Best Practices on Work Based Learning – from the dairy industry

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Executive Summary

The dairy sector in its origin is based on Work Based Learning. In the European countries that are member of AEDIL, there is a myriad of different ways of working with work-based learning. In many countries work-based learning is a compulsory part of the dairy education in the form of one or more internships during the education. Furthermore, many dairy companies have their own training programmes for newly employed dairy personnel, where they do job shadowing, work with a mentor or receive a full education as a graduate programme that qualifies them to access leading positions within the company. And yet others, have exchange programmes with other countries with the aim of supporting countries with need for more dairy expertise, and at the same time providing the students with solid hands-on problem solving.

This report offers an overview of definitions of work-based learning in the traditional way, as well as looking into future definitions and need for innovative work-based learning. Following this, the report offers 10 examples on best practices on Work Based Learning collected among AEDIL-members. Furthermore, some interesting reflections are annexed at the end of the report.

Introduction

The EU workforce is aging and so vocational education and training – as a supplier of new specialists – is essential. Modernisation of vocational training and education is one of the main topics of current discussions both at EU and Member State levels. To grow the ‘appeal and prestige’ of vocational education and training, business sector, trade bodies, learning establishments and government must improve the quality and responsiveness to labour market needs. Knowledge of how different Member States deal with these challenges is important to assess experience and success. This is critical to the output for the Dairy Skills Gap that have been identified across 14-member states.

Increasing involvement in vocational training and education is a way to progress successful business competitiveness hence it is in the focus of several Global and European policies. Modern socioeconomic environments, innovation and transition to a knowledge-based economy require a better qualified labour force. This is due to our world been more ‘Global’ and the general levels of Business and Commercial restructuring.

For the Dairy Industry it is clear we need to adapt current delivery mechanisms from the more inflexible ‘taught’ in class for years to a more flexible system such as Work Based Learning based on Cedefop principles to allow commonality across member states.

To have an agency solely responsible for this focus allows member states to develop the EU strategy for 2020- “A European strategy for smart, sustainable and inclusive growth”. This strategy is a source document and plan for smart, sustainable and inclusive economic growth through knowledge and innovation, setting out an employment target of 75%.

The success of this strategy depends on the skills of Europe’s workforce. Enterprises need people with the skills required to compete and provide high-quality goods and services.

Individuals need the right qualifications to find jobs, maintain those jobs and indeed ‘grow’ in those jobs though additional Knowledge, skills and learning through experience. Individuals with low levels

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1 Riga Conclusions, 2015
2 EU’s decentralised agency created in 1975. Supports the development of European vocational education and training (VET) policies and contributes to their implementation.
of skills or no qualification are nearly three times more likely to be unemployed than those with high qualifications.

The dairy sector
In the EU, around 75 million people, nearly a third of the working population, have low levels of or no qualification. Too many young people, around 15%, leave school without any qualifications. In particular, the dairy industry with a total of 600,000 dairy farms, 12,000 processing facilities and 300,000 jobs, and producing 15% of all EU revenue, the European dairy sector is an important area in the European Union's agricultural economy. Europe’s dairy sector is also a major player in the global dairy economy. It produces nearly a quarter of the world’s available milk, i.e. (163.3 billion litres of cow’s milk), and holds a 27% market share in global trade (69.4 billion litres of milk equivalent): neck and neck with New Zealand.

The Riga EU conference of 2015 carried forward an agreement to develop high quality and labour market relevant vocational skills and qualifications, based on the learning outcomes approach and therefore agreed 5 outcomes(a-e) itself:

1. The promotion of work-based learning in all its forms, with special attention to apprenticeships, by involving social partners, companies, chambers and VET providers, as well as by stimulating innovation and entrepreneurship.
2. The further development of quality assurance mechanisms in VET in line with the EQAVET recommendation and, as part of quality assurance systems, establish continuous information and feedback loops in I-VET and C-VET systems based on learning outcomes.
3. Enhance access to VET and qualifications for all through more flexible and permeable systems, notably by offering efficient and integrated guidance services and making available validation of non-formal and informal learning.
4. Further strengthen key competences in VET curricula and provide more effective opportunities to acquire or develop those skills through Initial vocational education and training - I-VET and Continuing vocational education and training - C-VET.
5. Introduce systematic approaches to, and opportunities for, initial and continuous professional development.

Defining work-based learning
It is widely being acknowledged that work-based learning (WBL) strategies are a vital part in the ongoing and future development of the existing workforce. For example, in Europe (Ref I) the “Developing European Work Based Learning Approaches and Methods” (DEWBLAM) project intended to develop a Europe-wide network of models and approaches to WBL within a European context.

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4 Reference A.
consortium of establishments, with the aim of allowing access to Higher Education qualifications for those adults currently in employment, through accreditation of prior and experiential learning.

a) A broad definition of WBL is offered in Work-based learning: A New Higher Education where the authors expand upon their definition to include meeting the requirements of learners and the contribution that this learning will have in the development of the organisation in the long term: ‘Work-based learning is the term being used to describe a class of university programmes that bring together universities and work organizations to create new learning opportunities in workplaces.’

b) Gray identified three key elements to work-based learning which all learners and employees can relate to: ‘A definition for the higher education level could involve any of the following work-based learning types; learning through work, learning for work and learning at work.’

c) A further definition of work-based learning which encompasses foundation degrees is provided by Sodiechowska and Maisch: ‘...where students are full-time employees whose programme of study is embedded in the workplace and is designed to meet the learning needs of the employees and the aims of the organisation.’

d) With respect to pedagogy: ‘the practice of work-based learning can be considered to be the continued lifelong learning adults undergo throughout their lives, following education; in an educational environment.’

Work-based learning is a widely utilised tool employed by both education suppliers and businesses to educate and develop their students or work-force in all three elements outlined above. There are many WBL pathways involved throughout the education system as well as in higher education institutions and businesses, and there are many means by which the student is engaged and assessed.

Types of Work-Based Learning methodologies

Work-based learning allows learning through real work experience instead of — or in addition to — classroom learning.

a) Apprenticeship
   i. Is for anyone interested in getting a foot in the door of a skilled craft or trade.
   ii. Is a structured, formal way to gain skills on the job.
   iii. Is always paid.
   iv. Combines on-the-job training with classroom instruction.
   v. Registered apprenticeships are for adults aged 16 and over.

b) Cooperative Work Experiences (School/VET ‘placements’)
   i. Is for high school or VET students.
   ii. Is a formal arrangement between a school/VET and an employer.
   iii. Allows paid work while attending high school or VET.
   iv. Is usually supervised by a school representative to make sure that it matches your educational goals.
   v. Might require a class or seminar to supplement what you’re learning on the job.
   vi. Is subject to child labour laws.

c) Credit for Prior Learning (CPL)
i. Are for VET students or prospective VET students.
ii. Give VET ‘credit’ for activities or classes you’ve taken outside the normal Colleges/VET setting.
iii. Are sometimes based on classes that substitute for VET work in the workplace. Others allow you to meet VET requirements by taking tests or substituting related work or life experiences.
iv. Paid work experience, military service, volunteer work, and self-directed learning can all qualify as related experience.

d) Internships

i. Is for high school or VET students who want real-world experience to supplement classroom learning.
ii. Is a short-term work experience that allows you to gain practical skills and learn about an occupation.
iii. Can be either paid or unpaid.
iv. Sometimes provides school/VET credit.

e) Job Shadowing

i. Is for anyone, at any stage in their career, but is most common for middle or high school students.
ii. Ranges from a few hours to a few days.
iii. Allows you to follow an employee on the job to experience real, day-to-day work in a specific occupation or industry.

f) Mentorship

i. Is for anyone, at any stage in their career.
ii. Is a relationship with someone who is further along in their career field. Your mentor may or may not be someone you already work with.
iii. Can help guide your career decisions, both big and small.
iv. Can give you inside information about an occupation, industry, or career. This can help you set or achieve your career goals.
v. Can offer guidance, support, and motivation.
vi. Can range from a very informal to completely formal relationship.
vii. Can be face-to-face or via e-mail (often called e-mentoring).

g) Teacher Externship

i. Is for teachers to see examples of how school learning is applied in real life situations.
ii. Helps teachers create lesson plans and activities.
iii. Are common during the summer.
iv. Are sometimes paid (through a teacher grant).

h) Worksite Field Trips

i. Is a ‘guided tour’ of a business. It is usually for elementary or middle school students but includes VET.
ii. Is a chance to learn about work processes and the skill requirements of different jobs.
iii. Is a short-term experience that lets you explore many occupations at one time and ask questions.
iv. Is for an individual student or an entire class. It is usually more valuable for both students and employers when it involves a small group.

Over the Horizon Scanning – concepts

Working around the plethora of websites dedicated to crystal gazing about the future of learning, this article was discovered from the Association for Talent Development and is reflective of many sites.

- The next few years will bring a wider adoption of m-learning.\(^5\)
- All companies will be doing more microlearning.\(^6\)
- There will be much wider use of xAPI\(^7\) and learning records stores.
- Learning apps will become ubiquitous.
- Gamification\(^8\) will be for everything!
- Video learning will be on a smart device near you.
- Social learning is an idea whose time has come.
- Things are looking up for cloud-based delivery.
- Responsive web design\(^9\) will be the buzzword for 2017.
- 2017+ is the year of adaptive\(^10\), more personalized learning.
- Content curation\(^11\) for learning will lead to better learning.
- Look out for virtual reality and augmented reality\(^12\).
- Training will focus on performance; not on smiles.

Any of these predictions about technology and trends may come true. But The Association for Talent Development (ATD) believe the prognosticators are doing what they always do—looking at the future through the wrong end of the telescope. Before the Association for Talent Development (ATD) tried to see into the future, they studied the past. For more than 100 years, during the first industrial revolution, work meant using your hands to produce things. Training and learning was predicated on the need to manage all those hands. Business schools focused their management practices and principles on managing hands. Today, despite the desire some practitioners have to pile into The ‘Wayback Time Machine\(^13\), most of us produce work with our minds. The world has been transported into the knowledge economy so rapidly that many of people/students are still not sure what happened.

"Even in the workplaces where hands are still making things, minds are hard at work using the digital technologies to work faster, better, and smarter."

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\(^1\) M-learning or mobile learning is “learning across multiple contexts, through social and content interactions, using personal electronic devices”

\(^2\) Microlearning deals with relatively small learning units and short-term learning activities.

\(^3\) The Experience API (xAPI), is an e-learning software specification that allows learning content and learning systems to speak to each other in a manner that records and tracks all types of learning experiences. Learning experiences are recorded in a Learning Record Store (LRS). LRSs can exist within traditional learning management systems (LMS) or on their own.

\(^4\) Gamification is the application of game-design elements and game principles in non-game contexts

\(^5\) Responsive web design (RWD) is an approach to web design that makes web pages render well on a variety of devices and window or screen sizes. Recent work also considers the viewer proximity as part of the viewing context as an extension for RWD. Content, design and performance are necessary across all devices to ensure usability and satisfaction.

\(^6\) Adaptive learning, also known as adaptive teaching, is an educational method which uses computer algorithm to orchestrate the interaction with the learner and deliver customized resources and learning activities to address the unique needs of each learner. Computers adapt the presentation of educational material according to students’ learning needs, as indicated by their responses to questions, tasks and experiences. The technology encompasses aspects derived from various fields of study including computer science, AI, psychometrics, education, psychology, and brain science.

\(^7\) Content curation is the process of gathering information relevant to a particular topic or area of interest. Services or people that implement content curation are called curators. Curation services can be used by businesses as well as end users.

\(^8\) Augmented Reality (AR) is an interactive experience of a real-world environment whereby the objects that reside in the real-world are “augmented” by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and olfactory.

\(^9\) The Wayback Machine is a digital archive of the World Wide Web and other information on the Internet. It was launched in 2001 by the Internet Archive, a nonprofit organization based in San Francisco, California, United States.
All this means working/learning needs to make an abrupt turn and change our whole approach to the way we manage people, training, and learning. We know from experience that change is hard. We tend to grab onto the past and use it to design the future. It’s a profound failure of imagination. That’s why so many predictions on this year’s list feel so disappointingly similar to last year’s. They are based on a managing hands model that is well past its shelf life.

The future is no longer about looking for continuity with the past and choosing shinier versions of existing technologies and trends. Sometimes there needs to be a disruptive idea that lights up the crystal ball and makes us look at the future in a new way. We believe that future starts with a simple prediction: We will transit training and learning from a managing hands world to one in which we are managing minds. And managers will be at the centre.

Managers will think very differently. Training and learning are no longer the primary responsibility of someone else, such as the L&D department. The primary role managers will have will be helping people continuously learn, equipping them with the tools and technology they need, empowering them to work together, constantly collaborating, openly communicating, and figuring out what they need to know, and know how to do it so quickly and effectively. Managing minds is now their responsibility and they will need to rethink and relearn what to do. Managers will need to look for people whose EQ is as high as their IQ.

Managers will need to post on their walls and carry in their wallets what Arie de Geus said when he headed the Royal Dutch Shell’s Strategic Planning Group: “The ability to learn faster than your competitors may be the only sustainable competitive advantage.”

Employees have their own work cut out in this new economy. They will need to learn to “pull” the information they need from a variety of resources rather than wait around for the information to be “pushed” to them. The artificial and archaic way we separated learning from work will be replaced by the idea that work is learning. If employees are not continuously learning, finding what they need when and where it’s needed, they aren’t improving, creating, innovating, competing, or keeping up with change. In this new managing minds world, they need to be able to rapidly curate the information coming at them from all sides, apply that information to their work, and quickly decide what is useful. They will need to be able to communicate in every way, reflect on actions and decisions, and learn from everyone’s experience.

The only certainty about the future from here on out is that it will not resemble the past. We no longer have the luxury of time to define, design, develop, deliver, manage, and measure formal courses. Survival will require people who can navigate a rapidly changing maze of policies, procedures, products, and services at high speed. They need to find their own curriculum and courses, figure out an appropriate way to learn, and get on with it. It is cliché to say it, but employees will have to learn how to learn in this new environment. And management will need to support self-learning, not direct it. We discovered that it is already happening in companies around the world, an unknown yet powerful trend. So, our prediction for 2017: The future of learning is managing minds.
Conclusions

Although there are many ways to describe and define work-based learning, an example would be one that describes three key categories which encompass the many models of work-based learning:

‘A definition for all levels of learning could involve any of the following work-based learning types; learning through work, learning for work and learning at work.’

There is no rigid formula for designing work-based modules or resources and Merrill’s First Principles of Instruction provide a set of guidelines which lay the foundations for successful module development.

  a) Learners are engaged in real-work problems.
  b) Existing knowledge is activated as a foundation for new knowledge.
  c) New knowledge is demonstrated to the learner.
  d) New knowledge is applied by the learner.
  e) New knowledge is integrated into the learner’s world.

One key challenge to overcome is that of employer-engagement; successful engagement with employers can lead to successful and fruitful courses for the tripartite of supplier, student and employer.

Summary of the benefits of work-based learning

To conclude, below are a range of benefits when work-based learning is incorporated well into educational courses for all parties involves, benefits may be noticeable for the education supplier, for the learner/employee and consequently their employer.

Benefits for the supplier

  • Potential for a lower assessment burden.
  • Shared responsibility on learner tutorship.

Benefits for the learner

  • Develop work-based learning and work-related skills simultaneously.
  • Exploiting the workplace as a learning resource.
  • Existing knowledge activated as a foundation for new knowledge.

Benefits for the employer

  • Flexible, tailored to their needs.
  • Improved workforce performance and productivity.
  • Increased employee motivation – higher staff retention.
  • Meets skills shortages – grow your own workforce.
  • Work-based learning – little time off the job, minimal disruption.
  • Projects directly related to your business.
  • The employer is closely involved in the delivery.
  • Potential to accredit company training programmes.
Work Based Learning must deliver:

a) Diversity with the use of time and place.

b) Personalized learning.

c) Free choice (time, place, provider)

d) Project based learning.

e) Field/factory/supplier (raw material, equipment) experience.

f) Data management and interpretation.

g) Different ways of checking knowledge gained - Exams will change completely.

h) Student ownership.

i) A mentoring/coaching programme

j) Continuous delivery from a number of sources (e.g.: workplace coaches, teachers, online support from peers) - Workplace learning is morphing from blocks of training followed by working to a merger of work and learning: they are becoming the same thing. Change is continuous, so learning must be continuous.

k) Connection - The primary function of learning professionals within this new work model is connecting and communicating, based on three core processes:

   i. Facilitating collaborative work and learning amongst workers, especially as peers

   ii. Sensing patterns and helping to develop emergent work and learning practices

   iii. Working with management to fund and develop appropriate tools and processes for workers

A potential definition (From Drinktec 2017) – requires Expert Group Discussion

"Work-based learning (WBL) is a collaborative educational approach which can provide employees (students) with real-life work experiences with the application of academic/technical skills where they are developed in both a classroom (virtual or physical) and their place of employment.”

WBL is a sequence/planned of educational courses (virtual or physical) which integrate the school, VET or university curriculum with the workplace to create a flexible way of developing employees.

Specific recommendations from Drinktec 2017

The approaches by which work-based learning courses should not be rigid but allow a flexible approach in its delivery. In essence: -

a) Previous and current knowledge is seen as a foundation for new knowledge.

b) Employees are engaged in real-work problems.

c) New learning is combined into the employees work environment.

d) New learning is demonstrated to the employee.

e) New learning is applied by the employee.

f) Each programme needs structure whilst remaining flexible in delivery.

g) Employees need a training plan.

A major challenge to overcome is that of employer-engagement where successful engagement with employers can lead to positive and productive courses for the tripartite of the education provider, the employee and employer.
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Appendix 1: Collection of Best Practices on Work Based Learning

For the collection of best practices on work-based learning from the dairy industry, some definitions where used, and hence referred to in the examples. The definitions are the following:

Definitions on Work Based Learning

<table>
<thead>
<tr>
<th>Definitions of Work Based Learning</th>
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<tbody>
<tr>
<td>Apprenticeship involves the student working for an employer where he or she is taught and supervised by an experienced employee of the chosen organization. The student is periodically evaluated for progress as per the skills and knowledge acquired, and maybe granted wages accordingly. At the end of the course, the student receives a certificate of service. The student learns in a realistic environment and gets the opportunity to apply his or her knowledge in real world scenarios.</td>
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<tr>
<td>Internship involves the student to work for an employer where he or she is taught and supervised by an experienced employee of the chosen organization – for a shorter period (some few month). Evaluation is not mandatory.</td>
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<td>Mentorship is a relationship in which a more experienced or more knowledgeable person helps to guide a less experienced or less knowledgeable person. The mentor may be older or younger but have a certain area of expertise. It is a learning and development partnership between someone with vast experience and someone who wants to learn.</td>
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<tr>
<td>Job Shadowing is a short-term opportunity that introduces the student to a particular job or career by pairing the student with an employee of the workplace. By following or ‘shadowing’ the employee, the student gets familiar with the duties and responsibilities associates with that job.</td>
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<tr>
<td>Business/Industry Field Trip offer the students an insight in the latest technical advancements and business strategies of an enterprise. Students also gain awareness of the various career opportunities available and understand the driving forces of the community's economy.</td>
</tr>
<tr>
<td>Entrepreneurial Experience includes setting up of specific business, right from the planning, organizing and managing stage to the risk control and management aspects of a business.</td>
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<tr>
<td>Cooperative Education means that the work experience is planned in conjunction with the technical classroom instruction. This method is used by universities that do not have access to state-of-art equipment required to transact the technical course practically.</td>
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<tr>
<td>School Based Enterprise is a simulated or actual business run by the school. It offers students a learning experience by letting them manage the various aspects of a business.</td>
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</table>
LEVEL 0: Early Childhood Education Programmes at this level are typically designed with a holistic approach to support children’s early cognitive, physical, social and emotional development and introduce young children to organised instruction outside of the family context. LEVEL level 0 refers to early childhood programmes that have an intentional education component.

LEVEL 1: Primary education Programmes at this level are typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy) and establish a solid foundation for learning and understanding core areas of knowledge, personal and social development, in preparation for lower secondary education. Age is typically the only entry requirement at this level. The customary or legal age of entry is usually not below 5 years old nor above 7 years old. This level typically lasts six years, although its duration can range between four and seven years.

LEVEL 2: Lower secondary education Programmes at this level are typically designed to build on the learning outcomes from LEVEL level 1. Students enter LEVEL level 2 typically between ages 10 and 13 (age 12 being the most common).

LEVEL 3: Upper secondary education Programmes at this level are typically designed to complete secondary education in preparation for tertiary education or provide skills relevant to employment, or both. Pupils enter this level typically between ages 14 and 16.

LEVEL 4: Post-secondary non-tertiary education Post-secondary non-tertiary education provides learning experiences building on secondary education, preparing for labour market entry as well as tertiary education. Programmes at level 4, or post-secondary non-tertiary education, are typically designed to provide individuals who completed level 3 with non-tertiary qualifications required for progression to tertiary education or for employment when their level 3 qualifications do not grant such access. The completion of a level 3 programme is required to enter level 4 programmes.

LEVEL 5: Short-cycle tertiary education Programmes at this level are often designed to provide participants with professional knowledge, skills and competencies. Typically, they are practically based, occupationally-specific and prepare students to enter the labour market. However, these programmes may also provide a pathway to other tertiary education programmes. Entry into level 5 programmes requires the successful completion of level 3 or 4 with access to tertiary education.

LEVEL 6: Bachelors’ or equivalent level Programmes at this level, are often designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, leading to a first degree or equivalent qualification. Entry into these programmes normally requires the successful completion of an level 3 or 4 programme with access to tertiary education. Entry may depend on subject choice and/or grades achieved at levels 3 and/or 4. Additionally, it may be required to take and succeed in entry examinations. Entry or transfer into level 6 is also sometimes possible after the successful completion of level 5.

LEVEL 7: Master’s or equivalent. Programmes at this level, are often designed to provide participants with advanced academic and/or professional knowledge, skills and competencies, leading to a second degree or equivalent qualification. Typically, programmes at this level are theoretically-based but may include practical components and are informed by state of the art research and/or best professional practice. They are traditionally offered by universities and other tertiary educational institutions.
<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Arla Foods Graduate Programme</th>
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<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>2 years consisting of three parts at two different diaries: 1st rotation is 6 months at the ‘Primary dairy’ working with on a project. The primary dairy is typically placed in the home country to ensure that there is no language barrier. 2nd rotation is on a diary abroad for 6 months. At this rotation it is also project management, however in a new culture, different working environment and a different language. 3rd rotation is a 12 months rotation working as a team leader typically in production. <strong>Division:</strong> 1st rotation: 6 months 2nd rotation: 6 months 3rd rotation: 12 months</td>
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<tr>
<td><strong>Level</strong></td>
<td>Level 7</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Students graduated within the last 1-3 years or about to graduate with a bachelor’s or master’s degree preferably within dairy or food science/technology. Also accessible for related scientific based subjects (for example microbiology, chemical engineering, biotechnology, etc.)</td>
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<tr>
<td><strong>Responsible</strong></td>
<td>Arla Foods sites globally (in the core countries: Denmark, Sweden, Germany, UK)</td>
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<tr>
<td><strong>Definition</strong></td>
<td>Mentorship</td>
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<tr>
<td><strong>Description</strong></td>
<td>The first two rotations are all about project management which is a fantastic way of getting to know the processes of the diaries. The graduate will be responsible for the execution of the projects that they are assigned to in these rotations. In the last rotation of the graduate programme the graduates will take on the role of team leader at the primary dairy. Throughout the entirety of the graduate programme the graduate will be connected to a mentor from top management. Upon completing the graduate programme the graduate will be able to take on a leadership role within Arla Foods.</td>
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<tr>
<td><strong>Why best practice?</strong></td>
<td>This graduate programme offers a great opportunity to get to know Arla Foods on the inside from a diary point of view as well as from a business point of view. Having rotations in two different countries and two different dairy categories provides valuable knowledge of dairy production and processes. Another great learning is the difference in culture and how that affects the way the project unfolds. Furthermore, the graduate will be exposed to different leadership styles, which strengthens the graduate’s perspective in terms of different approaches to management. In the last rotation of the graduate programme the graduates will take on the role of team leader at the primary dairy. This allows the graduate to develop oneself as a team leader in a safe environment where it is possible to try out different things as a leader while at the same time one will receive coaching from the leadership team. Throughout the entirety of the graduate programme the graduate will be connected to</td>
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a mentor from top management. This relationship helps both the personal and the professional development of the graduate.

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>MSc in Food Science and Technology with specialization in Dairy Science and Technology</th>
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</table>
| Duration          | 6 months consisting of two parts:  
An introduction period at Kold College (VET-provider with dairy training facility). Internships at two different dairy-related industrial processing plants.  
Division:  
Introduction period at Kold College: 6 weeks  
First internship period: 7 weeks  
Second period at Kold College (incl. exam): 2 weeks  
Second internship period: weeks. |
| Level             | 7  |
| Target group      | Dairy MSc Students  |
| Responsible       | University of Copenhagen, Kold College (VET-provider) and industry  |
| Definition        | Internship, School Based Enterprise  |
| Methodology       | Dual  |
| Description       | The dairy internship provides interns with practical experience and knowledge of dairy production through industrial placements. Interns gain valuable insight into the working procedures of dairy factories producing different types of dairy products as well as in the associated industries (e.g. ingredient and equipment manufactures) with processes similar to or relevant for the dairy industry.  
At Kold College the student obtains the theoretical and technical knowledge needed to undertake the internship.  
During the internship, the intern takes part in daily production and operation, including manual work and the operation of automated machinery, having the opportunity to work directly with production-related problems and learn about the layout, function, maintenance and cleaning of process equipment.  
Completion of the dairy internship, in combination with the MSc education in Food Science and Technology with a specialization in Dairy Science and Technology, gives the right to use the Danish title ‘MSc in Dairy Science and Technology’.  |
| Why best practice?| MSc in Food Science and Technology more often than not are employed as managers in the dairy industry.  
Most of the employees they will lead are typically, dairy technologists and dairy technicians (VET-students). Experiences and leanings from the dairy internship provide the MSc graduates with a deep understanding of how the dairy processes work not only from a theoretically perspective but also from a practical point of view. By working on the shop floor together with the dairy technologists and dairy technicians they gain a much better understanding of the day-to-day work and ways of working by these employees.  
Furthermore, through their internships MSc’s get hands-on-experience with various dairy products and processing, which is of great value when they undertake leading positions. The experience and knowledge enable them to trouble shoot and make decisions on a much more solid ground, than if they would merely have the theoretical training.  
This programme, furthermore, excels itself with the close collaboration between university, the industry and VET. |
<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Dairy Technologist (Mejerist)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>37 months, divided into:</td>
</tr>
<tr>
<td></td>
<td>• 55 weeks of theory at college</td>
</tr>
<tr>
<td></td>
<td>• The rest of the programme is internship in 1-2 companies within the dairy industry or to a minor extent related industry.</td>
</tr>
<tr>
<td></td>
<td>For trainees above 25 years with relevant job experience from the dairy industry, there is a possibility of shortening the internship from 5-9 months</td>
</tr>
<tr>
<td></td>
<td>For trainees above 25 years, the theory at college is shortened by 10%, furthermore there is a possibility of shortening the internship if the trainee has relevant education or courses.</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Dairy Technologist students</td>
</tr>
<tr>
<td><strong>Responsible</strong></td>
<td>Joint responsibility between Kold College and dairy industry</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>Internship, School based enterprise</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Sandwich model</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This education is 125 years old and has from the very beginning integrated Work Based Learning as an essential part of the education. The WBL is provided as internships at different dairies and as ‘school based enterprise’ in a modern pilot plant at the school.</td>
</tr>
<tr>
<td></td>
<td>75% of students already have an internship-contract with a dairy before starting at school. Students start with theory for 15 week. After that they have their first internship of 4-5 months. Then 11 weeks at school, 2nd internship, 11 weeks at school. After his period, the student is examined as a Dairy Operator. Then follows 6 months’ internship, 14 weeks at school, 3 months internship, and then 4 weeks at school.</td>
</tr>
<tr>
<td><strong>Why best practice?</strong></td>
<td>The final thesis is normally a challenge identified in one of the internships together with the company. This realistic scenario is much more appealing to the student, and at the same time providing the company with suggestions to solutions on real challenges. The swift between dairy school and internships makes the dairy technologist programme highly relevant both for companies within and outside the dairy industry.</td>
</tr>
<tr>
<td></td>
<td>A written feedback to the dairy on the student’s performance ensures the constant improvement of the programme.</td>
</tr>
<tr>
<td></td>
<td>Once a year a Mentor-day is arrange for VET and dairies to exchange ideas of what the dairies need and what the schools offer. And to talk about where to adjust or optimize to better meet each other.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Teacher Training</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>One week per year.</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Dairy Teachers</td>
</tr>
<tr>
<td><strong>Responsible</strong></td>
<td>Joint responsibility between VET and dairy industry</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Job shadowing - Continuous development of content of programme</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>College and representatives from the industry work closely together in various ways to ascertain that the programme content is relevant and up to date.</td>
</tr>
<tr>
<td></td>
<td>College staff perform job shadowing up to one week every year in different companies within the dairy industry to keep their knowledge of practice up to date and development their network within the industry. College staff integrate the knowledge directly in their lectures on a continuous basis.</td>
</tr>
<tr>
<td></td>
<td>Approx. every fifth year the programme content is revised in close cooperation between college staff and dairy industry. Larger changes within the dairy industry are incorporated into the programme at these occasions, e.g. digital trends.</td>
</tr>
<tr>
<td></td>
<td>In the shorter term programme content is adjusted, e.g. by developing new electives for the programme to reflect the latest needs. Special offers for talented trainees are</td>
</tr>
</tbody>
</table>
developed or offers for trainees who want a more specific profile – e.g. within Operator Asset Care, automation or specific production technologies.

**Why best practice?**

The dairy industry develops at such a speed due to digitalization, globalization etc. and therefore there is a need for continuous development of program content to make it as future proof as possible. For college staff it is impossible to keep up with the development within industry if there is not a close connection between college and dairy industry. Over the years managers and staff from both college and the dairy industry have clearly shown, that they are capable of working closely together to drive the development of the dairy technologist programme in a way that still makes the dairy technologist programme highly relevant both for companies within and outside the dairy industry.

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### FRANCE

| Title of programme | Higher Agricultural Technician Certificate, Food Science and Technology option, specialty Dairy Products.  
|                    | Brevet de Technicien Supérieur Agricole, option Sciences et Techniques des Aliments, spécialités Produits Laitiers (BTSA STA PL). |
| Duration           | 2 years – 1450 hours with “the sandwich model”  
Theoretical training in classroom combined with practical training in laboratories and pilot plant in dairy school for 40% of the time.  
Practical session in dairy company at workstation(s) with a more skilled employee (the mentor) for 60% of the time. |
| Level              | This diploma is approximately level 5 or 6  
It gives 120 ECTS (European Credits) and allows students to join the labour market or to continue studies. |
| Target group       | Students from scientific A level curriculum |
| Responsible        | This diploma is managed by the French Ministry of Agriculture who determine the skills referential, the accreditation of the schools to deliver this curriculum (public or private) and the way of certification  
The 6 national public dairy schools (called ENIL – Ecole Nationale d’Industrie Laitière) are accredited to deliver this diploma. |
| Definition          | Apprenticeship, School based enterprise |
| Methodology         | “Sandwich model” is an alternation of periods in dairy school (e.g. 3 weeks) and periods in dairy plant (e.g. 4 weeks).  
A tutor is identified to organize the curriculum and the progression in the dairy plant to make sure that the student will be independent at his/her job at terminate.  
A professor is identified in the school to ensure that the training period in the dairy is efficient and useful for the student.  
Traceability is recorded to make sure that the training objectives are achieved.  
Student, mentor and professor communicate with this tool.  
Certification is based on continuous assessment (50%) and final assessment (50%).  
Continuous assessment is managed by schools, final assessment is national and planned every year by the Ministry of Agriculture. |
A pedagogical progression is planned in the school. Theoretical lessons and practical sessions (laboratories for biochemistry, microbiology, dairy technology ... pilot plant to produce dairy products) alternate to train the students.

To help students to link periods in school and periods in dairy plant, works are given to them to apply their knowledges at workplace. These works are corrected by a teacher when the student returns to school.

After BTSA, the students are packaging line driver or pilot of production automated device in dairy sector.

ENIL is like an actual pilot plant which makes contracts with dairy producers to transform milk into different dairy products (cheeses, butter, yogurts ...) for customers and consumers. Students are in "real life" when they work in this kind of workshop. They have to work with due safety aspects, to respect rules and processes to produce quality products.

This curriculum is very practical, about 75% of the training takes place at the pilot plant and the laboratories of the schools and in dairy plant.

Several tools, visits, works ... ensure the link between school and workplace This is an essential point for successful apprenticeship.

Continuous assessment allows students to be less stressed before the assessment finalizes.

The BTSA could be a step for students who want to study more (e.g. to obtain a bachelor level) or it could be a recognized qualification to access a good job in a dairy plant.

Graduated employees have a job with responsibilities after few years (e.g. operational manager in the dairy sector).

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Certificate of Professional Qualification (CQP) “Pilot of automated installations in dairy processing”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>From 6 months to 1 year in the dairy</td>
</tr>
<tr>
<td></td>
<td>Theoretical training from 150 to 400 hours (about 20 % of work time) in classroom or pilot workshop in dairy or in dairy school</td>
</tr>
<tr>
<td></td>
<td>Rest of the time at the work station with a more skilled employee.</td>
</tr>
<tr>
<td>Level</td>
<td>This type of vocational training is approximately level 4 or 5.</td>
</tr>
<tr>
<td></td>
<td>The level is not clearly defined (it is not a national diploma which is prepared but a certificate which is managed by the dairy sector)</td>
</tr>
<tr>
<td>Target group</td>
<td>Employees (often newly employed)</td>
</tr>
<tr>
<td></td>
<td>Automated devices drivers (pasteurizer, centrifugal separator, homogenizer, concentrator …)</td>
</tr>
<tr>
<td>Responsible</td>
<td>These certificates were created 20 years ago by the dairy sector (some examples: “truck driver for milk collection”, “packaging machine pilot in the dairy sector”, “operational manager in the dairy sector” …)</td>
</tr>
<tr>
<td></td>
<td>The dairy sector manages the certification of employees.</td>
</tr>
<tr>
<td></td>
<td>Dairy and VET together organize curriculum when a dairy wants to train its employees.</td>
</tr>
<tr>
<td></td>
<td>A joint board (employees / employers) of the dairy sector, check each curriculum and the level of trainees before certification.</td>
</tr>
<tr>
<td>Definition</td>
<td>Mix of theoretical training, practical training, Internship and mentorship.</td>
</tr>
<tr>
<td>Methodology</td>
<td>The dairy sector has defined the job as “pilot of automated devices in dairy processing”: activities and capacities/skills</td>
</tr>
<tr>
<td></td>
<td>These standards are adapted by mentors and trainers to the actual conditions of the workstation</td>
</tr>
<tr>
<td></td>
<td>This adaptation allows trainers to define a theoretical and practical curriculum</td>
</tr>
</tbody>
</table>
Tools to measure knowledges and practical capacities are elaborated. Mentors and trainers follow the trainees with these assessments and adapt trainings. Sandwich model is required: e.g. 1 week of training and 4 weeks at the workstation.

**Description**

To be certificated, trainees have to manage some theoretical knowledges and practical capacities in 6 topics: Quality, Hygiene, Security, Green Skills, Dairy product & processing, Machine & Installations. The curriculum is made with the aim of applying all these knowledges and capacities at the work stations and products of the dairy. During the training, progression of the trainees is assessed (the mentor is in charge of practical skills and the trainer of knowledges). When the trainees are ready, a final assessment is made by professional examiners who are mandated by the dairy sector to check curriculum and the skills of trainees. This examiner recommends the joint board whether the trainee should receive the certification or not.

**Why best practice?**

National referential and methodology are defined by the dairy sector, it is very professional. Only topics relevant to the workstations are part of the training – hence the training is highly relevant to the industry. In the CQP, methodological framework has been determined and skill targets are known but content could be adapted to the context and the specificities of the dairy (products, process, installations). Trainers of schools and mentors of dairies create pedagogical curriculum together (pedagogical sequences, assessment). A training for mentors about CQP and basis of pedagogy must be elaborated at the beginning of the project. They are all very much involved during the project. This is a key for success. A final and official assessment of the skills acquired by the trainees and respect of CQP framework is carried out. It is an important day for mentors, trainers and trainees. Certificate of Professional Qualification in dairy processing is known in the whole French dairy sector. This official recognition of skills allows employees to change jobs easier. Every year, about 400 employees from French dairies are certified this way.

**GERMANY**

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Basic Course in Dairy Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>One week</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>Level 4 (short course)</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Employees from dairies and the supplier industry without a dairy education</td>
</tr>
<tr>
<td><strong>Responsible</strong></td>
<td>German Dairy Schools with pilot plants</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>School Based Enterprise</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Objectives of the course</td>
</tr>
<tr>
<td></td>
<td>- to understand basic processes in the dairy.</td>
</tr>
<tr>
<td></td>
<td>- to recognize connections.</td>
</tr>
<tr>
<td></td>
<td>- to understand hygiene measures.</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>Day 1</td>
</tr>
<tr>
<td></td>
<td>Milk as a food and as a raw material for processing</td>
</tr>
<tr>
<td></td>
<td>- Composition and properties of milk.</td>
</tr>
<tr>
<td></td>
<td>- Milk in nutrition.</td>
</tr>
</tbody>
</table>
- Legal provisions.
- Principles of milk processing (Separator, Plate heat exchanger).

Day 2
Production and processing of milk
- Practical training at the dairy training facility.
- Handling of the milk processing line.
- Processing of milk and cream.
- Principles of butter making.
- Visit of the Education and Research Center Futterkamp.

Day 3
Butter and cheese making / Hygiene
- Practical training at the dairy training facility / teamwork
- Processing of cheese milk and cream.
- Production of: sour cream butter, standard types of rennet cheese (Gouda, Tilsit, Edam cheese).
- Evaporation of milk and milk products; powder production (no practical part).
- Cleaning and disinfection in the dairy plant.

Day 4
Butter and cheesemaking / dairy market.
- Practical training at the dairy training facility / teamwork
- Processing of cheese milk and cream.
- Production of: sour cream butter and standard types of rennet cheese (Gouda, Tilsit, Edam cheese).
- Formation of the milk price (national and international dairy market).
- Principles of cheese making.

Day 5
Sensory analysis
- Principles of sensory analysis (basic flavours, threshold test, triangle test).
- Sensory analysis of butter.
- Sensory analysis of cheese.

Final test
Discussion round

| Why best practice? | **Combination between theory and practice** in five days to understand the basics of manufacturing dairy products. Tailored to real life. |
**THE NETHERLANDS**

**Kosovo cooperation**

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Optimization dairy factories Western Balkans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>20 weeks of internship at dairy in Kosovo, as part of bachelors.</td>
</tr>
<tr>
<td><strong>Level (note 1)</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Dutch students</td>
</tr>
<tr>
<td><strong>Responsible</strong></td>
<td>Undergraduate programme at dairy company in Kosovo</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>Internship, Cooperative Education and Business/Industry Field Trip</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Between 2016 up and until now different couples of bachelor students went for an internship of 20 weeks to Kosovo. In total 8 students have done their internship in Kosovo. Furthermore, several teachers visited the dairy company as well. The project started with a connection of one of our professors and this professor defined research questions for students out of the problems of this dairy company. It is unpaid internship, only some living costs are covered. Each couple of bachelor students make a final work based on their internship. In the southeast of Europe there are several relatively small companies producing dairy products. As in the Netherlands they want to improve their efficiency. In addition, they become more and more aware of the need of sustainable dairy processing and water handling. Dutch organizations and (retired) senior experts are already active to help these companies. Van Hall Larenstein University of Applied Sciences has started a cooperation with a dairy company to contribute to the development of the dairy sector and their dairy education. At this moment three projects are foreseen. One on <strong>the process optimization of a dairy factory</strong>, one on <strong>the optimization of water handling</strong> and one on <strong>Quality of the raw milk in Kosovo</strong></td>
</tr>
<tr>
<td><strong>Why best practice?</strong></td>
<td>Already for a couple of years several students go to the Western Balkan to do research on behalf of Van Hall Larenstein.</td>
</tr>
</tbody>
</table>

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**SWITZERLAND**

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>Dairy Technologist VET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>3 years</td>
</tr>
<tr>
<td></td>
<td>1-day school per week</td>
</tr>
<tr>
<td></td>
<td>4 days practical experience in a dairy</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Switch students</td>
</tr>
<tr>
<td><strong>Responsible</strong></td>
<td>Dairy and VET together</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>Apprenticeship</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Dual-track (school and enterprise) / VET is provided at upper-secondary level</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Dual-track vocational education and training (VET) programmes, which combine classroom instruction at a vocational school with work-based training at a host company.</td>
</tr>
<tr>
<td><strong>Why best practice?</strong></td>
<td>The Swiss VET system works very well for years already. In fact, this is</td>
</tr>
</tbody>
</table>
the option chosen by two-thirds of all young people coming out of lower secondary education. They are making a safe bet with this choice: the Swiss education system is designed in such a way as to offer continuous education and training relays for all career paths, thereby facilitating entry into the labour market.

## TURKEY

<table>
<thead>
<tr>
<th>Title of programme</th>
<th>University and Industry Collaboration in Dairy Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>Introduction: Dairy education in Turkish dairy schools consists of two years/four terms (56 weeks) to get Dairy Technician degree (Pre-Bachelor degree). In the period, there is 8 weeks internship programme in the Dairy plants during summer out of 56 weeks. Additionally, we have 1-1.5 days (8-12 hours) practical training lessons in SUTAS Dairy in every 56 weeks.</td>
</tr>
<tr>
<td></td>
<td>Uludag University-Kold College, Denmark Collaboration in Vocational Dairy Education: On the other hand, we sustained successful academic collaboration with Kold College for 3 years.</td>
</tr>
<tr>
<td></td>
<td>International Visiting Teacher Programme: Kold College teachers visited our college and gave 1 week lessons to share their industrial experiences.</td>
</tr>
<tr>
<td></td>
<td>Teacher Training in Dairy Education: Our teachers visited Kold College for 1 week in order to be informed about Dairy education. We had study visits to Kold College and its dairy partners. We were guided by Kold College to see practical training activities in the industry and Kold College’s facilities.</td>
</tr>
<tr>
<td></td>
<td>Dairy Education: Our students have been trained by the Kold College teachers in the college and the industry staff in the Danish dairy plants.</td>
</tr>
<tr>
<td></td>
<td>Internship programme: Our students have also been included in internship programme in Danish Dairies for 8 weeks organized and managed by Kold College.</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Target group</strong></td>
<td>Dairy and food production students</td>
</tr>
<tr>
<td><strong>Responsible</strong></td>
<td>Dairy and VET (Vocational College in University) together</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Industry Field Trip, School Based Enterprise, Internship</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>University-industry cooperation in vocational education (Uludag University/SUTAS Dairy) methods:</td>
</tr>
<tr>
<td></td>
<td>• Classroom and training farm in the factory.</td>
</tr>
<tr>
<td></td>
<td>• Teaching staff from the business to transfer practice.</td>
</tr>
<tr>
<td></td>
<td>• International collaboration to develop quality of vocational education with Kold College, Denmark (Staff mobility for seminars, tranieeship abroad, curriculum development).</td>
</tr>
<tr>
<td></td>
<td>• Due to its success, the number of industry partners eager to participate increases (Eker Dairy, Pınar Dairy, Matlı Dairy, Torku Dairy and etc with the regional universities) Target: At least one industry partner for every university department.</td>
</tr>
<tr>
<td></td>
<td>• On the job training periods.</td>
</tr>
<tr>
<td></td>
<td>• Industry Field Trips.</td>
</tr>
<tr>
<td></td>
<td>• Government makes lists and notifies all available internship positions from its institutions for VET providers.</td>
</tr>
</tbody>
</table>
| **Why best practice?** | The cooperation between Bursa Uludag University and SUTAS Dairy Co was nominated as best practice by the United Nations.  
  
The nomination was explained with:  
  - Private sector ownership  
  - Expertise and know-how.  
  - Better definition of problems based on industrial insights.  
  - Building credibility for the training and long-lasting empowerment through certification.  
  - Cooperation and partnerships with the private sector for mutual value creation.  
  - Close proximity to the production sites increases information flow and awareness among trainees about industries.  
  - Institutionalization ensures continuity.  
  - The reputation of the vocational training.  
  
A frequent challenge for vocational training is training schemes becoming outdated, which leads to suboptimal employment results. With this programme, the training schemes originate in and are tailored to industry’s demands, increasing trainee employability – up to 80% are employed in the industry by the end of the training. |
Drinktec 2017 provided an ideal venue and platform for an in-depth seminar looking at current and best practice within Work-Based-Learning (WBL). The seminar was held on 14th September 2017 in Munich. In addition, AEDIL members were invited for the Annual General meeting (AGM) and a Project steering committee opportunity. There were two outputs from the conference:

a) Feeding evidence into the Expert Group (EG) so that the findings may be used to inspire recommendations on how to even out mismatches and skills shortages in the dairy sector, as well as providing recommendations for lifelong learning.

b) The production of a short report specifically on Work Based Learning to share with stakeholders within the sector as well as from other sectors attending the Drinktec Trade Fair.

As milestones the delegates must have included AEDIL members, high profile guests, be live streamed and the press made fully aware of our intent. The invite list included:

a) AEDIL members
b) Trade from Drinktec
c) Specialist guest speakers
d) Dairy company representatives
e) Education suppliers

To monitor the success of the conference the following Key Performance Indicators (KPI) were measure against:

a) 90% high ranked invitees participate
b) 90% of participants find the conference useful and interesting and acknowledge their interest in receiving collection of Best Practices on WBL.

Delegates completed an evaluation form.

Specific Tasks

a) Prepare dossier with speeches
b) Ensure webcasting of conference
c) Roll out methodology to collect best practices
d) Develop evaluation form
e) Prepare report
f) Print and publish report
Report
Invites were sent to all 13 participating counties where their responsibility was to disseminate within their own countries. The invite was developed for email. Drinktec coincided with the time of year for the AEDIL AGM and the Steering Committee meeting for the Dairy skills gap analysis.

The invite was distributed to all sectors within the dairy industry including:

- Education Suppliers
- Trade associations
- Equipment Suppliers
- Small, Medium and large dairies as well as Corporate HQ of the larger dairies

Attendance
The seminar/conference was held in the International conference centre (ICC) next to Drinktec. Access was excellent for delegates, especially those attending throughout the day with further commitments.

Statistics

- Invited- approximately - 130
- Initial estimated attendance - 60 delegates.
- 45 places were booked
- actual attendance of 27
- Of the 27 attending 19 delegates chose to give some written feedback.

Overall Evaluation Scores

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Average score/ Highest possible score</th>
<th>% - positive scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>General approval of the seminar, content and impact</td>
<td>548</td>
<td>28/35</td>
<td>80</td>
</tr>
<tr>
<td>Facilitator and Venue</td>
<td>402</td>
<td>21/25</td>
<td>84</td>
</tr>
<tr>
<td>Self - impact</td>
<td>81</td>
<td>81/95</td>
<td>85</td>
</tr>
<tr>
<td>Totals</td>
<td>1031</td>
<td>1031/1235</td>
<td>83</td>
</tr>
</tbody>
</table>

Written Feedback
Written feedback was disappointing with most opting to talk about the conference itself rather than best practice.

- Planning seminar ½ part of the day (morning / afternoon).
• It was very interesting for me because I (with my team) work up new syllabus to dairy processing technician and results of this project and over syllabus and curriculum must be the same are very similar. Now I have new view to this problem.
• Thanks for the good organisation.
• A thought: inspiration from a non-dairy mated company (LEGO first) on how WBL is working, could be useful. Please ask if you don’t understand comments.
• Next time other countries should speak WBL applications.

Participating Companies

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Role</th>
<th>Country</th>
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<tbody>
<tr>
<td>ZDM</td>
<td>Dairy association</td>
<td>Germany</td>
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<tr>
<td>FMF</td>
<td>Dairy association</td>
<td>Denmark</td>
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<tr>
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<td>TUT</td>
<td>WBL éducation</td>
<td>Finland</td>
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<tr>
<td>Tetra Pak</td>
<td>Dairy Equipment</td>
<td>Global</td>
</tr>
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Live Streaming via You-Tube

At its height, there were 8 online subscribers. This fluctuated throughout the session.
Speakers
There were 3 sessions with 4 speakers, each with a discussion period:

1. Defining Work Based Learning (WBL) - Petri Nokelainen
   a. Break out session one - what do we want from WBL?
2. WBL training is about production management - Estelle Cuillier (EURIAL)
3. Experience within Diploma in production management - Julien Bloede (EURIAL)
   a. Break out session - Ideal Delivery methods for WBL
4. WBL- case study and look-out to the next 10 years - Marco Gentileschi, (Tetra Pak)

Speaker outlines
Petri Nokelainen is a global expert on WBL theory and practice having studied the topic for many years with a number of published research papers.
Estelle Cuillier is an apprentice with a dairy company. She spoke about her experiences and then her manager, Julien Bloede, gave some thoughts on managing WBL in a dairy factory.
The conference was concluded with some excellent thoughts from a global equipment supplier, Marco Gentileschi of Tetra Pak who uses WBL extensively using modern technology but also influencing behaviours.

Conclusions
A potential definition – requires Expert Group Discussion

"Work-based learning (WBL) is a collaborative educational approach which can provide employees (students) with real-life work experiences with the application of academic/technical skills where they are developed in both a classroom (virtual or physical) and their place of employment.”

WBL is a sequence/planned of educational courses (virtual or physical) which integrate the school, VET or university curriculum with the workplace to create a flexible way of developing employees.

Figure 1: Outline of two extremities of Work Based Learning

Examples 1 and 2 indicate two extreme variations in the work-based arena, with the emphasis changing from teacher-centred learning (example 2) to student centred-learning (example 1); both examples allow for the delivery of courses by blended learning. Example 1 is of a tutor travelling to various employer establishments delivering content by a face-to-face means, but this could readily be adapted for distance learning in a virtual mode. Examples on the
subject recommend an **individualised** approach for the employee whilst maintaining contact between training provider and employer to assist in development of the **learning plan** whilst satisfying the requirements of the employer; the employer involved should have a lot more input into the design and outcomes of their employees course structures.

**Recommendation**

The approaches by which work-based learning courses should not be rigid but allow a flexible approach in its delivery. In essence:

- h) Previous and current knowledge is seen as a foundation for new knowledge.
- i) Employees are engaged in real-work problems.
- j) New learning is combined into the employees work environment.
- k) New learning is demonstrated to the employee.
- l) New learning is applied by the employee.
- m) Each programme needs structure whilst remaining flexible in delivery.
- n) Employees need a training plan.

A major challenge to overcome is that of employer-engagement where successful engagement with employers can lead to positive and productive courses for the tripartite of the education provider, the employee and employer.

**Summary of the benefits of work-based learning**

In summary, there are a range of benefits when work-based learning is incorporated effectively into the workplace for **all** stakeholders.

Benefits for the programme can be:

**For the Provider (School, VET, Colleges/VET, University):**

- a) A lower assessment burden.
- b) Shared responsibility on employee advice and guidance.
- c) Development of teachers/trainers when in the workplace delivering to employees
- d) Employer engagement – new business

**Benefits for the employee:**

- a) Develop work-based learning and work-related skills at the same time and synergistic.
- b) Manipulating the workplace as a learning resource.
- c) Existing knowledge activated as a basis for new knowledge.

**Benefits for the employer:**

- a) Work-based learning – little time off the job, minimal disruption.
- b) Flexible, specific and tailored
- c) Improved workforce performance and productivity.
- d) Increased efficiency, less waste
- e) Potential to accredit company training programmes.
- f) Increased employee motivation – less staff turnover.
- g) Meets skills shortages – grow your own workforce.
- h) Projects directly related to the core business.
- i) The employer must be interwoven and meticulously involved in the delivery.
Invite to Drinktec - Sept 2017

**Trade Fair München**

**drinktec.com**
11–15. September 2017
Messe München

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### 14th September 2017 | Trade Fair drinktec | ICY Saal 4

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<td>Coffee and welcome</td>
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<tr>
<td>1:30pm</td>
<td>Steffen Kuhn - Defining World Leading Learning (OLI)</td>
<td>1. Overview of the project - the major challenges in the dairy production management.</td>
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<tr>
<td>10am</td>
<td>Lunch</td>
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<tr>
<td>3:30pm</td>
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<td>3:30pm</td>
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</table>

**Application**
For applications please send an e-mail to AEDIL, Z. 29368 H.V. Anruf-AK 854
info@drinktec.de

You will receive a ticket code for free to the form to be by email. You can only submit your ticket code online to www.drinktec.de. **
WBL: a glimpse into the Future

“Mission: make the world more open and connected”
M. Zuckerberg

Digital transformation of industries - historical evolution

Meet the future learners

Millenials
- A new challenge, generation user
- Experience 1980-2000
- Technically oriented
- Use in former: web apps
- Pervasive
- Mobile

How to maximize brain's capacity to learn

76%
80%
18-34
00%
100%
There are, potentially, ten innovations that are already in supply but have not yet had a deep influence on education/training/development.

1. **Crossover Learning**

Learning in informal settings, such as dairies, suppliers and after-school clubs, can link educational content with issues that matter to learners in their lives. These connections work in both directions. Learning in schools and Colleges/VETs can be enriched by experiences from everyday life; informal learning can be deepened by adding questions and knowledge from the classroom. These connected experiences spark further interest and motivation to learn. An effective method is for a teacher to propose and discuss a question in the classroom, then for learners to explore that question on a museum visit or field trip, collecting photos or notes as evidence, then share their findings back in the class to produce individual or group answers. These crossover learning experiences exploit the strengths of both environments and provide learners with authentic and engaging opportunities for learning. Since learning occurs over a lifetime, drawing on experiences across multiple settings, the wider opportunity is to support learners in recording, linking, recalling and sharing their diverse learning events.

2. **Learning Through Argumentation**

Students can advance their understanding of science and mathematics by arguing in ways similar to professional scientists and mathematicians. Argumentation helps students attend to contrasting ideas, which can deepen their learning. It makes technical reasoning public, for all to learn. It also allows students to refine ideas with others, so they learn how scientists work together to establish or refute claims. Teachers can spark meaningful discussion in classrooms by encouraging students to ask open-ended questions, re-state remarks in more scientific language, and develop and use

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**Appendix 3: 10 Innovative Learning Strategies for Modern Pedagogy**

Feb 2018

10 Learning Strategies For Modern Pedagogy

- Crossover Learning
- Embodied Learning
- Context-Based Learning
- Incidental Learning
- Stealth Assessment
- Adaptive Teaching
- Computational Learning
- Analytics of Emotions
- Argumentation
- Science
models to construct explanations. When students argue in scientific ways, they learn how to take
turns, listen actively, and respond constructively to others. Professional development can help
teachers to learn these strategies and overcome challenges, such as how to share their intellectual
expertise with students appropriately.

3. Incidental Learning
Incidental learning is unplanned or unintentional learning. It may occur while carrying out an activity
that is seemingly unrelated to what is learned. Early research on this topic dealt with how people
learn in their daily routines at their workplaces. For many people, mobile devices have been
integrated into their daily lives, providing many opportunities for technology-supported incidental
learning. Unlike formal education, incidental learning is not led by a teacher, nor does it follow a
structured curriculum, or result in formal certification. However, it may trigger self-reflection, and
this could be used to encourage learners to reconceive what could otherwise be isolated learning
fragments as part of more coherent and longer term learning journeys.

4. Context-Based Learning
Context enables us to learn from experience. By interpreting new information in the context of
where and when it occurs and relating it to what we already know, we come to understand its
relevance and meaning. In a classroom or lecture theater, the context is typically confined to a fixed
space and limited time. Beyond the classroom, learning can come from an enriched context such as
visiting a dairy/supplier or being immersed in a good related topical book. We have opportunities to
create context, by interacting with our surroundings, holding conversations, making notes, and
modifying nearby objects. We can also come to understand context by exploring the world around
us, supported by guides and measuring instruments. It follows that to design effective sites for
learning, at dairies, equipment suppliers, utility companies, schools, museums and websites,
requires a deep understanding of how context shapes and is shaped by the process of learning.

5. Computational Thinking
Computational thinking is a powerful approach to thinking and problem solving. It involves breaking
large problems down into smaller ones (decomposition), recognizing how these relate to problems
that have been solved in the past (pattern recognition), setting aside unimportant details
(abstraction), identifying and developing the steps that will be necessary to reach a solution
(algorithms) and refining these steps (debugging). Such computational thinking skills can be valuable
in many aspects of life, ranging from writing a recipe to share a favorite dish with friends, through
planning a holiday or expedition, to deploying a scientific team to tackle a difficult challenge like an
outbreak of disease.

The aim is to teach students to structure problems, so they can be solved. Computational thinking
can be taught as part of mathematics, science and art or in other settings. The aim is not just to
encourage students to be computer coders, but also to master an art of thinking that will enable
them to tackle complex challenges in all aspects of their lives.

6. Learning by Doing Science (with remote labs)
Engaging with authentic scientific tools and practices such as controlling remote laboratory
experiments or telescopes can build science inquiry skills, improve conceptual understanding, and
increase motivation. Remote access to specialized equipment, first developed for scientists and
university students, is now expanding to trainee teachers and school students. A remote lab typically
consists of apparatus or equipment, robotic arms to operate it, and cameras that provide views of
the experiments as they unfold. Remote lab systems can reduce barriers to participation by
providing user-friendly Web interfaces, curriculum materials, and professional development for teachers. With appropriate support, access to remote labs can deepen understanding for teachers and students by offering hands-on investigations and opportunities for direct observation that complement textbook learning. Access to remote labs can also bring such experiences into the school classroom. For example, students can use a high-quality, distant telescope to make observations of the night sky during daytime school science classes.

7. Embodied Learning
Embodied learning involves self-awareness of the body interacting with a real or simulated world to support the learning process. When learning a new piece of dairy equipment in processing or a lab, a basic flow chart is an obvious part of the learning process. In embodied learning, the aim is that mind and body work together so that physical feedback and actions reinforce the learning process.

Technology to aid this includes wearable sensors that gather personal physical and biological data, visual systems that track movement, and mobile devices that respond to actions such as tilting and motion. This approach can be applied to the exploration of aspects of physical sciences such as friction, acceleration, and force, or to investigate simulated situations such as the structure of molecules.

For more general learning, the process of physical action provides a way to engage learners in feeling as they learn. Being more aware of how one’s body interacts with the world can also support the development of a mindful approach to learning and well-being.

8. Adaptive Teaching
All learners are different. However, most educational presentations and materials are the same for all. This creates a learning problem, by putting a burden on the learner to figure out how to engage with the content. It means that some learners will be bored, others will be lost, and very few are likely to discover paths through the content that result in optimal learning. Adaptive teaching offers a solution to this problem. It uses data about a learner’s previous and current learning to create a personalized path through educational content.

Adaptive teaching systems recommend the best places to start new content and when to review old content. They also provide various tools for monitoring one’s progress. They build on longstanding learning practices, such as textbook reading, and add a layer of computer-guided support. Data such as time spent reading and self-assessment scores can form a basis for guiding each learner through educational materials. Adaptive teaching can either be applied to classroom activities or in online environments where learners control their own pace of study.

9. Analytics Of Emotions
Automated methods of eye tracking and facial recognition can analyze how students learn, then respond differently to their emotional and cognitive states. Typical cognitive aspects of learning include whether students have answered a question and how they explain their knowledge. Non-cognitive aspects include whether a student is frustrated, confused, or distracted.

More generally, students have mindsets (such as seeing their brain as fixed or malleable), strategies (such as reflecting on learning, seeking help and planning how to learn), and qualities of engagement (such as tenacity) which deeply affect how they learn. For classroom teaching, a promising approach is to combine computer-based systems for cognitive tutoring with the expertise of human teachers in responding to students’ emotions and dispositions, so that teaching can become more responsive to the whole learner.
10. Stealth Assessment
The automatic data collection that goes on in the background when students work with rich digital environments can be applied to unobtrusive, ‘stealth’, assessment of their learning processes. Stealth assessment borrows techniques from online role-playing games such as World of Warcraft, in which the system continually collects data about players’ actions, making inferences about their goals and strategies in order to present appropriate new challenges. This idea of embedding assessment into a simulated learning environment is now being extended to schools, in topics such as science and history, as well as to adult education.

The claim is that stealth assessment can test hard-to-measure aspects of learning such as perseverance, creativity, and strategic thinking. It can also collect information about students’ learning states and processes without asking them to stop and take an examination. In principle, stealth assessment techniques could provide teachers with continual data on how each learner is progressing.

However, much research remains to be done, both to identify the measures of student learning process that predict learning outcomes for different learning systems and to understand the amount and format of student learning data that are useful to teachers. Concerns have been raised about collection of vast amounts of student learning data and the ethics of using computers to monitor a person’s every action.
9 Things That Will Shape the Future of Education: What Learning Will Look Like In 20 Years?

Students will be learning outside, armed with different devices, listening to a teacher of choice. Skills will not be assessed on paper but based on their performance in the field. What on earth are we talking about? Welcome to the future of education.

As technology is rapidly changing the world around us, many people worry that technology will replace human intelligence. Some educators worry that there will be no students to teach anymore in the near future as technology might take over a lot of tasks and abilities that we have been teaching our students for decades.

The thing is: Education will never disappear.

It will just take up different forms.

Here we list 9 things that will shape the future of education during the next 20 years.

1. **Diverse time and place**
   Students will have more opportunities to learn at different times in different places. eLearning tools facilitate opportunities for remote, self-paced learning. Classrooms will be flipped, which means the theoretical part is learned outside the classroom, whereas the practical part shall be taught face to face, interactively.

2. **Personalized learning**
   Students will learn with study tools that adapt to the capabilities of a student. This means above average students shall be challenged with harder tasks and questions when a certain level is achieved. Students who experience difficulties with a subject will get the opportunity to practice more until they reach the required level. Students will be positively reinforced during their individual learning processes. This can result in positive learning experiences and will diminish the amount of students losing confidence about their academic abilities. Furthermore, teachers will be able to see clearly which students need help in which areas.

3. **Free choice**
   Though every subject that is taught aims for the same destination, the road leading towards that destination can vary per student. Similarly to the personalized learning experience, students will be able to modify their learning process with tools they feel are necessary for them. Students will learn with different devices, different programs and techniques based on their own preference. Blended learning, flipped classrooms and BYOD (Bring Your Own Device) form important terminology within this change.

4. **Project based**
   As careers are adapting to the future freelance economy, students of today will adapt to project-based learning and working. This means they have to learn how to apply their skills in shorter terms to a variety of situations. Students should already get acquainted with project-based learning in high school. This is when organizational, collaborative, and time management skills can be taught as basics that every student can use in their further academic careers.
5. **Field experience**
   Because technology can facilitate more efficiency in certain domains, curricula will make room for skills that solely require human knowledge and face-to-face interaction. Thus, experience in ‘the field’ will be emphasized within courses. Schools will provide more opportunities for students to obtain real-world skills that are representative to their jobs. This means curricula will create more room for students to fulfill internships, mentoring projects and collaboration projects (e.g.).

6. **Data interpretation**
   Though mathematics is considered one of three literacies, it is without a doubt that the manual part of this literacy will become irrelevant in the near future. Computers will soon take care of every statistical analysis and describe and analyse data and predict future trends. Therefore, the human interpretation of these data will become a much more important part of the future curricula. Applying the theoretical knowledge to numbers and using human reasoning to infer logic and trends from these data will become a fundamental new aspect of this literacy.

7. **Exams will change completely**
   As courseware platforms will assess students’ capabilities at each step, measuring their competencies through Q&A might become irrelevant, or might not suffice. Many argue that exams are now designed in such a way, that students cram their materials, and forget the next day. Educators worry that exams might not validly measure what students should be capable of when they enter their first job. As the factual knowledge of a student can be measured during their learning process, the application of their knowledge is best tested when they work on projects in the field.

8. **Student ownership**
   Students will become more and more involved in forming their curricula. Maintaining a curriculum that is contemporary, up-to-date and useful is only realistic when professionals as well as ‘youngsters’ are involved. Critical input from students on the content and durability of their courses is a must for an all-embracing study program.

9. **Mentoring will become more important.**
   In 20 years, students will incorporate so much independence in to their learning process, that mentoring will become fundamental to student success. Teachers will form a central point in the jungle of information that our students will be paving their way through. Though the future of education seems remote, the teacher and educational institution are vital to academic performance.
The future of the training department

Corporate training needs to evolve if it is to stay relevant for today’s learners.
(This article is re-posted by permission of Harold Jarche via Written.com)

The training department of the past

The latter 20th Century was the golden era of the training department. Before the 20th Century, training per se did not exist outside the special needs of the church and the military. Now the training department may be at the end of its life cycle. Join us for a brief look back at the pre-training world and some thoughts about what may lay ahead.

Before industrialization, work was local, or industry meant cottage-industry. People had vocations, not jobs. Sometimes guilds helped apprentices learn by doing things under the eye of a master, but there weren’t any trainers involved.

About three hundred years ago, work became an organizational matter. Factories required groups of people working together. To coordinate their activities, groups need a shared understanding of who is doing what. Orders from the top of the organization kept everyone on the same page. Managers showed workers how to do things and made sure they were doing them the right way. A little training went on, but there still weren’t any trainers involved.

Fast forward to the 20th century. The pace of progress is unrelenting. Clocks measure working hours instead of the sun. Railroads and communications links span the globe. Competition fuels change. Efficiency becomes paramount. Frederick Taylor uses time-and-motion studies to find the one best way to do individual pieces of work. Taylor’s Principles of Scientific Management becomes the bible in the crusade for maximizing efficiency.

Training was invented in the first half of the 20th Century. GE started its corporate schools. NCR delivered the first sales training. Factory schools appeared in Europe. Mayo discovered the Hawthorne Effect, opening the study of motivation. B.F. Skinner constructed teaching machines. The U.S. military formalized instruction to train millions of soldiers for World War II. ASTD is born.

The second half of the 20th Century was arguably the Golden Age of Training. Every corporation worth its salt opened a training department. Xerox Learning, DDI, Forum Corporation, and hundreds of other “instructional systems companies” sprung up. Thousands upon thousands of trainers attended conferences to learn about new approaches like programmed instruction, behaviour modification, role play, certification, CD-ROM, sensitivity training, corporate universities, and the Learning Organization. Training was good; efficient training was better.

Most of this training activity assumed that you could prepare people for the future by training them in what had worked in the past. Yesterday’s best practices were the appropriate prescription for curing tomorrow’s ills. That works when the world is stable, and things remain the same over time.

At this point in the 21st Century, the game is changing once again. Complexity, or maybe our appreciation of it, has rendered the world unpredictable, so the orientation of learning is shifting from past (efficiency, best practice) to future (creative response, innovation).
Workplace learning is morphing from blocks of training followed by working to a merger of work and learning: they are becoming the same thing. Change is continuous, so learning must be continuous.

Embracing complexity
Nothing is for sure anymore. Consultant and management theorist Dave Snowden has come up with a framework for management practice in complex environments.

Snowden’s Cynefin framework has been used in the study of management practice. It can also help us make decisions for our organizations. Understanding what type of environment we are working in (Simple, Complicated, Complex or Chaotic) lets us frame our actions. When the environment is complex: the relationship between cause and effect can only be perceived in retrospect, but not in advance, the approach is to Probe – Sense – Respond and we can sense emergent practice.

From the Cynefin perspective best practices are only suitable for simple environments and good practices are inadequate in responding to constant change. Both approaches look to the past for inspiration, or as Marshall McLuhan wrote, “We look at the present through a rear-view mirror. We march backwards into the future.”

Most of our environments are complex so first we need to probe, or take action, and then sense the results of our actions (Probe-Sense-Respond). This approach has already been adopted by Web services, where Beta releases are launched and tested before they are finalized. For example, Google’s ubiquitous GMail service is still in Beta. The phrase, “we are living in a beta world” is increasingly being used outside the Web services domain.

In complex environments it no longer works to sit back and see what will happen. By the time we realize what’s happening, it will be too late to take action.

Here are some practical examples for learning professionals:

- PROBE: Prototype; Field test; Accept Life in Beta; Welcome small failures
- SENSE: Listen; Enable conversations; Look for patterns; Learn together
- RESPOND: Support the work; Connect people; Share experiences; Develop tools
Inverting the Pyramid
So, what models will work for our complex environments? The hierarchical organizational pyramid is a model that has worked for centuries. It’s premised on the beliefs that management has access to the necessary strategic information and knowledge. Because knowledge is thought to be power, management best understands the outside world and can clearly tell the workers what needs to be done and how.

In a complex, networked environment the lines of communication are no longer clear and the walls between the workers and the outside world are porous. Many workers know more about the outside environment than management does. Today, the relationship between workers and management is not as clear as it once may have been. Effective organizations are starting to look more like inverted pyramids.

As the Cluetrain Manifesto succinctly stated almost a decade ago, “Hyperlinks subvert hierarchies”. Hierarchies may not die in the future but they may have to co-exist with a new form of workplace organization, the Wirearchy.

Researcher and analyst, Jon Husband, says that wirearchy is, “a dynamic two-way flow of power and authority based on information, knowledge, trust and credibility, enabled by interconnected people and technology”. The Internet has created interconnectedness on a massive scale. Power and authority must now flow two ways for any organization to be effective. This requires information, knowledge, trust and credibility. Wirearchy in action is evident in open source software development projects, with minimal command and control, yet able to compete directly with large hierarchical corporations.

What Wirearchy Means For as a Leader
Become deeply aware of and truly mindful about the scope and reach of interconnected markets and flows of information. Understand how and why people are connecting, talking, sharing information. Be prepared to listen deeply, be responsible, be accountable and be transparent.

As a Manager
Become knowledgeable about online work systems and how the need for collaboration is changing the nature of work, generally – and the nature of managerial work specifically. Learning how to be an effective listener and coach is all-important.
As an Employee
Become more aware of the changing nature of work, and the traditional structures of authority. Develop a clear understanding of how to be both empowered and valuable and of service. Understand how to navigate on one’s own through a constantly shifting landscape of work.

As a Citizen
Understand the possibilities and responsibilities inherent in open and public dissemination of information. Understand and exercise the responsibilities of citizenship in a country and community. Understand how to have influence via electronic participation and collaboration.

Responding to the Conditions of Wirearchy
Responding to the interconnected and interlinked conditions of wirearchy is about adapting on a continuous basis based on real-time feedback to an environment that keeps changing. This means:
– being aware of, and identifying, the changes and preparing for more change on an ongoing basis.
Learn to “go with the flow” of life.
  • setting a direction for a desired future, and ensuring that the desired future can be clearly articulated,
  • translating the details of that vision into goals,
– learning how to fulfill the goals,
– finding and acquiring the necessary resources, and taking the necessary actions,
– and opening to and operating in ongoing and constant feedback loops

A New Model for Training
Workers at the bottom of the traditional organizational pyramid are those who interact closest with their environment (market, customers, information). To be effective today they need to be constantly probing and trying out better ways of work.

Management’s job is to assist this dynamic flow of sense-making and to respond to workers’ needs, within a trusted network of information and knowledge sharing.
The main objective of the new training department is to **enable knowledge to flow in the organization**. The primary function of learning professionals within this new work model is **connecting and communicating**, based on three core processes:

- **Facilitating collaborative work and learning** amongst workers, especially as peers
- **Sensing patterns and helping to develop emergent work and learning practices**
- **Working with management to fund and develop appropriate tools and processes** for workers

The only certainty about the future from here on out is that it won’t resemble the past. For example, instructional designers no longer have time to develop formal courses. Survival requires people who can navigate a rapidly-changing maze at high speed. They need to find their own curriculum, figure out an appropriate way to learn it, and get on with it. It’s cliché to say that people have to learn how to learn. Management needs to support self-learning, not direct it.

Workers will also have to be their own instructional designers, selecting the best methods of learning. Furthermore, given the increasingly reciprocal nature of knowledge work, **they will have to know how to teach**. Each-one-teach-one is at the heart of invent-as-you-go learning. The training department should be encouraging and supporting these activities.

**Collaborative, peer-to-peer learning, every day**

Create a constant, open channel for brainstorming, questions, and honest discussions with Poll Everywhere. All it takes is a few Poll Slides embedded in PowerPoint or displayed from the web. Then everyone has a spot for instant knowledge-sharing built into every group interaction, whether it’s a formal training meeting or simply a daily check-in. It takes less than a minute to start.