Reskilling: The Future of Workplace Education
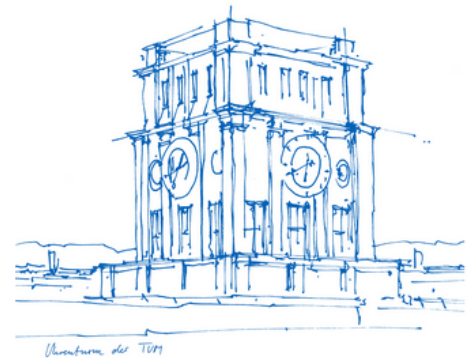
An overview of theoretical and practical reskilling approaches and novel solutions under development

Aiganym Seitkazina

Sergey Kramp

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Outline:

I. Introduction

The primary focus of this paper and the underlying project study behind it is reskilling. We decided to zoom in and focus on the topic of employee reskilling. The main mission of the project study is to provide an overview of theoretical and practical reskilling approaches and novel solutions to reskilling that currently exist in a simple and comprehensive manner. To do that, the paper aims to answer the following research questions:

- What are the most important competencies/skills for employees currently and in the future?
- Which theoretical approaches to reskilling exist?
- Which practical approaches to reskilling exist that are interesting, innovative and impactful?
- How can organizations reskill their employees and what kind of challenges they face?

This project paper is organized in a way that gives an overview of the reskilling as a general topic. First, the paper starts by defining what reskilling is, why it is important and what kind of trends are driving reskilling. When reading the paper one can notice that the definition of reskilling has evolved over time. However, the latest definition of this term defines reskilling as acquiring skills needed to change a profession to a different one than that an employee was doing before.

After setting a tone by defining what exactly reskilling is, the paper highlights why reskilling should matter and why it is worth looking at and considering a topic of a project study. It turns out that reskilling is more important than one can think. There are four main reasons for it: We are entering the Fourth Industrial Revolution phase that is already creating new jobs and new skills that one must acquire to be employed in the market; The effect of Covid-19 pandemic on businesses urge companies to refine and redefine their businesses, which requires that their employees have the necessary skill sets to drive the business in the post-pandemic world; Reskilling opportunities at the workplace have a positive impact on employees' job satisfaction, retention, and performance; Reskilling positively affects companies by giving greater returns on investment and help to attract top talents. Thus, based on four reasons one can understand why reskilling is such an important topic to consider and understand not only it is important from the economic and business stands but also from the human resources perspective.

Second, the paper sheds light on the demand side of reskilling, meaning what kind of skills and competencies are the most important for employees as of now and in the future (next 5-10 years). This was done by researching and reading through different reports by consultancies and job boards as well as other online resources. Thus, important skills and competencies were defined as the "demand side" of reskilling as those skills and competencies are what is demanded by the market, employers and companies that deploy reskilling.
The paper categorized skills in terms of two major clusters: soft skills and hard skills and presents an overview of sub-skills that are under each cluster. Understanding skills and competencies that are demanded from employees helps assess the impact of reskilling approaches in terms of their relevancy and economic importance.

Third, after defining the demand side, this paper looks at the supply side – theoretical and practical approaches to reskilling. This refers to what is actually supplied to meet the demand for skills. It can be looked at from two perspectives, a theoretical approach to reskilling and a practical one.
On the theoretical approach to reskilling, the paper covers different ways how in theory employees can learn skills and how reskilling approaches can actually give needed skills. For example, skills can be taught using online resources or led by instructors, they can also be taught using different

gamification elements, etc.

On the practical approach to reskilling, the paper looks at all different companies, services, startups that can provide skills to employees. The end product of the research on practical approaches to reskilling resulted in 12 solutions that are currently out there and that focus on reskilling.

These solutions were assessed based on three characteristics: if an approach is impactful, innovative and interesting. The paper defined impactful as how a reskilling approach addresses a gap in skills demanded from employees; innovative as how a reskilling approach actually re-skills and gives knowledge to those who want to re-skill; interesting as how a reskilling approach makes the employer's task of reskilling easier and better. This characteristic means how a reskilling approach addresses challenges that employers face when it comes to reskilling.

Fourth, the paper acknowledges that reskilling can be an overwhelming task for an employer/company and sets out specific challenges that can be out there. However, not only does the paper mention challenges, but it also attempts to address those challenges proposing a guideline for employers and companies on how they can address reskilling using a five step approach. These five steps include: assessing critical skills and competencies; categorizing them; determining who needs reskilling and encouraging employees to be on board with it; assessing constraints and preferences of those who need reskilling and, lastly, implementing reskilling, for example, by using practical reskilling approaches and continuously assessing the whole reskilling project and process in order to learn on the go and correct the approach if needed, as well as looking at if the reskilling is providing any visible benefits to the company.

II. Reskilling: definition, importance, trends, and challenges

1. What is reskilling?

The history of reskilling dates back to the XX century. One of the first articles related to reskilling was written by Hutton and Ley in 1987. In the paper the authors warn about reskilling because of the introduction of information technologies (IT) into jobs, especially clerical white-collar jobs. They define reskilling as taking formal courses to learn skills needed to use IT for job-related tasks. Another early article that mentions reskilling is written by Kanpol (1993). In this article the author talks about reskilling teachers and explains reskilling as an ability to not only follow a given curriculum of what to teach and how, but to actively decide based on a context what to teach and how to teach. In summary, in the early 1990s reskilling was considered as being conscious of one's work and having power over how one does his/her work instead of just following given guidelines.

Coming to the recent definition of reskilling in the XXI century, academic articles and official reports do not offer a formal definition. However, one may derive a definition based on the context and examples given in those articles or reports. For example, World Economic Forum regularly publishes reports about reskilling aimed at determining which jobs will, most likely soon, become obsolete and how those roles can be mapped to different roles by giving various examples of possibilities one can take. An instance of such a possibility is when one moves from a Secretary position to a Human Resources Specialist position by acquiring the skills needed to perform tasks in the new role. Another example is to transition from a Cashier to a Retail Salesperson or from a Barista to a Food Service Manager. Thus, reskilling is used in a context of acquiring a certain set of skills to perform a job that is different from the one's current but still adjacent, meaning that the new role will also benefit from the skills acquired from the previous role (World Economic Forum, 2018). Online web resources define reskilling in a similar manner: "Reskilling means looking for people with adjacent skills that are

close to the new skills your company requires. It provides a lateral learning experience" (TalentGuard, 2021). Another web resource defines reskilling as "training for employees who have shown they have the aptitude for learning a completely new occupation" (ManagementConcepts, 2021). In a nutshell, reskilling can be defined as acquiring skills needed to change to a profession different from the one the employee was doing before.

One more aspect that needs clarification is the difference between reskilling and upskilling, as these terms sometimes are used synonymously. However, they are different because upskilling is about acquiring skills that are needed to advance in one's profession or to move up the career ladder in the same area (ManagementConcepts, 2021; TalentGuard, 2021). The main difference, thus, is that reskilling helps to change roles in a given field, while upskilling is related to advancing in one's role or career.

2. Why is reskilling important?

"When the weather forecast says a hurricane is coming, we act. We take precautions for our own homes. We help our neighbors, and we join our efforts in local communities. We take joint responsibility because we are aware of the dire consequences if we do not act. I wish the forecast to invest in skills could be taken as seriously – that more people, companies, and societies would start to invest in skills, reskilling and lifelong learning. If we don't, it will not only hamper businesses and the foundation for our economies. It could undermine our entire societal contract" said Peter Hummelgaard - Minister for Employment, Ministry of Employment of Denmark (Hummelgaard, 2020). Other sources also mention a huge importance of reskilling, which can be summarized in four explanations.

A) *We are entering the Fourth Industrial Revolution phase that is already creating new jobs and new skills that one must acquire to be employed in the market:*

Fourth Industrial Revolution (4IR) is a term coined by a Prof. Klaus Schwab, who summarized it as a high interconnectivity due to the massive improvement of digital capabilities that will lead to redefinition of how we perceive physical, biological, and digital borders. In other words, it's a seamless interconnectivity of everything that will create completely new opportunities and will redefine the employment market in terms of skills that people need to stay in the job market. These skills will most likely be related to usage, working with and integration of technologies into the daily work life. Summed up as technological skills, the demand for those skills will likely rise by 55% in 2030 (De Ruyter et.al, 2018). Thus, reskilling will not be a choice anymore but rather something that will be inevitable as we move more towards the 4IR. However, the effects of 4IR can already be seen in the employment market. Already in 2017 ManpowerGroup's Talent Shortage Survey revealed that 40% of employers have difficulties finding employees with the necessary skills (World Economic Forum, 2018). Dating back to 2016 World Economic Forum predicted that by 2020 more than 1/3 of skills needed for employees to perform their jobs will be comprised of completely new skills. Thus, comes the importance of reskilling (World Economic Forum, 2018). Their latest report of 2021 highlights that around 1 billion jobs will be transformed due to technology in the next 10 years alone, and to meet that change the world must focus on reskilling. If that demand, however, is not fulfilled, that might cost economies around $11.5 trillion potential in GDP growth. When looking just at the next 1-2 years, it is predicted that 133 million new jobs will be created to meet the skills demand of the characteristics of the 4IR (Zahidi, 2020). Whiting (2020) also quotes findings of the World Economic Forum research that by 2025 as much as half of the employees will need reskilling.

B) *Effect of the Covid-19 pandemic on businesses urge companies to refine and redefine their businesses, which requires that their employees have the required skill sets to drive the business in the post-pandemic world:*

Coming to the present times, we must mention the effect of the Covid-19 pandemic on jobs. Recent McKinsey report of 2020 by Agrawal, et.al. (2020) highlights the uttermost importance of reskilling in the current and post-pandemic world. As companies are getting ready for the post-pandemic world, they are pivoting or have already pivoted their business models to adjust to the new world. New business models require new skills that can help achieve the highest gain from that business model. Therefore, business model change also requires change in skills that employees have, which requires reskilling. Skills that need to be developed can be differentiated to personal or professional ones. On the personal side the important skills are remotely working in an effective and efficient way, being flexible and adaptable to constant changes, emotionally stable, staying social, despite the fact that human interaction has become more digital, and developing critical thinking. On the professional side the skills involve harnessing technological advancement to do the work faster, better, and more efficiently.

The report by McKinsey (Agrawal, et.al., 2020) urges companies to start reskilling as soon as possible. According to the report, companies that did at least some reskilling activity are more ready for future changes in required skills of employees than those companies that haven't done anything in that area, which is visualized in Figure 1.

Organizations that had already tried reskilling felt more prepared to take on future skill gaps than those that hadn't.

Assessment of previous reskilling, % of companies that said they were unprepared to address the potential role of disruptions due to market and/or technology trends
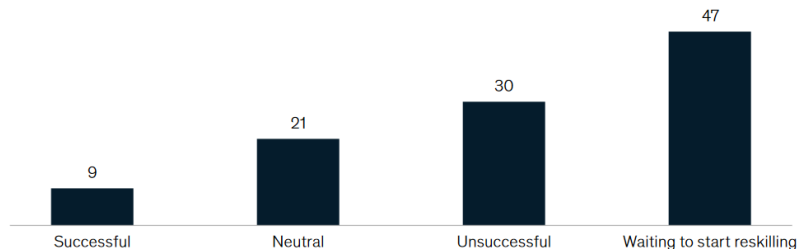
Figure 1

Note: % of companies that said they were unprepared to address the potential role of disruptions due to market and/or technology trends. Adapted from "To emerge stronger from the COVID-19 crisis, companies should start reskilling their workforces now" by Agrawal, et.al. (2020), p.6., McKinsey & Company, Organization Practice and McKinsey Accelerate.

C) *Reskilling opportunities at the workplace have a positive impact on employees' job satisfaction, retention, and performance*

In the 2020 McKinsey report by Agrawal, et.al (2020) written on the effect of reskilling programs, the respondents stated that they saw an improvement in as much as seven performance indicators, the most important of them being employee satisfaction (Agrawal el.al, 2020). Other sources indicate that reskilling programs can have a positive influence on employee retention (People Goal, 2021). This is also stated by the Glint Research by Kitto (2020), which found out that employees that have learning opportunities at the workplace are 2.9 times more likely to stay with the company they are currently working for at least in the next 2 years. This could be because employees that participate in reskilling programs see them as an investment in their future and by their employer, especially if the

reskilling programs are integrated in the employees' daily tasks. Participation in these programs also leads to higher employee engagement and subsequently to employee satisfaction, which results in higher performance (People Goal, 2021). Lutin (2020) also adds that when employees can reskill themselves, they feel more meaning from the work they do, which increases the quality of their end work.

D) Reskilling positively affects companies by giving greater returns on investment and help to attract top talents

Recent trends indicate that companies are implementing reskilling programs to give the existing workforce the skills that will be required in the future, as they can no longer rely solely on hiring new employees to address the growing skill gaps. Hence, retaining employees that are now equipped with valuable skills the company has paid for becomes a priority. Luckily, it is also true that skilling programs in general have shown to have a direct impact on the returns organizations realize from investments. For example, an IT project has a higher probability of succeeding and meeting its objectives if resources are allocated to training (Anderson, 2011). Companies stand to gain by introducing reskilling programs. The 2020 McKinsey report by Agrawal, et.al (2020) showed that nearly half the respondents that were asked about the effect of the implemented reskilling programs in their companies replied that they have seen an impact on bottom-line growth that was equal or greater to the investment in the programs.

Reskilling programs can also be useful in attracting young talent. Gen-Z workers, who are now entering the workforce, seem to put a stronger emphasis on learning and development. Thus, employers that are known for providing training programs will be more attractive to top talents (People Goal, 2021).

3. What kind of trends are driving reskilling?

Although reskilling has been around since a century, every period has its own drivers of reskilling. In the XXI century some important trends seem to drive the need for reskilling, which are:
- Digital transformation (Dittrich, 2016)
- Fourth Industrial revolution (De Ruyter et.al, 2018; Dittrich, 2016)
- High usage of mobile, social media (Zou, et.al., 2021)
- Changing economic situation, e.g. Covid19 pandemic (Zou, et.al., 2021; Agrawal, et.al., 2020)
- Arrival of AI (Zou, et.al., 2021), IoT and automation (Dittrich, 2016)
- Business model change requires new roles, new skills (Agrawal, et.al., 2020)

III. Demand side: Overview of the most important skills and competencies for employees

After doing research on different skills and competencies that are the most important for employees currently and in the future (next 5-10 years), one can see some trends that help to categorize those skills and competencies. On the top level, there are hard and soft skills, which are mentioned in a continuous manner by different resources. On the granular level, each hard and soft skill set can be categorized into subcategories that are described below.

1. Hard skills

Hard-skills are "skills relating to a specific task or situation, comprising both understanding and proficiency in such specific activity that involves methods, processes, procedures, or techniques" (Leitao, et.al, 2020).

Based on the research of different sources, some of the most important hard skills include:

A. Technical skills

Comprehension of programming languages:

Knowing a programming language is becoming as essential as knowing a language, like English. Programming languages can be used in developing websites, automating tasks, writing scripts and many other tasks (Van Nuys, 2020). Engineers can benefit by becoming proficient in other programming languages to make their daily tasks more efficient or even move to a new role where this language is used. Moreover, knowledge of programming languages paves a way for one to further develop in the direction of Artificial Intelligence, Machine Learning or Mobile App Development (Indeed Editorial Team, 2021). Even understanding how website development works in general can be a good asset for an employee (Malinsky, 2020).

Cloud computing:

One of the recent developments in business and technology has been increased usage of cloud service, in particular businesses are moving their digital assets to cloud based solutions. Therefore, companies require employees who are comfortable working with the cloud based platforms (Anderson, 2020; Leighton, 2020). Cloud computing skills are actually based on strong technological skills; thus, cloud computing skills can be developed once an employee has a good base of technological understanding (Indeed Editorial Team, 2021).

Artificial intelligence (AI) and Machine Learning (ML):

One of the recent trends in companies is leveraging data to improve the business. The leverage of data, however, requires more than classical analysis on excel sheets but also the usage of Artificial Intelligence and Machine Learning algorithms. Thus, AI and ML skills are very demanded nowadays (Anderson, 2020; Leighton, 2020). These skills allow companies to work with data and systematically understand the large amounts of data to answer specific business questions and give insights to managers. Skills around AI and ML include development of data models and creating and keeping AI

infrastructure. Those skills are highly based on understanding software design, statistics, comprehension of programming languages and engineering skills (Indeed Editorial Team, 2021).

Technological skills:

These are the skills related to usage, working with and integration of technologies in the daily work life (De Ruyter et.al, 2018; Zahidi, 2020; Whiting, 2020). In other words, these are the skills that help an employee to use different technologies comfortably and efficiently for work and easily adapt to new technologies.

Hard skills for Industry 4.0 in areas of mathematics, science, and computing:

A study by Leitao, et.al (2020) conducted a gap analysis in 6 technological sectors that are part of the Fit4FOF (Fit for Factory of the Future) project, which aims at analyzing technology trends in the Fourth Industrial Revolution in sectors such as Collaborative Robotics, Additive Manufacturing, Machine Automation, Human-Machine Interaction, Data Analytics, and Cyber-Security. The researchers found out that in those sectors the most important hard skills are: Artificial Intelligence and software development in Collaborative Robotics and Machine Automation; engineering fundamentals, design and simulation in Additive Manufacturing; Big data analytics and Development of applications for Virtual and Artificial Reality in Human-Machine Interaction; programming and deep learning in Data Analytics. Notably, all the mentioned skills are in the realm of mathematics, science and computing.

B. Business related skills

Working with Excel:

Excel is one of the most used corporate tools. Knowing it can help work with data, organize data, do calculations, and analyze as well as visualize data (Van Nuys, 2020). Mastering excel can be a very good asset to any employee in many different roles, highlights Malinsky (2020). Thus, opening doors to move to different positions.

Project Management:

Companies always need employees with project management skills, as companies constantly run projects and initiatives at different scales. Project management skills comprise setting project objectives and goals, meeting project goals, considering resources, managing resources, and delivering the project on time (Van Nuys, 2020).

User Experience (UX) Design:

No time in the past has the importance of user experience been highlighted as much as nowadays. Products are fighting for consumer attention and user experience of these products may be the most distinguishing factor between competitors. Having a great user experience has become a focus of many companies producing consumer products, as it shows that having a great user experience also has an impact on more revenue and returns to shareholders (Sheppard et.al., 2018; Indeed Editorial Team, 2021).

Audio and Video production:

With the development and revolution of the entertainment industry, skills related to production, editing and delivery of audio and video content are becoming ever more important. Mastering those skills using the available tools can get one a job in content producing companies, making it an easy target for reskilling (Indeed Editorial Team, 2021).

2. Soft skills

Soft-skills can be defined as "desirable qualities for certain forms of employment that do not depend on acquired knowledge: they include common sense, the ability to deal with people, and a positive flexible attitude" (Collins English Dictionary, n.d.).

There seems to be a shift in recent years toward emphasizing the importance of soft-skill over hard-skills. Surveys by the IBM Institute of Business Value have shown what are the most important skills in the eyes of executives in the years 2016 and 2018. According to these reports, soft skills such as time management are now considered to be more crucial than hard-skill (core/ technical skills) such as core capacities in STEM (LaPrade, et.al, 2019). Soft-skills are now growing even more importance to executives, because companies are tasked with continuous innovation in a constantly evolving landscape. Executives now recognize that navigating such a landscape requires individuals who can communicate effectively, solve problems, and think critically to successfully drive innovation (LaPrade, et.al, 2019).

Based on the research of different sources, some of the most important soft skills include:

Time management:

Time management has always been important for employees to make the most out of their working hours and to keep a balance between their personal and professional lives. However, in the pandemic time management has become an even more important skill, as many people shifted to working from home and staying productive in the home setting has proved to be a challenge (Van Nuys, 2020; Leitao et.al, 2020).

Remote working skills:

Working from home skills will not only be relevant in the pandemic era but also most likely will become a new normal in the post-pandemic era. Working from home skills include, but not limited to, mastering the tools that facilitate remote work setting, using video conference tools, communicating with other teammates in a digital environment and harnessing the full power of productivity at home (Van Nuys, 2020; Zahidi, 2020).

Emotional intelligence:

Leitao et.al (2020) as well as Van Nuys (2020) state that emotional intelligence is a crucial soft skill an employee must have and develop. Emotional intelligence is an ability to recognize one's own emotions and manage them as well as perceiving emotions of others. It has four important pillars: self-awareness, self-management, social awareness, and relationship management. Human resource managers state that emotional intelligence is one of the strongest predictors of one's success at work. Current trends show that for employees to have technical abilities alone is not enough, one must foster emotional intelligence as well (Landry, 2019).

Cognitive skills:

The most mentioned cognitive skills that are under the radar are critical thinking, strategic thinking, analytical thinking, and problem solving skills. Critical and analytical thinking as well problem solving skills revolve around identifying a problem and systematically coming to a solution considering different dimensions and constraints (Leitao et.al, 2020; Zou, et.al., 2021; Van Nuys, 2020; Whiting, 2020). Strategic thinking implies an ability to implement long and short term thinking as well thinking

on a small scale but also being able to look at the bigger picture. This skill of employees is crucial for any business (Van Nuys, 2020).

Communication and interpersonal skills:

The communication skills that most need improvement are specialized skills that concern interacting with people as well as online teams; collaborating with others; and communicating effectively in each context (Anderson, 2020; Leitao et.al, 2020; Zahidi, 2020; Zou, et.al., 2021). Ability to work in a team environment became especially important due to the pandemic as people switched from face-to-face team work to a remote team setting. Moreover, an ability to communicate effectively in a business context is also mentioned as an important asset to an employee (LaPrade, et.al, 2019).

Creativity:

Wardle (2021) argues that there are some skills that humans possess that are the most difficult to replace by any technological advancement. One of those skills is creativity. Creativity allows one to adapt to changes, respond to new developments, such as a sudden pandemic, and react in innovative ways. Zahidi (2020) and Leitao et.al (2020) state that creativity is a crucial skill for employees to have and to develop. Whiting (2020) also stresses the importance of developing critical skills by stating that it will be among top 10 skills needed for 2025.

Leadership:

Companies are realizing the importance of leadership skills, not only among C-level managers but also at every hierarchy, as leadership can be practiced at every role and by anyone. Leadership skills comprise a set of different skills that should result in being able to make decisions with other people, so that decisions are aligned to company strategy and corporate culture (Gavin, 2019; Moldoveanu and Narayandas, 2019). Leadership skills are also mentioned among the most important top 10 skills that will be needed for 2025 (Whiting, 2020)

IV. Supply side: Overview of theoretical and practical reskilling approaches

1. What kind of theoretical approaches to reskilling exist?

There are numerous theoretical approaches to reskilling, such as:

- **Instructor-led training**: it is like a traditional classroom but a teacher and students are connected via online platform or face-to-face (Zou, et.al., 2021).
- **Online courses (MOOCs)**: pre-recorded online courses people can take on a self-paced basis (Zou, et.al., 2021).
- **Immersive learning**: interactive online learning process involving different gamification methods, quizzes, using Artificial or Virtual reality tools (Zou, et.al., 2021).
- **Industry courses and certificates**: Certified courses or industry specific courses specialized in a certain domain (Colman, 2020).
- **Coaching and consulting**: finding mentors and coaches to target a specific skill. This is a personalized way of reskilling where mentor and mentee are in a face to face environment, be it online or offline (Colman, 2020).
- **Contextual learning** (or on the job training): learning a skill directly at work and applying those learned skills in practice. This also may involve directly collaborating with those who already have skills that are needed to be learned. Employees who have skills can teach another employee who needs reskilling on the job using theoretical and practical methods. This can also include rotation programs, internships, and traineeships (Colman, 2020; Moldoveanu and Narayandas, 2019).
- **Skill management tools:** Services or software that enable reskilling or are used to manage it.
- **Blended learning**: mix of two or more learning methods, such as on the job training and doing online courses (Colman, 2020)

2. What kind of practical solutions to reskilling exist?

When it comes to practical solutions to reskilling there are many different companies or solutions that offer their services. We collected a list of different practical reskilling approaches. This paper will present 12 different solutions to reskilling. We believe that doing more research on each practical reskilling solution will give us even more insights on the domain. We wanted to have a general overview of solutions to reskilling, not just provide a list of solutions. To have a general overview practical reskilling approaches were categorized based on certain common characteristics. Those common characteristics are: if a solution is impactful, innovative and interesting. Below are the definitions of each characteristic:

- Impactful: how does a reskilling approach addresses a gap in skills demanded from employees. To be more precise, how does an approach deal with the industry demand for different skills and if an approach actually addresses the need for certain highly demanded skills. This characteristic is directly connected to the overview of different skills that are currently demanded or will be demanded from employees, such as soft skills and hard skills and different skill sets within each of soft and hard skills. For example, cloud computing and Artificial Intelligence within hard skills or time management and creativity within soft skills and more.

- Innovative: how does a reskilling approach actually reskill and give knowledge to those who want to reskill. This characteristic is directly connected to the theoretical approach to reskilling that was described above. For example, a company may use instructor-led training or immersive learning for the purpose of reskilling. The way how an approach re-skills can be innovative and can distinguish it from other reskilling approaches.
- Interesting: how a reskilling approach makes the employer's task of reskilling easier and better and what benefits does it present. This characteristic means how a reskilling approach addresses challenges that employers face when it comes to reskilling. Reskilling can be an overwhelming task for an employer but when done right it can bring numerous benefits, as mentioned in the section about the importance of reskilling. The way an approach addresses an employer's challenge of reskilling can make a certain practical approach interesting on its own but lucrative for companies as well, as companies are the major customers of reskilling approaches.

Based on the definitions of impactful, innovative and interesting below we present each of the practical approaches to reskilling in detail. Each of the practical approaches to reskilling addresses the questions below:

- Innovative: What is innovative about the reskilling approach?
- Impactful: How does it address the demand for reskilling?
- Interesting: What kind of advantages does it provide to employers/companies?

1. MOTIF

Theoretical approaches: Blended Learning, Industry Courses, MOOC

MOTIF is a Hong Kong based skilling startup that focuses on the fashion industry. MOTIF provides online courses that are aimed at professionals and businesses that are either already in the apparel industry or want to establish themselves in it. The courses range from sustainability, women's fashion and fitting, 3D modelling, etc. The aim is to equip the participants with the most relevant and uptodate knowledge in emerging trends in fashion and apparel or to teach the participants to use new technologies that can provide them an advantage in the age of digital transformation (e.g. model clothing items using 3D modeling and simulation). The courses are held by industry experts that have practical experience in a particular topic and provide either practical exercise or theoretical explanations, usually through video recordings, animation and live seminars.

I. What is innovative about the approach?

In addition to individual courses, MOTIF offers course bundles, subscriptions and programs. Some of these programs are "Hybrid Programs'' which combine several methods of education. Namely, they combine on-demand courses with live sessions with the instructors. The on-demand courses are usually a bundle that includes pre-recorded video lessons and exercises that participants can complete at their own pace. These courses, however, are often too generic and lack the individual attention of a face-to-face interaction. The intention of these courses is to fit the needs of as many people as possible, and therefore any questions or inquiries that the participants have are left unaddressed. The way that MOTIF compensated for these shortcomings is by supplementing the program with live (in-person or online) webinars, which provide learners individual attention from the instructor and a platform on which questions can be addressed. This mixed approach lowers the costs of such programs as well, as instructor-led courses tend to be more expensive. The result is a reskilling solution that allows participants to learn parallel to work thanks to the flexibility of the on-demand courses, but can also be customized to the needs of the learner thanks to live webinars.

II. How is it impactful? What skill gaps does it address?
   ● Technical skills
   ● Skills related to Industry 4.0
   ● Working with Excel
   ● Remote working

III. What is interesting about the approach? What are the advantages?
   ● **Completely remote** - all of the courses and programs offered by MOTIF are available online, this includes the webinars and events hosted by them. This is a distinct advantage in the time of the COVID-19 pandemic and for companies that have a multinational staff
   ● **Easily scalable** - the online on-demand courses are not limited to a number of participants and the quality is consistent regardless of the scale. This makes the solution applicable to large scale firms as well as small start-ups.
   ● **Cost effective** - the hybrid courses reduce the costs of reskilling by reducing the amount of instructor-led course hours.

2. **Hitch**

Theoretical approaches: Skill Management Tool

Hitch offers various talent management solutions that implement AI and Machine Learning to help companies identify skill gaps and bridge them with talent from outside the company, but also with existing talent pool through reskilling.

   I.   What is innovative about the approach?

The software that Hitch offers allows companies to create an internal database, or internal market place as they call it, in which employees can create their profiles and store their current skills, as well as their development goals. The software then creates a comprehensive overview of what the skill capacities of the company are and where the gaps lay. It can then compare the existing talent to available positions and create a development path for the employee based on their stated goals and suggest reskilling programs if they are needed. Hitch can also be integrated with platforms like LinkedIn to search a large number of candidates and find the most suitable ones.

   II.   How is it impactful? What skill gaps does it address?

Hitch doesn't offer any courses or training programs, instead it automates the reskilling process. By having an overview of the skill that each employee possesses, the company can find the right reskilling programs that align with the needs of the company and the goals of the individual worker.

   III.   What is interesting about the approach? What are the advantages?
   - **Reduced spending -** Hitch enables companies to reduce the amount of new hires by tapping into the hidden potential of its workforce. The reduced hiring leads to lower hiring cost and onboarding costs.
   - **Increased employee satisfaction** - Hitch creates a development plan that is aligned with the goals the employees set. This increases the feeling of being challenged by one's work. Likewise, the employees feel that they are moving in their desired career path, and are less likely to look for a different job. Subsequently, employee turnover is reduced.
   - **Identification of skill gaps** - companies have a hard time realizing what the skills they need to be successful are, as well as determining what the current skill status in the company is. Hitche's AI can be a convenient solution to both these problems by having a database of all the employee skill profiles.
   - **Automated reskilling planning -** Hitch provides a scalable solution, as the software can find the best development path for each employee and suggest any reskilling programs that might be needed. This is particularly advantageous for large companies, for which generating large amounts of personalized programs can be difficult or costly.
   - **Better hiring -** By having an internal database, the employees of the company become potential candidates. Thus, hiring teams have a large pool of candidates they can pick from. Starting a new position for such internal candidates is likewise easier, as they are already familiar with ins and outs of the company and need less time to settle in.

3. Codecademy

Theoretical approaches: Immersive Learning, MOOC

Codecademy is an online platform where individuals can take interactive courses meant to teach programming languages, data science and computer science.

       I.   What is innovative about the approach?

Codeacademy's courses are built to be self-paced and self-taught. Meaning that the learning material is entirely on demand in forms of pre-recorded lectures and exercises. What sets Codecademy apart from other MOOCs is it's truly interactive nature. The learners interact with the course through a portal that contains instruction videos that explain a concept or a tool. However, this is not the bulk of the material. The courses consist mostly of coding exercises that call for the learners to write code to test their understanding of the taught material. This code is checked, executed and evaluated by an algorithm that shows errors and gives corresponding feedback. This way, learners get to practice what they learned immediately after they learned it and get immediate feedback.

      II.   How is it impactful? What skill gaps does it address?
- Artificial Intelligence (AI) and Machine Learning
- Comprehension of programming languages

      III.   What is interesting about the approach? What are the advantages?
- **Reduced onboarding time**- new hires can acquire the skills necessary for their position without the need for a mentor to teach them.
- **Improved communication with developers** - non IT employees can improve the mutual language with the IT personnel, by learning the fundamentals of coding and computer science.
- **Interactive and engaging** - the courses by Codecadamy are more engaging for the learner than a regular pre-recorded lecture, because they are built to give learners more frequent feedback through coding exercises and quizzes. Thus, the learning experience is more engaging and enjoyable.

4. Coursera for Business

Theoretical approaches: MOOC, Industry Courses and Certificates

Coursera is a MOOC that works with universities and other organizations to offer online courses, certifications, and degrees in a variety of subjects. Coursera for business is the branch that focuses on providing services for businesses. Coursera for business is meant for large corporations that seek to reskill their employees without having to build internal reskilling programs and courses.

      I.   What is innovative about the approach?

Coursera for business grants access to more than 4500 courses from Coursera's catalog. The courses are either university courses from top universities around the world (e.g. Yale, UC San Diego) or certificated courses that are provided by well-known companies (e.g. IBM, Google), aimed to generate more workforce in sectors they have an interest in. The courses are held completely online and in several languages, meaning companies from all around the world can use the Coursera for Business to reskill their personnel at any time. Included in Coursera for Business are consulting services that help companies that work with Coursera to determine what skills are needed for them to meet their goals, as well as what courses can be taken from the catalogue to learn them. Companies can also monitor the progress of the learning employees with tools provided by Coursera for Business such as the Skills Dashboards that provides employers with an overview of the courses taken and the progress of each participant, as well as statistics such as time until mastery.

      II.   How is it impactful? What skill gaps does it address?

Coursera addresses all of the skills mentioned in section II. This includes hard-skills and soft skills. It is the widest source of reskilling courses we found.

      III.   What is interesting about the approach? What are the advantages?
- **Scalable** - There is no limitation on the number of participants in the courses. Most courses are not supplemented by live sessions and are mostly based on pre-recorded lectures and exercises. This means that the approach can be implemented in both small and large scale companies.
- **High quality education** - Coursera collaborates with prestigious universities from around the world. The quality of the courses on Coursera are at par with courses offered on university campuses. A large part of the courses have the same material as provided in the university itself.
- **Fast delivery** - The Coursera skill management tools and APIs are easily integratable with companies' IT infrastructure.

    5. Festo Didactic

Implemented approaches: Contextual Learning, Blended Learning, Instructor-led Training

The Festo group manufactures production machines and parts in the fields of pneumatics, hydraulics, electronics, electrical engineering, mechatronics, etc. Festo Didactics, along with Festo Training and consulting, is a provider of technical training in these fields. They provide training solutions in the forms of instructor-led training, e-learning and training systems (laboratories and training centers).

    I.   What is innovative about the approach?

Festo Didactics provides the opportunity for employees to gain hands-on experience with new technologies, mostly related to automation and Industry 4.0, with training stations that are meant to simulate production lines and real working environments. These training stations are manufactured by Festo and can be combined to create laboratories or learning centers where employees can learn and get experience with new technologies before implementing that knowledge on the production line. The training solutions are also highly customizable and can be tailored to a company's production process and work methods.
In addition to technical training, Festo Didactics also provides a consultancy and training service: Festo Training and Consulting. With this service companies can work with Festo to create a holistic training program that spans from top management consulting and strategy to middle management training and production line technical training.
First, Festo's consultants set goals with the company's management. E.g. increased machine availability, reduction of waste, process optimization, reduced throughput time, etc. Then, an analysis of competencies is conducted to determine which skills need to be developed and which training, in the form of practice stations or instructor training, is necessary.
Finally, the training doesn't focus exclusively on increasing proficiency with the new production method or technology, but also on soft skills such as organizational skills, team-work, customer relations, etc. These soft skill courses are not targeted at management only, but also at production line employees.
Training eventually extends outside the simulated work environments and training centers and onto the production line. There, trainees can practice what they learned while still receiving the help and guidance of Festo's instructors.

    II.   How is it impactful? What skill gaps does it address?
- Skills related to Industry 4.0
- Project management
- Cognitive thinking
- Communication skills and interpersonal skills

    I.   What is interesting about the approach? What are the advantages?
- **On-site training** - training is held on the factory floor or at the customer's preferred location. This means that there is no travel time or travel expenses incurred on the side of the customer. Moreover, the training tables manufactured by Festo can be deployed in the factory, thus, making the transition from the learning environment to the practice more seamless.
- **Holistic training program (involves management)** - the reskilling programs include training of top and middle management, as well as factory-line workers. Such a program makes sure that knowledge of the new technology

is imbued across all levels of the company and the benefits that it offers can be taken advantage of to the fullest.

- **Tailored to company goals** - the training program is goals oriented. Meaning the training objectives and content depend on what the company seeks to implement with the new technology, its strategic goals and current processes. This means no two training programs will be the same, and each one is tailored to the needs of the individual company.

6. iSpring

Theoretical approaches: Skill Management Tool

iSpring provides tools for companies to create and manage e-Learning courses.

     I.   What is innovative about the approach?

iSpring offers two products that can be used by companies for the purposes of reskilling.
The first is "iSpring suite'' which is a software that integrates with Microsoft Powerpoint and enables users to create interactive learning modules. This software includes a video and audio editor, various templates for interactive quizzes, a large library of icons, backgrounds and stock images among others. These enable anyone to create interactive and immersive courses without any previous knowledge in video editing or design. Users can create interactive quizzes with games to test the participants knowledge and branching roleplay scenarios to simulate conversations with clients to practice communication skills.
Additionally, users of "iSpring suite" can work on projects collaboratively through an add-on called "iSpring space". This add-on stores projects on a cloud server and allows several users to make changes and edit the project in a similar way to "Google Docs".
The second product provided by iSpring is "iSpring learn". It is a LMS (Learning Management System) which can be used to store and manage training of employees in a company. "iSpace learn" allows administrators to assign and schedule training, as well as to monitor the progress of each learner on his respective course in the form of learning statistics.

     II.   How is it impactful? What skill gaps does it address?

iSpring doesn't address any of the skills mentioned in section II, instead it allows companies to create high quality inhouse reskilling programs.

     I.   What is interesting about the approach? What are the advantages?
- **No new software required-** There are virtually no IT related obstacles to using iSprints products, as "iSpring suite" can be integrated into Microsoft PowerPoint, a software that is used by the vast majority of companies, and "iSpring learn" is a cloud server that can be accessed through an internet browser.
- **24/7 customer support-** iSpring promises 24/7 around the clock IT support, thus removing the need for in-house IT administrators.
- **Compatible with all platforms-** iSpring removed technological barriers for learners. Courses created using iSpring can be taken on a variety of devices including PCs, Macs, tablets and smartphones.

7. Spearhead Training

Theoretical approaches: Instructor-led Training, Coaching and Consulting

Spearhead Training is a training and consultancy group that provides instructor-led (online and face-to-face) courses for UK and Gulf Region based companies. They mostly focus on management training, in particular on the development of soft-skills and general business administration topics such as, sales, HR and marketing.

I.   What is innovative about the approach?

Spearhead Training focuses on providing high quality training for a premium rate. They strive to achieve this by recruiting experienced instructors and limiting the number of participants to maintain an optimal trainer to learner ratio.
Spearhead Training employees only experienced and qualified trainers that are familiar with the business environments in which they offer their training, namely the UK and the Gulf Region. All of the trainers have more than a decade of experience in education or a business administration related topic and most have a Bachelor's or a Master's degree in their respective field. Nearly all speak English and Arabic, a few are former CEOs.

Spearhead Training offers both virtual and face-to-face courses. Both types are held by one of the instructors and there is a hard restriction on the number of to either 12 for face-to-face courses or 8 for online courses. The restriction is intended to prevent overcrowding and allow trainers to have the attention for each individual learner and their needs.
Additionally, Spearhead Training offers so-called "In-Company" courses. These courses start with a pre-course analysis and consultancy to get to know the business structure, business goals, challenges and training needs of the client. Then, a customized training program is created.
All of these factors, the qualified personnel, the small number of participants and the customized program drive the price of courses up, but help provide a truly high quality skilling program.

II.   How is it impactful? What skill gaps does it address?
   ● Project management
   ● Working with excel
   ● Cognitive thinking
   ● Communication skills and interpersonal skills
   ● Creativity
   ● Leadership

III.   What is interesting about the approach? What are the advantages?
   ● **High quality** - This quality focused approach is meant to offer the most premium and tailored approach for companies to reskill.
   ● **Insider knowledge** - Learners can draw valuable insider knowledge from the decades of experience the trainers bring to the table.
   ● **Agile** - Person to person teaching offers the advantage of enabling learners to give direct feedback to the trainer during the learning program. Thus, changes can be made and programs can easily be adjusted to accommodate the individual learner.

8. GeekBrains

Theoretical approaches: Instructor-led Training, Blended Learning

GeekBrains is an online education platform that focuses mostly on the Russian and Eastern-European markets. GeekBrains was originally founded as an online school for programming but has since expanded it's portfolio of courses and now hosts courses and webinars on information technology, marketing, management, design, analytics and other professions.

I.   What is innovative about the approach?

GeekBrains offers courses that span between 3 to 16 months. They strive to offer a valid alternative to university education, but one that is focused on preparing the learner for a specific profession rather than a broad area of application. Most courses are structured in a manner similar to a typical week for a university student, with a combination of lectures, exercises, homework and group projects. For most courses there are no prerequisites and the material is taught from scratch by instructors that have working experience in the field they teach. Most courses require 10 hours of active study per week with the live online courses and webinars taking place in the evenings, thus, making it possible for full time workers to take part. At the end of the course, Russian learners can receive a certificate from the Russian Ministry of Education that testifies to them completing an educational program.

II.   How is it impactful? What skill gaps does it address?
- User Experience (UX) Design
- Audio and Video production
- Comprehension of programming languages
- Project Management
- Artificial intelligence (AI) and Machine Learning (ML)

III.   What is interesting about the approach? What are the advantages?
- **Extensive and thorough** - The approach takes enough time to give the learner a deep understanding of a domain. This is in particular beneficial for more complicated jobs such as software development and other engineering domains, that require substantial background knowledge to gain mastery.
- **Combines several teaching methods** - learners engage with the taught material in several ways, which makes the learning process more interesting and increases retention. In addition to that, the combination of instructor-led lectures and self study material enable the learners to learn at their own pace while still getting individual attention from the instructors.
- **Insider knowledge** - Learners can draw valuable insider knowledge from the decades of experience the instructors bring to the table.

9. Educative

Theoretical approaches: MOOC

Educative.io is an online platform with programming courses aimed at beginner and experienced software developers. Educative distinguishes itself from other MOOCs by specializing on courses in a specific domain, namely software development, instead of touching upon a broad range of topics. Software developers need more frequent reskilling than most other professions, hence Education aims to frequently publish courses on the latest technologies in the domain of software development.

     I.   What is innovative about the approach?

In contrast to other MOOCs, the courses on Educative don't use video clips to explain the material, instead, they rely on written scripts, graphics and exercises. The reason for this is simple. People can read faster than watch videos and, therefore, can absorb more material in a shorter period of time. Educative claims that on it's courses students learn twice as fast, as a result of this. Another advantage of reading over watching videos is making notes and going back over material is more convenient, hence, Educative provides built-in tools that allow learners to take notes, highlight text and backtrack to them easily. Additionally, because no time is spent on recording and editing videos, creating an Educative course is faster, which allows new courses to be created more frequently. This is crucially important, because technologies and skills become outdated faster in the software industry than in others.

     II.   How is it impactful? What skill gaps does it address?
- Comprehension of programming languages
- Artificial intelligence (AI) and Machine Learning (ML)

     III.   What is interesting about the approach? What are the advantages?
- **Faster than video recorded courses** - Learners can cover more material in a shorter amount of time, because the courses rely on reading and practicing, rather than watching videos.
- **Up-to-date courses** - Courses are uploaded frequently and touch upon news technologies and methods in the tech industry.
- **Specialized topics** - Unlike other MOOCs, the courses provided are suitable not only for beginner programmers just getting into the field but also for experienced programmers, who look to deepen their knowledge on a topic or get familiar with new ways of doing things.

10. Strivr

Theoretical approaches: Immersive Learning

Strivr is a US based company that provides VR immersive learning services. The company started as an initiative by Standord university's football team coach to train his players with VR. He later on founded Strivr with the aim of training employees after collaborating with large American corporations (such as Walmart and Verizon).

     I.   What is innovative about the approach?

Strivr creates custom end-to-end immersive learning solutions with VR, primarily for large corporations with many employees. Strivr starts by conducting strategy consulting with its customers. During these strategy sessions Strivr's advisors translate the client's business goals into learning

objectives. These learning objectives are subsequently used for curriculum design. The curriculum is built by immersive learning and L&D experts, who derive critical use cases and success metrics. The next step is the creation of the actual learning content. Strivr employs professional filmmakers and UX designers to produce the learning material. The material is aligned with the requirements of the client and the environment the trainees will find themselves in. For example, for the training of Verizon's department store workers in stressful situations Strivr's production teams shot scenes in a department store with actors that played the roles of customers, shoplifters and police officers to simulate a robbery scenario. The learning material is produced using 360 degree cameras and other equipment, which allow the trainee to observe the environment with a VR headset and move around and interact with it using a remote.

The user interface is also customized to fit the needs of the training. For instance, the trainee may be asked to pick a reaction from a list of multiple choices, as in the case of Verizon, or to interact with objects in the environment by pointing at them or manipulating them.

After the training content has been produced and the software developed, the hardware, namely the VR headset and remote, is configured and shipped to the client. Following this, Strivr supports the rollout and implementation at the client's site, by guiding the trainees on the use of the hardware and the software and solving any technical issues that arise.

Lastly, data, such as the movement of the eyeballs, is collected and the progress of the trainees is monitored. Strivr can provide the customer with feedback on the performance of the employees, as well as create predictive models that evaluate who will be the most successful on the job and who requires more training and attention. The data collected can also be used to modify the training. For example, if a large number of trainees make the same mistake, more emphasis can be put in the training to address that pitfall.

II. How is it impactful? What skill gaps does it address?
- Technological skills
- Hard skills for Industry 4.0

III. What is interesting about the approach? What are the advantages?
- **Dramatic reduction in overall training time** - According to case studies published by the company, the time it takes to teach something in VR is substantially lower than by using traditional methods of education. The reason for this is two-fold. First, functional tasks, i.e. ones that involve doing things with the hands, are easier to learn by doing, rather than by explaining via video or presentation. Second, more learners can be taught in parallel. Thus, training duration is reduced.
- **Better retention** - Trainees retain the information they learn better. The training triggers an emotional response from the trainee. This emotional response strengthens the connection to the taught material and makes it easier to remember.
- **Exciting** - Most trainees find interacting with the new technology intriguing and are excited to participate in the training just for the sake of experiencing VR.
- **Better evaluation of learners** - Employers get better insight about their employees from the data collected in the course of the training. Such data can be used to identify the employees that require more training, as well as to recommend additional training programs based on the weaknesses that were exposed during the training.

11. Talespin

Theoretical approaches: Immersive Learning

Talespin is an immersive learning platform that enables training of soft skills with the help of VR and speech recognition. The company offers off-the-shelf courses, as well as creation tools that allow content creators to make their own VR courses.

      I.   What is innovative about the approach?

Talespin uses a combination of virtual reality and speech recognition to simulate a virtual one-on-one coaching session. This is done by rendering 3D animated environments with virtual human characters that talk to the learner and with whom he can interact. The courses can be completed with a VR set, consisting of VR glasses and remotes, or without one. The latter variant does require a microphone in order to record the speech of the learner.

Most currently available off-the-shelf material starts with a conversation with a virtual human coach and a one-on-one lesson. The coach talks directly to the learner and explains the content of the course the same way a real life human coach would. The topics range from public speaking, active listening and conflict resolution to diversity in the workforce. During the dialog, slides and figures can appear on the screen or in the VR environment (if the learner is using a VR headset) to help convey what the coach is explaining. The learner can interact with the coach by either selecting from a list of questions with the mouse/ VR pointer or by speaking the questions to the microphone.

After the lesson, the learner is put in a simulated scenario with one or more virtual humans and they need to apply the skills the coach taught them. The learner interacts with the characters by speaking to the microphone and the characters react based on the responses the learner gives. At the end of the simulation, the learner's responses are analysed and evaluated both on how appropriate they were in the situation and on other factors such as clearness of speech. Thereafter, the learner gets a feedback report that highlights how they did on each topic that was covered in the initial training, as well as a numeric score.

      II.   How is it impactful? What skill gaps does it address?
- Remote working skills
- Emotional intelligence
- Cognitive skills
- Communication and interpersonal skills

      III.   What is interesting about the approach? What are the advantages?
- **Safe space to make mistakes** - The technology provides a unique opportunity for learners to make mistakes, that would have dire consequences in the real world, without putting themselves or others at risk. This enables them to gain valuable experience at no external cost.
- **Better retention** - Trainees retain the information they learn better. The training triggers an emotional response from the trainee. This emotional response strengthens the connection to the material and makes it easier to remember.
- **Exciting** - Most trainees find interacting with the new technology intriguing and are excited to participate in the training, just for the sake of experiencing VR.

- **Content creation** - In addition to the off-the-shelf content, companies can use software provided by the Talespin to create their own training via a user-friendly editor that doesn't require any programming knowledge.

12. Better Up

Theoretical approaches: Coaching and Consulting

Better Up is a coaching and mental health platform that helps managers cultivate leadership skills and increase performance.

I.   What is innovative about the approach?

Better Up makes coaching affordable and on demand by visualizing the coaching experience. With Better Up members can choose from a wide selection of coaches to help them with challenges at work and in their personal lives.

The coaching process starts by the trainee completing an personality evaluation that determines their strengths, weaknesses and their leadership style. Better Up offers a large pool of coaches, therefore, the trainee gets help from an AI to determine which ones will likely be a good match for them based on the results of the personality test and the coach's experience. After selecting a coach, the coach and the trainee meet in weekly one-on-one or group video call sessions and communicate via messages in between sessions. During sessions the trainee and the coach touch upon experiences that are work related, but also discuss the trainee's personal life. This follows Better Up's belief that work and private life are highly intertwined and that the one affects the other. Thus, managers are taught about nutrition, sleep and parenting to help them cope with problems at home and thus become more effective leaders in the workplace.

The progress of the trainee is then tracked by Better Up using several quantitative metrics, such as effectiveness and engagement at work, to determine the effectiveness of the coaching and the impact it has on the employee and the company.
Additionally, in Better Up's corporate solution, an AI is used to determine which employees in the organization require coaching the most. This is determined both by the needs of the individual and by taking into account the effect on the company, i.e. it picks the employees whose improvement will contribute the most to the success of the company.

II.   How is it impactful? What skill gaps does it address?

This approach is highly personalized, and can address any soft skill gaps the individual learner has.

III.   What is interesting about the approach? What are the advantages?
- **Personal** - The approach is tailored to the individual and their needs.
- **Large pool of coaches** - Due to the virtual nature of the approach, trainees are not restricted to a geographic location and are ,therefore, more likely to find the right coach for them.
- **Visualizes impact of coaching** - Using quantitative measures, Better Up is able to calculate the ROI of the coaching, as well as effects on other performance measures.

3. How are theoretical and practical reskilling approaches connected?

By filling out Table 2 with actual practical approaches to reskilling, we provide an overview based on different dimensions. One of the most important dimensions is the link between how practical approaches to reskilling use different theoretical approaches to reskilling and which theoretical approaches are the most and least used. Table 2 provides such an overview and lists existing solutions as well. From looking at Table 2 one can observe that: (1) Practical approaches to reskilling mostly use a combination of different theoretical approaches. (2) There are very few practical approaches that use only one theoretical approach only. (3) One can notice that 12 reskilling approaches that are covered in this paper are almost evenly distributed based on the theoretical approach to reskilling. On the one hand, this shows that practical approaches to reskilling that are out there use very different means of actually reskilling customers. On the other hand, this table shows that there is no one theoretical approach that is overwhelmingly popular, correct or right for reskilling. This opens up possibilities for reskilling companies to distinguish themselves from others and tailor their reskilling solutions to the demands of customers.

Theoretical approach to reskilling that is used	Practical approaches to reskilling: name(s) of the solution provider(s)
Instructor led trainings	GeekBrains, MOTIF, Spearhead Training
Online courses (MOOC))	Coursera, Educative, Codecademy
Immersive learning	Codecademy, STRIVR, Talespin
Industry courses and certifications	MOTIF, Coursera
Coaching and consulting	Spearhead Training, Festo Didactic, Better Up, Talespin
Contextual learning (or on the job training):	Festo Didactic
Blended learning	GeekBrains, MOTIF, Festo Didactic
Skill management tools	iSpring, Hitch

Table 2: Types of theoretical approaches to reskilling are used by practical approaches to reskilling

V. Conclusion

The main focus of this project study was to look at reskilling, which was defined as acquiring skills that are needed to perform a job that is different from the one an employee is currently doing. For example, reskilling is needed to transition from a secretary to a human resources specialist or from a barista to a restaurant manager. Reskilling is not only important for companies, but also recently propelled by trends such as digital transformation, changing economic situation and fourth industrial revolution. A constantly changing world requires constant employee reskilling, therefore, reskilling becomes an even more interesting subject as it gains momentum.

This paper looked at reskilling by identifying what kinds of theoretical approaches to reskilling exist and thereby aims to propose some guidelines for companies on how they can reskill their employees. By following this goal, this paper gave insights on different competencies, soft or hard, that are most sought after. Then this paper looked at different practical approaches to reskilling and identified the most interesting, impactful, and innovative reskilling approaches that are out there. Innovative was defined in terms of what kind of theoretical approach to reskilling the company uses. Impactful was defined in terms of how a reskilling approach addresses a gap in skills or competencies demanded from employees, either soft or hard skills or both. Interesting was identified in terms of how a reskilling approach makes employers task of reskilling better and easier. Based on competencies that are demanded, theoretical and practical approaches to reskilling, this paper aims to provide a guideline for employee-companies on how they can reskill their employees.

This conclusion part of the paper aims at two important goals. First, it aims to provide a guideline for companies/employers on how they can approach a tremendous task of reskilling by looking at a bigger picture well beyond listing theoretical and practical approaches to reskilling. Second, it addresses actual challenges that employers/companies need to address before and when they are performing the reskilling in order to successfully drive the reskilling process and reap all the benefits of it.

Guide for companies to reskill their employers

The framework for a guideline on how companies can reskill their employees was inspired by Fernandez-Araoz (2017). The authors propose a model for companies that addresses how they can devise a successful leadership development program. Although their main focus is leadership development programs, similar steps can be very well used for reskilling employees. The reskilling guideline below includes five steps that companies can follow.

1. Assess Critical Competencies and Skill Gaps

The first step for employers in developing a successful reskilling program is to assess which competencies are currently lacking and are critical to the company's success. Once these competencies have been determined, the skill gaps can be derived. This can be done both externally and internally.

Externally, a company can assess which skills their employees may need by:
- Analyzing the industry trends and what kind of skills can help a company to adopt the trends;
- Analyzing competitors and assessing what kind of skills they are developing in their employees and for what purpose;

- Looking at general technological trends and analyzing how those trends can be used by the company and what kind of skills employees might need in case a company needs to use the new technology.

Internally, a company can make an assessment based on:
- Its business model and analyze what skills are necessary for a company to successfully achieve all the milestones of the business model;
- Where it is going as a business in the future and what skills are needed for that;
- Looking at its core competencies and searching for skills that can even further strengthen its core competencies.

However, these methods are non-exhaustive, and a company can find other ways to assess what skills it needs or will need the most in its employees.

2. Categorize Competencies

The second step is to categorize competencies a company needs the most reskilling in. The categories that this project study looked at were soft skills and hard skills.

Soft skills include but are not limited to leadership, emotional intelligence, time management, remote working skills, creativity, communication and interpersonal skills as well as an array of cognitive skills such as critical, strategic, analytical and problem solving skills.

Hard skills include technical skills, such as cloud computing, artificial intelligence and machine learning, technological skills, specific skills related to Industry 4.0, and business skills, such as working with tools such as Excel, project management, user experience design and audio-video production. Additionally, a company may also need some domain or industry specific skills as well.

3. Determine Who Needs Reskilling: Encourage and Motivate

The third step is to assess the employee base and to decide which employees need to go through the reskilling program. This choice needs to take into account the company needs, i.e. which employees will have the most impact on performance, for example, reskilling a team leader might have more impact than reskilling a team member, as well as the employee needs, i.e. which employees will benefit the most from the reskilling in term of their personal development goals. The inclusion of the individual goals of the employees in the reskilling decision can be just as important as the business consideration, as reskilling leads to higher retention of talent in an age where having good human capital is increasingly important (PeopleGoals, 2021). Once identified, those employees need to be empowered and motivated to reskill and understand the benefits of reskilling.

4. Assess Time Constraints and Learning Preferences

The fourth step is to assess time constraints and employee preferences. When it comes to time constraints a company has to decide whether it wants to use available tools that are ready to use, or to adopt and personalize tools or even create their own employee reskilling content based on the company needs. Using available content and tools is faster than customized or creating something from scratch.

Moreover, reskilling programs are designed for employees and, therefore, need to take into account their learning preferences. This can be done by matching employee preferences to theoretical approaches to reskilling:
- If employees will prefer a synchronous and personal reskilling approach, such methods as instructor-led trainings or coaching and consulting are suitable;
- If employees prefer asynchronous and self-paced reskilling approach, a massive open online course including interactive elements as gamification or VR, i.e. immersive learning, should be used;

- Other factors such as seniority, position, and future career goals play a part in determining the employee's preference. In any case, employers should communicate with the employees to determine which is the best applicable theoretical approach to reskilling

There are other aspects that should be considered as well when selecting the right approach:

- If nature of the reskilling is very specialized, a more applied reskilling approach such as contextual learning at the job or an industry specific approach is called for, as they focus on company specific tasks;
- If the reskilling is conducted on a substantial part of the workforce, for example by introducing a new manufacturing technology as part of Industry 4.0, or if the reskilling is has a profound effect on the way of conducting business, a coaching and consulting approach is likely the best fitting one, as it involve top management in determining company goals and derive the reskilling program from them.
- Employers should also consider using not only one, but multiple reskilling approaches combine, i.e. blended learning, which includes a mix of many approaches such as online learning and gamification.

5. Implementation and Continuous Assessment

The fifth and final step is to integrate the reskilling approach that was chosen as a result of four steps above, and make sure employees are using it and actually reskilling. This requires a proper integration into the employees' work schedule and the encouragement and empowerment of employees by management, so they believe in the approach and actively engage in the program. Here, the type of the approach plays a pivotal role in determining the emplyee's engagement. Technologies such as VR have been shown to be more engaging than other more traditional teaching methods (Likens & Eckett, 2020).

Moreover, it is of uttermost importance to monitor how the reskilling program is going and to constantly assess employee progress, performance, and overall satisfaction as well as impact of reskilling on the company business. Many reskilling companies, in particular ones that focuses on E-Learning, offer software that collects data on the progress of each employee and builds a picture of the progress of the individual in the programm, such as scores, and predicted time of completion (e.g. Coursera and Codecademy) , as well as the impact of the reskilling on the company (e.g. Better Up).

Employees should constantly loop through all five steps to stay competitive and keep their employees productive.

Challenges employers need to address for a successful reskilling

In conclusion, these five steps may help guide companies in their attempt to reskilling their employees. However, these steps are not without roadblocks.

Companies face great challenges in terms of reskilling as they need to identify which skills and which individuals need reskilling. Not only that, those skills need to be critical for the success of the company. Companies then need to deliver reskilling to employees and ensure continuous reskilling and invest time and money in reskilling. Moreover, reskilling requires the engagement and dedication from both employees and employers. What is most challenging is for employers to choose the right reskilling approach given its need for reskilling, time and budget constraints, as well as employee preferences.

To summarize, according to (Agrawal, et.al., 2020) for a reskilling to be successful there are couple of challenges that employers should focus on and overcome, which are:

- Identifying skills that need reskilling that are critical for the success of the company

- Delivering reskilling to employees
- Ensuring continuous reskilling
- Investing in reskilling constantly

The end goal of reskilling approach that companies implement should be creating a work environment that fosters super-learning: a culture in which skills based learning is intrinsically engrained in employees, learning is driven by data and based on employee capabilities, employees are offered flexible career opportunities (Lutin, 2020).

Looking at the challenges that employers/companies face can help one to look at a bigger picture of reskilling by understanding and assessing how practical approaches to reskilling also solve challenges that companies face related to successful reskilling. There seems to be no one stop place for companies to determine what the best approach for them is. There are numerous reskilling approaches and it can be confusing which one is the best suited for them. Moreover, constantly changing reskilling approaches can be frustrating for employees.

Therefore, employers face a challenge of finding the most optimal reskilling approach. The future of reskilling, thus, may be in finding a way of how employers can find the best way among many reskilling approaches that fit the company and its constraints the best by referring to a one stop reskilling environment. This environment should offer the best reskilling approach among many available given the company needs and constraints.

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