma des a eigentlich weil jetzt werden auf die Maschinen wenn irgendwo a neiche kummt wird meistens der Mitarbeiter eingeschult und natürlich ja nachdem wie viel Arbeit momentan is wird ma hoid mehr oder weniger intensiv geschult und dann kann si des dahirzahn und wenn ma gleich gscheide Lehrvideos im Vorfeld also wenn des glei in so Schulungen packt wird und so E-Learnings machen muas und si des a bissl anschau kann den Arbeitsablauf und Bedienung und so is des sicher hüfreich"
| HR 2 Z. 230 | "Du lernst mehr wennst was selber duast net? Wenn da ana an Satz sagt merkstan sicher net so guad wie wennstan selber aufschreibst”
| HR 1 Z. 159 | "...oh die Arbeiter zu motivierer san diesbezüglich weil für die is mehr Aufwand des muss ma scho ehrlich sagen ja. Oiso die müssen ja hingeh die müssen si jedes Mal neu damit befassen die müssen einindenken... eher neutral hinstellen."
| HR 1 Z. 163 | "Im Sinne der Personalentwicklung kann i nur sagen ja auf jeden Foi oiso es war ein Erfolg.”
| HR 2 Z. 66 | "Aber klas is dass ma die Module also net auf amoi erledigen muas sondern dass ma si des eintaken kann wie's wie's zeitlich einipasst des is natürlich auch a großer Vorteil.”
| E 1 Z. 454 | "...der Lokführer selber, weiß i net hat zwa Stund eigentlich nix zum duan, ja vielleicht a bissl a Wartung an der Lok, hoid, weiß i net genau zum machen is, aber ansonsten hat er nichts zum duan. So, nichts leichter ois da zu sagen, da in irgendana Form ahm macht er hoid da a Schulung, a Auffrischung, an Test, a Quiz oder irgendwas duach ah was ihm hoid letztlich a wieder, wieder, wieder weiter hilft..."
| BC 10 Z. 140 | "Des diat garantiert kana oiso i kenn nermo der nachand numoi einigschaut hät..."
| BC 8 Z. 221 | „...dass jede ah Maschine ah an Computer stehen hat oiso is da scho is des scho ah ah...“ |
| BC 7 Z. 252 | „...wast hoid E-Mail henschreibst oder ois hoid wo hoid deine ahst zum Beispihl wahrscheinlich irgendwo Erinnerung dass nu a paar Schulungen offen hast...“ |
| BC 1 Z. 108 | „Direkt am Arbeitsplatz net weil wenn laut is kannst di eh net konzentrieren. Da is gscheider irgendwie im Jausenkammerl da wo der Computer steht des is scho net so schlecht...“ |
| E 2 Z. 461 | „...wost hoid E-Mail hinschreibst oder ois hoid wo hoid deine ahst zum Beispül wahrscheinlich irgendwo Erinnerungen dassd nu a paar Schulungen offen hast...“ |
| BC 6 Z. 137 | „...Na da ham’s gsagt „nimm da Zeit so langst wust net setz di her“ und die Zeit soit ma si a nehma net...“ |
| BC 5 Z. 253 | „...na des is eigentlich relativ ois guad formuliert und oiso wenn ma jetzt weiß Gott net was si für an Stress söba macht bei da bei da Schulung is des eignetlich ois ziemlich verständlich formuliert und und aufgelistet...“ |
| BC 9 Z. 39 | „...Maschin astöhn des von mir aus sogar anderthoi Stund oder was dauert und des hat mi da a bissl aufgret muts a ganz ehrlich sagen weil wenn ma auß Klo geht zehn Minuten dann steht die Maschin dann wird nachfragt warum wieso warum. Bei sowas wann ma zwarahoib Stund steht oder zwa Stund steht spüt des keine Rolle ob die Maschin jetzt rennt oder net interessiert kann...“ |
| BC 5 Z. 42 | „...des mtn Computer mach ah des is vi irgendwie ah persönlicher ois wie wennst des jetzt in am großen Raum mit sag i amoi mit 20 Leit drinnen sitzt und derjenige tragt hoid des so vor weit da ja. I find wennst des mtn Computer machst einfach besser konzentrieren kannst...“ |
| BC 5 Z. 124 | „...kurzes Vorwort vom Geschäftsführer dabei is a ganz nett... ein bissl Basiswissen was die Firma anbelangt und die was produziert wird wer die Kunden sand des is ja auch interessant...“ |
| HR 4 Z. 282 | „...bin ma sicher dass der eine oder der andere für sein ah Poppenheimer des E-Learning gemacht hat und der is nur daneben gessen. Is immer nu besser wenn er wenigstens zuschaut ois wie er hat a Face to Face oiso ka Face to Face sondern a Schulung in am Schulungsraum...“ |
| E 1 Z. 289 | „...damit wird a glaub i speziell im Arbeiterbereich...bissl a Vertrauen den Mitarbeitern ah gegeben...manchmoi scho nu de des wenig zutrauen an den an den Arbeiter da...Es lös a wenig die Hierarchie auf...“ |
| E 1 Z. 309 | „...mehr Commitment und arbeiten dann mehr auf Augenhöhe ahm mit ah de Führung...“ |
| E 1 Z. 269 | „...aber so dieses Vertrauen is sowas was sehr gut is ah dass ma da eben ja es is a es is a Tick von Aufwertung...“ |
| E 3 Z. 106 | „...Rahmenbedingungen muss es geben aber innerhalb dessen sollen die Leute doch das Gefühl haben a gewisse Freiheit auch vorzufinden wie sie sich die Dinge aneiggen was Personen so haben’s wir erlebt nicht schätzen ist wenn es zu restriktiv ist fast wie ein ah eben dann doch wieder so im Sinne von von Fernsehen abläuft und man keine Möglichkeiten mehr hat in irgendeiner Weise auch sich zu involvieren in dieser Sache...“ |
| E 3 Z. 345 | „...ganzen Umgang mit ah mit ah den den digitalen Medien den hm ja neuen Lernen ah des wird einfach verbessert. Des is so a Nebenaspekt...“ |
| E 1 Z. 129 | „...Lernen ah bedeutet an Wissen anzuknüpfen damit die Sachen a hängen bleiben und manches was eben ois Lernen lauft is im Prinzip die ah gib jemanden was i net a Unterweisung in irgend etwas die mehr oder weniger komplex is und erwart ma noch dieser Unterweisung dass des jetzt ois hängen blieben is. “ |
| E 2 Z. 446 | „...Personen auch gerne ah auch die Möglichkeit zu schaffen von zuhause aus...“ |
machen klar geregelt muss natürlich sein wie mit der Zeit umgegangen wird da gibt’s Modelle die in diese Richtung gehen dass jetzt für erfolgreich absolvierte E-Learning-Einheiten egal jetzt in welcher Methode und Form des geht ja mit Micro-Learning genauso es gewisse Zeiten är Zeitgutschriften gibt.”

“...der sicht des ois Arbeitsunterbrechung als unangenehm vielleicht isst er dann sein Apfel dazu und er unterschreibt die Listen oiso des is für mi des was si wirklich geändert i glaub so dass eben die Qualität der Schulung dadurch wirklich besser worden is...”

“...Arbeitskolleg vo mir der hat mi dreimoi gfragt wie des wie's zum Einsteigen is und ja des is hoid für die Älteren is der nie was zdo kabt hat mitn Computer des Programm hat si immer aufgehängt des is a net so super...”

“...san hoid wir Jungen dann a da und und und höfen erna dass ma dass ma dann oiso wir höfen uns untereinander...wir zagen des a ois her dass dass eben sehng es is eh net vi dahinter...net so dass da dir irgendwer a Hackl ins Kreiz einhaut...”

“...wir reden ja die Hauptzielgruppe san ja Arbeiter die ganz wenig mitn Computer insgesamt zum duan ham und und wenn's ältere Generationen waren oft nu gar nix damit zum duan kabt ham...”

“...weil die Leute eben merken dass das System eigentlich nicht für sie gemacht ist also da da der der Grat is sehr schmal wo die Mitarbeiterinnen und Mitarbeiter merken für wen ist das eigentlich gemacht. Ist das für mich gemacht habe ich einen Nutzen davon oder hat eine Personalführungsabteilung einen Nutzen davon oder hat eine Personalführungsabteilung einen Nutzen davon? Und natürlich will jeder einen Nutzen davon haben...im Prinzip geht es darum einen Mehrwert für die Zielgruppe zu generieren die natürlich auf die Unternehmensstrategie ausgerichtet sind die natürlich teilweise die Personalführungsprozesse auch unterstützt effizienter gestaltet aber der Hauptfokus sollte bitte auf den Mitarbeiter gelegt werden.”

“Des glaub i als Rahmenbedingung wär notwendig...dass ma vor allem ältere Mitarbeiter mehr auf den Weg bringt dass des Daily-Business is mit mit mit PC mit Ipad mit soichen Dingen zum Arbeiten und da glaub i könnt den vor unserer Seiten sehr viel doan indem ma klane Kurzeinheiten schaffen mit No-Name-Gsichten wo’s einfach gezwungen san des immer wieder auszuprobieren damit’s die Angst davor verlieren dann würden sa si a leichter doa dann glaub i ahm wär es a eben für die Arbeiter lässig zum sagen „jetzt hab i zehn Minuten Zeit jetzt setz i mi hin net“ des is jetzt da is sicher nu a Hemmschwelle da.”

“...ja de Frischen...für de is des sicher a super Sache. Und wenn’s da nachschau kennan mit ois drum und dran...klass wanna nachschau kann net...wanna si interessiert dafo oiso oiso fia die die damit was afanga kennan ja is des a super Sache wia gsagt uns Oden kannst da nimer so begeistern damit...”

“...ka junge dynamische Branche sondern eher a beständige tz und des merkt ma da bei diesen Dingen schon...”

“...natürlich immer wieder einen gewissen Prozentanteil gibt der des negativ sieht...”

“...i denk des Nonplusultra is ah transparent zu sein für was das da is dass das jetzt nicht darum geht nur um zu prüfen ah sondern die Hintergründe zu erklären auch wenn es einmal eine Prüfung ist dann klar zu stellen was damit passiert und erfolgt und ahm ich denk dass aaah natürlich immer wieder einen gewissen Prozentanteil gibt der des negativ sieht...”

“Na i hab des eigentlich i hab des mit wie soi i sagen i hab des so grman wie’s war mi hat des überhaupt net gstört und meine Kollegen de älteren ham a wenig gsudert sag i amoi aber des is hoid amoi so...”

“.....immer wieder kumman wo’s um um Weiterführendes oder Verbesserndes geht und jeder hat gsagt „bitte unbedingt weitermachen“ weil der Sinn dahinter is erkannt worden und der Nutzen a und daher war’s für mi ein Erfolg.”
E 2 Z. 356
“…70-20-10 Geschichte wo ma sagt 70 % des Lernens passiert sowieso im Arbeitsprozess in dem der Mitarbeiter das eigentlich ausprobiert oder es solange versucht bis es eben funktioniert die 20 % geht er zu seinen Kollegen oder seinen Vorgesetzten und fragt wie äh das funktioniert oder vielleicht macht er das auch über Communities und ein 10 % ist eigentlich der formale Ansatz wo ich eigentlich heute im Seminar habe oder Ausbildungsmaßnahmen schicke. Das heißt wenn die Formel halbwegs irgendwie Bestand hat dann heißt das wir investieren heute in Unternehmen 90-95 % der Weiterbildungs(?) in 10 % der Prozesse die eigentlich was bringen äh und in die 70 und die 20 wird eigentlich wenig bis gar nichts investiert….Ich darf net den Fehler machen die zur formalisieren das heißt dass ich jetzt anfange die 70 % zu strukturieren

HR 1 Z. 521

"...ob da des informelle Lernen immer des Beste is weil i ma net sicher bin ob da die Wichtigkeit dann nu unterstrichen wird ahm was er ois können muss damit er des dann a richtig ausführen kann. Oiso für mi is des a sehr schmaler Grat. Obwohl i des informelle Lernen immer guad is aber da siach is a immer wieder Themenbezogen. I siach’s net immer ois guad muss i ehrlich sagen."

HR 2 Z. 280

"...wenn wir hier inhaltlich von Lernen ist gleich Arbeiten und Arbeiten ist gleich Lernen sprechen wieso bau ich dann eine getrennte Lernwelt von der Arbeitswelt auf?"

BC 6 Z. 186

"...schon auch Schulung oder was vielleicht macht net net nur des E-Learning net dass ma des a leichter kapiert..."

E 1 Z. 74

"...Präsenzphase mehr fokussiert werden kann auf ah des was es wahrscheinlich auch sein sollte hm mehr zu üben ah mehr bestimmte spezielle vielleicht Problemfälle anzusprechen ahm und die Grundlagen da schon vorbereitet sind."

E 3 Z. 210

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Preparation and implementation

HR 1 Z. 690

"...dass scho dann aufn Bereich dann drauf an kommt ob jetzt Angestellte oder Arbeiter dass da schon noch differenziert wird...san nu immer zwa Paar Schuach weil des is für mi scho sehr selbstverständlich und im Arbeiterbereich trotzdem neig..."

HR 1 Z. 37

"...kürzer Zeit die breite Masse erreichen...und des den koordinierenden Gruppenleitern und -funktionären sehr viel Zeit nimmt...und zusätzlich is es so dass aufgrund der Tatsache dass nie jeder da is is es a so dassd nie jeden erreicht und es is aber a wichtig dass des...jeder macht...

HR 1 Z. 36

"...immer so im Hintergedanken kacht wo kennt uns wo kennt uns ahm ah a Lernsystem höfen wo ma söba erstens amoi vielleicht mit weniger Aufwand des betreiben kann...aber auch gleichzeitig und des war für mich a immer wichtig mit am mindestens wenn nicht gleich guten Effekt... amoi a Bedürfnis und auch a ah der betrieblichen Führungs- und -funktionäre ah des irgendwie organisatorisch administrativ zu verbessern ahm weil de ham sehr viel Zeit verbracht mit diesen wiederkehrenden Schulungen ahm ah mit diesem Leid san’s immer wieder ah an uns herangetreten..."

E 1 Z. 254

"...taucht irgendwo ein Bedarf auf...wir woin a Präsenzschulung ersetzten durch ahm eben digitale ah Lernformen und ahm dann schaut man sich eben an kann man das ersetzten oder nicht. Könnte auch sein dass ma sagt oiso guad ah Wissensvermittlung geht zu an bestimmten Teil wär ma wieder beim Thema Blended Learning..."

E 2 Z. 258

"...die Thematik der individuellen Produktion ich sprech eigentlich nur noch über individuellen Produkten. Ich bin...überhaupt kein Fan von Standardlernprodukten..."

E 1 Z. 550

"...die Dinge net deswegen macht weil man’s kann und weil’s cool is und weil ma jetzt weiß i net Digitalisierung macht oder sowas...sondern dass ma si anschaut wie macht...des an Sin...wo hab i denn jetzt ah welche Probleme um dann die entsprechenden Maßnahmen setzt und die richtigen Maßnahmen setzt ah um des entsprechend eben lösen zu können."

E 3 Z. 580

"...interessanterweise is jetzt in letzter Zeit auch eher in seltensten Fällen nämlich der Pulsgeber das HR...sondern geht aus verschiedensten Bereichen heraus...

E 1 Z. 732

"...Bereiche da wird si net dramatisch was verändern zum ah heutigen Stand weil dort ah kama ja Arbeit die i mecht jetzt net sagen ganz optimiert is aber wo i net recht vü Möglichkeiten hab ah die über des jetzige hinaus gehen... muss si verdammt guad anschau wo zoi si des aus und des würd si net überrei auszoin...

E 3 Z. 234

"...nicht gleich flächendeckend ahm ein riesen Projekt aufzieht...sondern wirklich konzentriert ahm entweder auf eine Zielgruppe fokussiert mit einem bestimmten Thema sukzessive das aufbaut ohne jetzt ein mehrjähriges Projekt zu initiieren und dann eigentlich Leute ääh schon mit einem mit einer Masse mehr oder minder zu
konfrontieren mit der dann alle überfordert sein könnten...Also eher diese Strategie zu fahren sukzessive Schritt für Schritt zu implementieren natürlich nach orientiert nach Bedarfen die es im Moment gibt.”

“…wenn man digitales Lernen machen will neben der Kulturveränderung und -begleitung ein hochgradiges Technologiethema also eben deshalb heißt es ja digital. Und äh digital und HR hat in der Vergangenheit net immer gepasst…viele HR-Abteilungen sin im Moment im Moment nur bedingt in der Lage sowas zu tun also generell so nen Ansatz digitales Lernen ganzheitlich mit all seinen Facetten in der Organisation einzuführen. Das is ne gewisse Herausforderung das is kein Vorwurf gegen HR sondern das is auch n Problem das die HR-Leute net ausgebildet werden dazu ähm und auch zum Teil aber auch das Verständnis fehlt…”

E 2 Z. 584

“…heutzutage nimmer möglich dass man alle diese Kompetenzen irgendwo selber aufbaut…”

E 1 Z. 412

“…Des san knappe Ressourcen auf der einen Seite ah des jetzt auch dass man gewisse Knowhow auslagert hat es is nimer Firmenphilosophie...dass ma dass ma sich in den Tiefen der Systeme bewegt des is nimer vorhanden da sagt ma einfach des is ja auch irgendwo Vorhalteknowh...ah und damit lagert man das auch anan Lieferanten aus oiso des san jetzt mehrere Sachen Ressourcen und ah gezielt nicht mehr vorhandenes Knowhow um einfach letztlich auch billiger zu warden...Glaub i net dass es a Umdenken gibt sondern diese Abhängigkeit ah von Lieferanten wird si wird si eher verstärken…”

E 1 Z. 408

“…griagt ma net von heute auf morgen a Antwort wenn ma sagt „he des funktioniert aber net”...sondern da griagt ma 27 Fragen gestellt und die versuchen des über jeden Weg dass am wieder des Problem wieder zruschmeißen…”

E 4 Z. 152

“…immer irgendwas geben hat was net funktioniert hat dass ma dann scho leicht unter Zeitnot komman san und da dann uns nema mehr Zeit lassen woinn.”

HR 1 Z. 308

“…wie gehe ich dann mit den Daten um die da verarbeitet werden beginnt dann mit den Nutzerdaten…”

E 2 Z. 161

“…unheimlich viel Energie aufwenden müssen das wieder in richtige Richtung zu lenken ahm sowohl Budget wie auch Ressourcen oder man hat ein Thema und das wär das schlimmste verbrannt dass man versucht hat ein Thema einzuführen und es eben net funktioniert hat…dann is das Thema erst mal paar Jahr tot…”

E 2 Z. 124

“…neben den Klassikern dass eine IT dabei sei eine HR-Abteilung…”

E 3 Z. 289

“…auf jeden Fall auch Betriebsräte einlädt…”

E 3 Z. 291

“…aber die wirkliche Zielgruppen müssen auch vertreten sein das müssen net hundert Mitarbeiter sein aber das müssen halt ich sag mal eine Handvoll Mitarbeiter sein im Idealfall sein die die Chance bekommen auch vielleicht Ideen mitreinzugeben…”

E 2 Z. 548

“…vielleicht kennt ma’s nu besser informieren vielleicht kennt ma a große Informationsveranstaltung machen des is sicher net schlecht haben wir aber net gmacht wahrscheinlich weil i net dran gedacht hab...des hätt ma eigentlich vi besser machen kenna”

HR 1 Z. 362

“…wir ham’s vom von der Deadline a fast gschafft. Wir waren a bissl hinten nach…”

HR 1 Z. 107

“…die Toolfrage is eigentlich fast am Schluss zu stellen also man muss wirklich genau wissen was man eigentlich machen will und das was ich halt leider beim tool meistens erlebe ist dass eine Personalabteilung sagt „ich will meine Personalentwicklungsprozesse effizient abbilden” und dann wird die Toolfrage nach diesem Ziel ausgewählt…”

E 2 Z. 315

“…wie mehr den Menschen in den Mittelpunkt zu stellen und seine Bedürfnisse und weniger die Technologie anzusehen auch wenn da digitales Lernen steht es geht um Menschen die in ner Welt sind die sich extrem wandelt die extrem schnell sich wandelt das is das Neue der Wandel is eigentlich gar nicht das Neue sondern die Schnelligkeit is das Neue und mit dem einhergeht auch ne Unsicherheit bei den Menschen…”

E 2 Z. 661

“…Gleichmacherei in einer Organisation und das ist für mich eines der größten kulturellen Fehler die heute passieren in einem Untern...Lernen is ein individueller Prozess und kein Zielgruppenprozess…Lernen passiert in der bei der einzelnen Person im Kopf …muss man sehr individuell ansehen und dann auch bewerten was ich dann wirklich benötige von der Umsetzung her.”

E 2 Z. 290

“…von der Deadline a fast gschafft. Wir waren a bissl hinten nach…”

HR 4 Z. 152

“…mehr den Menschen in den Mittelpunkt zu stellen und seine Bedürfnisse und weniger die Technologie anzusehen auch wenn da digitales Lernen steht es geht um Menschen die in ner Welt sind die sich extrem wandelt die extrem schnell sich wandelt das is das Neue der Wandel is eigentlich gar nicht das Neue sondern die Schnelligkeit is das Neue und mit dem einhergeht auch ne Unsicherheit bei den Menschen…”

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“…auf jeden Fall auch Betriebsräte einlädt…”

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“…wie gehe ich dann mit den Daten um die da verarbeitet werden beginnt dann mit den Nutzerdaten…”

E 3 Z. 256

“…aber die wirkliche Zielgruppen müssen auch vertreten sein das müssen net hundert Mitarbeiter sein aber das müssen halt ich sag mal eine Handvoll Mitarbeiter sein im Idealfall sein die die Chance bekommen auch vielleicht Ideen mitreinzugeben…”

E 2 Z. 161

“…bei uns eher unternehmenskulturell sehr guad läuft des is glaub i des a bei anderen
Projekten was die Mitarbeiter betrifft hama nie a großes Problem wir haben a sehr gute Ergebnisse bei dieser Mitarbeiterbefragung oiso des hat mit Unternehmenskultur scho was zum doa glaub i ja.

BC 5 Z. 85  
"...da gibt’s eh schätzungsweise in unserer Firma gibt’s da sicher zwa oder drei Leit die was des hoid so im vorhinein entwickln sag i jetzt amoi und ja i glaub dass da net weiß Gott fia a großer Vorteil is wennst da sag i amoi da weiß i net Hausnummer zehn Leit von der Produktion mit außer nimmst..."

BC 5 Z. 93  
"...von de Mitarbeiter aus und weiß net ob ob de da weiß Gott was Positives miteinbringen hätten kennan. Oiso i find dass des so recht guad gelöst worden is sag i amoi."

BC 6 Z. 83  
"...des geht net wir ham eh genug andere Sachen was ma machen misn und dann wenn’s aktuell is eh erklärt worden und dann hat des eigentlich tadellos hinkaut..."

BC 7 Z. 67  
"...Ja ganz sicher i mein wie gsagt bei de Odan is immer wissen eh immer wenn was nei er macht’s scho 30 Jahr söba so und dann muasas amoi so mocha i mein i hab’s scho 30 Jahr söber gmacht drum mach ma des jetzt so des is ja des anziage was erna erklären muast aber des is hoid heizutage so..."

BC 7 Z. 228  
"...nicht zu vernachlässigen...wie man in diese Richtung des Bildungsmarketing ah gestaltet...dass jetzt es kommt was neues es wird etwas ergänzt es wird ah etwas vielleicht geändert und daher ist es wichtig dass man auch der Mitarbeiterschaft weil ma will ja wenn’s Arbeiter betrifft den Arbeiter so schnell wie möglich ah klar macht um was es hier geht und des im positiven Sinn..."

BC 9 Z. 30  
"...Kollege hat’s ma gsagt bei da Nachtschicht amoi dass des so kummt...I sag amoi so möglich aber i hab da vielleicht gar net so genau zugehört [lacht] nuas i a ehrlich sagen weil da wird so vä umadum gredt weißt eh des geht oft da eini und da wieder ausi..."

BC 10 Z. 76  
"...scho gmacht worden ja des Schneeboisystem is scho gmacht worden ja aber nur i moan der hat a nur des weitergeben was erm da jetzt aufgfoin is oder sunst irgendwas. Oiso ohne dass er Kenntnisse kabet hat warum des so is oder warum des net so is..."

BC 10 Z. 59  
"Is sicher net so schlecht i moa sie san a ins koide Wasser gschmissen worden so wie a jeder andere da oiso von uns hoid was i woaf. Da ham’s nur E-Learning gehört und des war scho ois du hast net vi mehr gehört..."

BC 2 Z. 58  
"...hab i mi eigentlich glei zurecht gänden..."
Tasks of HR

E 3 Z. 580 "...interessanterweise ist jetzt in letzter Zeit auch eher in seltensten Fällen nämlich der Pulsgeber das HR..."

E 2 Z. 506 "...agil arbeitet nur da is ma eben heute normalerweise noch net in den Personalabteilungen meistens is wenn die IT vielleicht in die Richtung unterwegs aber HR noch relativ wenig..."

E 2 Z. 502 "...Design Thinking is eine eine Möglichkeit heute...dass zunehmend die Personalabteilungen auch agiler werden auch mit Methoden wie Scrum...in allen agilen Umsetzungen ist der Kunde immer Teil der Umsetzung..."

E 1 Z. 579 "...wenn ma dann einfach so aus Prinzip weil's wo anders die Entscheider sitzen und aus Prinzip diese Kompetenz net nutzt uh des duat a weng weh. Und aber zeigt auf der anderen Seite da is nu Potenzial da..."

E 1 Z. 661 "...zwa Jahr keine Gespräche geführt..."

E 1 Z. 642 "...geht auch zu wenig auf uns zu ah um zu sagen da gibt's die Spezialisten ah und mach ma irgendwas miteinander...De sagen macht's und wenn jetzt aber des Kompetenzverhältnis ein anderes is...durch diverse Umsetzungen und dort fehlt die Kompetenz weil die Umsetzungen fehlen...hat sicher erkannt dass da was dran is aber ma hat glaub i nu net wirklich den den Einblick was es is..."

E 1 Z. 375 "...Job-rotation macht siagt was da rennt siagt was da an Kompetenz zusammengetragen wird ah oder auch vice versa..."

HR 4 Z. 418 "...ois als Treiber des Projekts...der vertrauensbildende Maßnahmen machen mus der mit der Fahne voraus geht..."

E 2 Z. 509 "...Funktionsverständnis das ich eben dort kleinschrittiger werde schneller werde flexibler bin äh dass ich auch viel schneller auf Herab äh Herausforderungen im Markt von der Geschäftsführung reagieren muss und kann ähm und das sind ziemlich heftige Veränderungen für HR weil man doch im HR ne gewisse sag ich mal Stabilität bis dahin auch hatte..."

E 2 Z. 513 "...allerdings der Druck wächst meistens wenn halt die HR-Abteilungen sehr stabil gewesen sind und selber net wirklich sich verändert haben..."
<p>| E 2 Z. 521 | “…verändern auch im Sinne von Strukturen und Arbeitsformen also HR muss selber auch Vorbild…” |
| E 2 Z. 481 | “…HR in ner Rolle drinnen…zusammen zu bringen…” |
| E 3 Z. 588 | “…Überblick behalten Vermittler sein zu den Fachabteilungen Connector ahm Projektleiter…HR ahm muss sich in diesem Foi wahrscheinlich in Kooperation mit ana Kommunikations- oder Marketingabteilung über des Bildungsmarketing Gedanken machen…” |
| HR 1 Z. 585 | “…Aufgabe zum an die administrative oiso wenn ma jetzt vom laufenden Prozess reden die die administrative Abwicklung Ansprechpartner wenn’s Probleme gibt und im Vorfeld natürlich ah an tz an Mitarbeit an der Konzeption… wird er immer zu HR gehen und von uns erwarten dass ma ois machen…” |
| E 2 Z. 487 | “…diesen Wandel zu begleiten und da eigentlich die Mitarbeiter fit zu machen für die neue Welt sozusagen…” |
| E 2 Z. 551 | “Rausgehen zu den Leute fragen „was is denn dein Problem wo gibt’s Probleme wo gibt’s Ziele wie sehen die Ziele aus was gibt’s für Rahmenbedingungen?“. Ich muss raus muss mit den Leuten sprechen dann kann ich über Lösungen nachdenken.” |
| E 2 Z. 554 | “…das müssen feststehende Prozesse sein…dass ich Prozesse hab rausgehe zu der Zielgruppe zu den Vertretern dass ich verstehe…” |
| E 2 Z. 668 | “…erste ist der Umgang mit Veränderung das heißt zu lernen wie gehe ich mit der Unsicherheit um wie gehe ich mit dem Wandel um das zweite wär Lernen mit eben diesen neuen digitalen Möglichkeiten das heißt wie kann ich eigentlich persönlich am besten mit diesen neuen Möglichkeiten umgehen und das dritte wär eigentlich wie kann ich in einem Team mit all dem mit dem Wandel und mit dem Thema ähm Digital umgehen?” |
| E 2 Z. 480 | “…Auftraggeber so zusagen der is eigentlich die Geschäftsführung…” |
| E 2 Z. 416 | “…natürlich muss man es auch messen…irgendif wann wird die Geschäftsführung auch kommen und auch fragen „was bringt mir das Ganze?” |
| E 3 Z. 621 | “Ahn mit den Vorgesetzten spricht mh alles auf Schiene hält aber auch neue Projekte initiiert managet steuert…” |
| HR 2 Z. 123 | “Weil sie regen si glet auf wenn was net passt…na weil es hüf eh nix bevor ma da umadumredi is gscheider ma sagt des so wie’s is und dann kann ma entweder a Maßnahme setzen oder es is kane möglich. So handhaben wir des hoid.” |
| HR 1 Z. 339 | “…geplant kabet dass ma des einführen dass ma uns des anschau und dass ma dann wirklich a Feedback einführen…nachdem so viele Schwierigkeiten gem hat was soi i da groß fragen. Des weiß i eh dass i da net drüber reden muas ja? Da brauch i net mehr Feedback einhoin.” |
| HR 1 Z. 601 | “…verantwortlich san bis hin zu Testung dass a funktioniert von der technischen Seite her söbst wenn da die IT verantwortlich is und die IT also frage ich ob dann kann ma entweder a Maßnahme setzen oder es is kane möglich. So handhaben wir des hoid.” |
| E 3 Z. 606 | “…so dass zentral mehr oder minder da aus dem HR-Bereich heraus des gesteuert wird gemanagt wird des is der Punkt.” |
| E 1 Z. 723 | “…einfache Geschichten ah ka Thema ah des is dann wirklich mit dem konzernalen tool ganz ganz einfach…” |
| E 2 Z. 582 | “…Qualitätsstandards setzen und generieren und dazu brauch ich Kompetenzen dazu brauch ich Skills…” |
| BC 5 Z. 196 | “…vielleicht konkret des Beispiel vielleicht nu hinzufügt oder so irgendwas ah dass ma da hoid irgandg gei a optische Beispü dabei…” |
| BC 5 Z. 117 | “…nachand hat des wieder von Linz aus glöst wenn…Und des ja weiß i net wär vielleicht zu verbessern dass des ja sag i amoi da nächste Vorgesetzte oder da Kreisgruppenleiter dass des ah irgendwie machen könnte.” |
| E 3 Z. 155 | “…sehr viele Realvideos um fallbasiert und vor allem auch und des is jetzt der Punkt immer mit dem Bezug zu dem Unternehmen…wohlwollend aufgenommen weil halt dass dann welche von ihnen sind und des is noch amal a Stück weit viel besser als wenn’s umgekehrh wäre.” |
| E 2 Z. 663 | “…Menschen die in ner Welt sind die sich extrem wandelt die extrem schnell sich wandelt das is das Neue der Wandel is eigentlich gar nicht das Neue sondern die Schnelligkeit is das Neue und mit dem einhergeht auch ne Unsicherheit bei den Menschen…” |</p>
<table>
<thead>
<tr>
<th>Seite</th>
<th>Zitat</th>
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</thead>
<tbody>
<tr>
<td>BC 9 Z. 176</td>
<td>„...muast denga wie i angfanga hab mit was ma da afganga ham da hama mit da Hand nu gschrieben was ma machen net eingeben da is da Leistungsausweis nu vor die dir glegen so a Zettel und da hast einigschrieben...“</td>
</tr>
<tr>
<td>BC 9 Z. 152</td>
<td>„Oiso i hab mit Computer i hab a zu Hause kan Computer i hab nix i hab mit am Computer nix zum doa i kann net amoi E-Mail (?) öffnen [lacht] i muas ehrlich i hab mit an Computer i schau liaba weg wie hin.“</td>
</tr>
<tr>
<td>BC 9 Z. 240</td>
<td>„...und wieder mit zehn Leit weniger ois wie vorher...“</td>
</tr>
<tr>
<td>BC 6 Z. 285</td>
<td>„...dass ma an Chip implementiert graitg...“</td>
</tr>
<tr>
<td>BC 4 Z. 50</td>
<td>„...i hoff es kummt mehr.“</td>
</tr>
<tr>
<td>BC 4 Z. 207</td>
<td>„Najo wünschen dua i ma fürs fürs Lernen dass ma do dann weit mehr unterstützt wird a von da Firma dass ma wirklich sie bieten eh Schulungen an dass ma des a bissl verstärkt macht das ma wirklich olle Mitarbeiter auf ein Level bringen kann und dass ma a vielleicht aufernaturlich Sachen anhietet quad machen’s eh a. Englischkurse oder so aber kummt ma sicher nu mehr.“</td>
</tr>
<tr>
<td>BC 7 Z. 248</td>
<td>„...wie du a Facebook-Profil hast wirst so a eigenes voest-Profil ham und über des wirst du dann ois abschliäb...“</td>
</tr>
<tr>
<td>HR 2 Z. 325</td>
<td>„Ohne a guade Ausbildung Fortbildung oder Weiterbildung wird gar nix mehr geh wirst kan Beruf mehr griang oder Arbeit schätzt i amoi.“</td>
</tr>
<tr>
<td>HR 4 Z. 473</td>
<td>„...Datenschutz is a großes Thema... bin i sehr optimistisch oiso i hab ka Angst vor dem...“</td>
</tr>
<tr>
<td>HR 4 Z. 462</td>
<td>„...gut ausgebildet fit und haben Verständnis dass des machen ah und die Maschinen werden trotzdem ah serviciert werden müssen gewartet umgebaut ah ah Produktzyklen und des wird durchaus nu Menschen und des was da do ois mit Gesten geht und aus Datenbrillen oder irgendwie implementiert is ins Aug des is dann selbstverständlich.“</td>
</tr>
<tr>
<td>HR 4 Z. 470</td>
<td>„...weil sich de des gar net vorstöhn kennen dass ma auf an Zettel was aufgschrieben hat.“</td>
</tr>
<tr>
<td>HR 1 Z. 679</td>
<td>„Oiso von dem her glaub i dass diese dieser Entwicklungsstand oid und jung und gewisse Hemmschwellen immer geben wird nur san’s dann scho ganz andere Themen.“</td>
</tr>
<tr>
<td>E 2 Z. 661</td>
<td>„...Menschen in den Mittelpunkt zu stellen und seine Bedürfnisse und weniger die Technologie...“</td>
</tr>
<tr>
<td>E 2 Z. 634</td>
<td>„...Lernen wird halt per se individueller gleichzeitig wird der Vernetzungsgrad größer weil die Themen so komplex werden dass ich sie allein net mehr lösen kann. Das heißt jetzt Zugang zu Experten zu Wissen die von anderen oder das Wissen das von anderen kommt das wird steigen aber per se wird das Lernen n’individueller Prozess werden. Und dieser individueller Prozess äh der wird durch Technologie einfach unterstützt werden und wir wissen wahrscheinlich heute noch gar nicht was da 2050 für eine Technologie geben wird...“</td>
</tr>
<tr>
<td>E 1 Z. 765</td>
<td>„...werd des Lernen verbessern können und aber teilweise einfach ah wegrationalisieren können i werd teilweise nimer lernen oder des Detaillernen...i kann mi auf die Zusammenhänge fokussieren ah heutzutage ahm manche Leit drauffen die kénna die Zusammenhänge net weil’s net relevant san fia ermr der muas seine seine 87 Handgriffe die muas er verwalten kenna im Griff ham ah die großen Zusammenhänge san fia ermr ja fast a fast a Belastung wenn i mi jetzt von de 87 Handgriffe ah die Hälfte davon ah soiche Assistentensysteme zur Verfügung stöh dass er die a hinhört ohne dass er jetzt da gedrillt wird ahn dann kann er si auf Zusammenhänge natürlich mehr fokussieren.“</td>
</tr>
<tr>
<td>E 1 Z. 520</td>
<td>„...geht eben net in in zum PC lernt des dort geht dann ausi und sagt dann ups jetzt kenn i mi aber nimer aus sondern der spielt sich des Video von sein Kollegen spielt er si ein ah kann genau nachvollziehen was der da für Schritte macht oder wenn i jetzt an bei uns...“</td>
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<td>Page</td>
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<tr>
<td>527</td>
<td>denk was da an Parameter am am Hochofen oder wo eingestellt werden ah und kann des eben entsprechend wirklich gut nachvollziehen.”</td>
</tr>
<tr>
<td>3 777</td>
<td>“...Kontext sensitives Lernen ah dass es keinesfalls mehr oder minder in keinen Seminarräume oder in Lerninseln oder in Pausenräumen stattfindet sondern mehr wirklich vor Ort und des auch in der Produktion mehr Möglichkeiten gibt ah aufgrund hoid der technischen Entwicklungen vor allem.”</td>
</tr>
<tr>
<td>3 747</td>
<td>“...wenn hm es so is dass ah i denk eher an die Medien die eingesetzt werden und die Art und Weise wie Wissen vermittelt wird hier hm noch ein Stück weit mehr ah i wüs net Praxis nennen vielleicht aber schon ein Stück weit mehr fast Entertainment reinkommt”</td>
</tr>
<tr>
<td>4 357</td>
<td>“…i glaub wo ma weiterdoa miasn is des Medium hoid a bissl geiler sag i amoi um in der Sprache der meisten Menschen zu sprechen und deswegen glaub i a dass ma a in die Richtung ma muss erna dann andere andere Geräte a in die Hand geben…”</td>
</tr>
</tbody>
</table>