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# FAST ADAPTATION OF NEW COMPETENCIES

## THE ESSENCE OF INDUSTRIAL SURVIVAL

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# FAST ADAPTATION OF NEW COMPETENCIES: THE ESSENCE OF INDUSTRIAL SURVIVAL

*“New technologies and availability of information are making “I don't know” obsolete, creating new skills and knowledge possibilities never known before.”*

- THE EUROPEAN COMMISSION ON EDUCATION AND TRAINING



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***Technological advancement foster changes in work processes, as a result, organisations cannot deny the need to upgrade their skills to be relevant and be able to compete globally. The necessity for new ways of learning and development within companies in the current industrial revolution can be used as an organisation strategy for competitive advantage.***

**T**echnological advancement has challenged the industry and educational system to start thinking in another direction. The knowledge gaps created by the rapid progress in technology trends are felt at all levels of society. The workforce on a global scale is faced with a challenge to develop new competencies faster than ever before, to be able to multitask and focus on problem-solving. What we see today is that companies, especially SMEs, are seeking much more focused, frequent and affordable competence development programs. Conventional training and workshops often do not match fully expectations of the participants, requires significant time and money investments and cannot be seamlessly shared and adopted into the organisation. The multidisciplinary approach is the biggest challenge: interaction of IT, production, engineering and logistics into one inter-connected and inter-dependant system is a new reality that needs time and deep understanding.

Companies are aware that the competencies that were required in the past are not the same today. They also understand that the ability of the workforce to learn, develop, apply and adapt continuously to the changes within an organization is key to success. Developing non-traditional businesses and new competencies is a function of a company's ability to organize itself into a knowledge-creating system.



**DEVELOPMENT**

**SKILLS**



There are still organisations that focus on CV-initiative or import (buy) skills to fill the gap of competence rather than focus on building on the skillset of their existing workforce. The knowledge and skill set of an organization needs to follow and adapt to the technological advancement inside the company. Organizations should accurately improve and integrate new knowledge into their fundamental skills. Many companies feel that they are not prepared and equipped to support knowledge growth, not realizing that only they can create learning programs that will address the requirements of the organization.

If companies can combine their knowledge, experience and technology advancement with an ability to understand what competencies will be needed in the future, they can lead the organization forward at a time when fast development of new skills is so crucial to success. In today's global competition, it is not a question, If learning and development should be deeply integrated with an organization's strategy; it is a necessity. There are a lot of e-learning platforms and tools that support the development of new competences, however, these skills may not be that obvious for manufacturing companies. The company leaders need to be willing to create a more dynamic environment within the organization, to give space for learning and development. At the beginning the following questions should be asked on the top level of the organisation:

**HOW CAN WE ALIGN THE STRATEGIC PATH OF THE COMPANY WITH THE LEARNING AND DEVELOPMENT PATH OF OUR EMPLOYEES?**

**WHAT NEW LEARNING AND DEVELOPMENT APPROACHES OR TECHNOLOGIES CAN SUPPORT THE FAST DEVELOPMENT OF NEW COMPETENCES?**

**HOW CAN WE CREATE A MORE DYNAMIC GOVERNANCE STRUCTURE WITHIN THE ORGANIZATION?**

The above questions do not only focus on the learning and development within a company but also focus on an organisational strategy for creating a competitive and sustainable business. Continuous learning and development in companies are key for sustainability and process knowledge creation, especially in manufacturing. This article discusses some of the key point organisations can focus on to integrate learning and development within their organisations.



### **Companies should focus on adding a layer of new skills on top of the fundamental skills already existing in their workforce**

In manufacturing, we are always learning and growth is driven by continuous technological changes and advancements. Therefore, the decision for adding new skill sets within an organisation requires constant revision of fundamental skills existing within the workforce so they can follow the industrial revolution and gain competitive advantage. The revision of fundamental skills and the addition of new layers of skills create dynamic companies and always ensures comparative advantage.

### **Automation and digitalisation will have a big impact on skills manufacturers need to remain competitive**

Amid the epidemic, we have seen the need for automation and the possible impact of automation and digitalisation in companies. New ways of doing business emerged, although some companies are still struggling they are learning to adapt to the new ways of doing business characterised by Automation and digitalisation one way or another. No doubt about the necessity of learning and development in this regard. It is also important to note that automation and digitalisation are engulfed in advanced manufacturing

technologies driven by the current industrial revolution also known as Industry 4.0. Manufacturing companies need to upskill their workforce on advanced manufacturing technology skills that will enhance their competitive edge. This includes an in-depth understanding of the current trends and foundational skills required in the current manufacturing era. Most of the skillsets required in adopting industry 4.0 are available publicly. However, every company need to decide on their skills based on their business value, needs and customers. The learning and development within the organization is a continuous process and it always needs to go hand in hand with the business value.

### **On the job learning and through work experience is an important way of developing competence**

Relevant work learning and experience are key points for ensuring competencies within a company. In this case, companies need to have experiential learning and skills development aligned with their general organisation priority and values to enhance competence. Companies need to be able to spot talent, keep talent and maintain it through continuous learning and development within a company. This can be achieved through organisation values and lifelong learning culture. Companies should enable and empower their employees to have professional growth and development as well as personal development.

### **Participate in new projects/ working groups in your workplace**

Participation in working groups and new projects is one of the imperative ways of learning and skills development in companies. Participation in new projects increases motivation and creates a sense of responsibility on an individual and group level which also promotes organisational competitiveness. This is also one of the productive ways of identifying what skills to work on within the company.

### **Reflect on what you have done and learned. That will deepen the knowledge and help you look at things from new angles**

### **Share and communicate the lessons you learned to a wider audience**

This point emphasizes on knowledge creations concerning skills development which leads to process knowledge. Process knowledge is one of the key factors for competitive advantage and it is important for the manufacturing industry. Lesson learned in projects or during training and implementation are building stones for skills development within a company for the workforce. The documentation and sharing of knowledge learned to create opportunities for improvements on the learnings and the sharpening of the attained skills. Expert and leaders understand opportunities that come with knowledge sharing among which are; growth, competitiveness and improvements.

There are many other ways that companies can use to learn a new skill in the current global competition. Everything required to succeed is at our disposal however, it is not easy to apply it without actually being aware of the need for it. Companies that are successful today are realising and taking advantage of skills that improve their competitiveness. The technology that supports lifelong learning is already available it is a matter of how the companies will use it and adapt it to its current and future requirements.

### **Lifelong learning approach in companies**

Employers and employees are acknowledging that formal education credentials are no longer the only way to recognize and develop talent. Different from formal education, lifelong learning is the "ongoing, voluntary, and self-motivated" pursuit of knowledge for either personal or professional reasons.

Just advocating the concept of lifelong learning and placing the responsibility of learning on employees is not good enough and cannot guarantee the best results. While employees should be proactive, the company must also offer the resources, support and training needed to foster this kind of workforce and guarantee the maximum corporate benefit from lifelong learning. And this is particularly true to technological and fast-changing industries (which include almost all companies nowadays!).

There is a continuum from purely self-interested lifelong learning and rigid formal education where employers are taken from the workspace to the classroom. While the former does not guarantee the learning alignment to the company's interest, the latter brings the workers to a space that seldom resembles the real work problems they daily face. In the continuum between these two extreme scenarios, proactive employees are fostered at different degrees by the companies to follow some learning paths.

We can summarize the companies' alternatives within this continuum in three categories: just-in-time learning, opening learning paths, and focused training. In each of these categories, technologies can play an important role and university-industry collaborations can leverage their results either in terms of teaching methods or in terms of up-to-date content.

### **Just-in-time learning (JIT): I need, therefore I learn**

JIT learning is an approach to an individual or organizational learning that promotes need-related training to be readily available exactly when, where, and how it is needed by the learner. So, the information is delivered to learners at the moment they need it and to the location they need it in, without pulling the employees away from their jobs. JIT learning can either replace or enhance traditional education.





With today's advances in technology, on-demand services have been integrated into almost all aspects of everyday life, and JIT is about on-demand education. This education might relate to specific information about something or information on how to proceed while executing a task. JIT learning is most effective for personnel who work in the field and need courses and technologies "to-go" and often use mobile devices. Responsive technology brings the flexibility to successfully employing JIT learning methods. Augmented reality is another technology that can play an important role in JIT learning while executing activities.

Content for just in time learning methods should be short, yet highly relevant. The best way to address this is to look at actual competency gaps. The courses must also be categorized and organized in such a manner that searching for them is easy and requires the least possible amount of time and effort.

University-industry collaborations in terms of JIT-learning can lead to the definition of pedagogical methods for delivering the content, the structuring of the content, and the designing of the learning environment.

### **Opening learning paths: a beacon shedding light to the preferred direction**

One way to align the employees' lifelong learning initiatives to the company's interest is by making its business and technology roadmap goals available to the workforce. In this way, the company creates a "beacon" for giving direction to self-driven learning. Additionally, openly available courses or remote laboratories can be recommended or can be tailor-made to align with the company's roadmap.

Platforms such as Coursera and CEPHEI are examples of sources of courses (some open

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and free) for lifelong learning. The CEPHEI platform, which the University of Twente takes part in, focuses on linking the education with the practice, thus integrating the reality of professional innovation activities to the context of education according to the demand of the industry. The CEPHEI is a good (and not unique) example of the opportunity for university-industry collaborations. The companies can reach the CEPHEI partner universities and seek or suggest courses for including in the platform. In this win-win scenario, the industry benefits from high-quality courses that fit its interest and the university benefit from bringing to its courses real industry experiences.

A remote laboratory is the use of telecommunications to remotely conduct real experiments, at the physical location of the operating technology, whilst the scientist or students is assessing the laboratory from a separate physical location. For instance, an asset the industry has in several geographically distributed locations can be turned into a remote lab, so that all locations benefit from a unique training infrastructure.

### **Focused training: Formally follow a formal training**

Formal training where workers are taken to the classroom (physical or virtual) is still a choice, particularly when there are specific pieces of knowledge a group of employees need to learn. In this case, the key aspect is to minimize the time the employees are pulled away from their jobs and maximize the benefits from the time they stay in the classroom.

Blended learning and particularly the flipped classroom setting is adequate to this situation. The flipped classroom is a pedagogical approach in which direct instruction moves from the group learning space (classroom) to the individual learning space (home). Therefore, the content is checked at home through videos, readings, and quizzes and the class time is used to perform more dynamic, interactive, and creative activities, such as problem-solving and project work.

While the supporting technologies are similar to the “opening learning paths” category, the university-industry collaboration goes one step further since it requires developing



courses with content that are specific to the company's needs. Here courses are developed together, where the university staff brings their pedagogical and content/best practice knowledge, and the industry staff brings their practical knowledge.

There is also the benefit of becoming partners of initiatives such as CEPHEI, since the industry can host its courses in a platform without needing to create its course authoring and management infrastructure.

### **Education 4.0? “Employees and Employers 4.0?”**

Industry 4.0 has become a buzz, and “Education 4.0” is yet another “4.0” term that has been used, which relates to aligning learning to the emerging fourth industrial revolution's technologies including robotics, IoT, digitalization, automatization, and teleconferencing to name few. Although these technologies are indeed promising to education, they are the means and not the goal. Education, from 1.0 to 4.0, is about defining learning goals, using the best fitting pedagogical approaches to promote the learning in each context, and

then selecting the best fitting technologies. The actual times, though, indeed require both “employees and employers 4.0”. Lifelong learning and the use of new ways of learning and development within companies is both a reality and an opportunity.

### **One final note**

We discussed about the challenges companies are facing, when it comes to the point of building new competences. We also shed some light on the approaches that companies need to take in order to make the first step towards becoming a knowledge-creating system. Many times it is not the question of how to approach the challenge but who should approach it.

Companies need to understand that knowledge is part of all the levels in an organization and it is not a static process but a very dynamic one. Every employee is part of the puzzle to make the companies more competitive. Having a culture that encourages lifelong learning and invests time in revision of the fundamental skills and competences, plants additional layers to the strategic path of the company, creates a dynamic working environment and ensures a comparative advantage.