To keep pace with rapid industry growth, biopharma companies must reassess their current training strategies and embrace customized, learner-focused approaches.
Introduction

Biopharmaceuticals is one of the most complex and promising areas of drug development today and with its revolutionary therapies in progress and volume requirements, is expected to reach new heights in the future.

The biopharma industry has expanded rapidly in the last three decades. Total annual revenues have skyrocketed from $4.4 billion in 1990 to $275 billion in 2018 and biopharmaceuticals now account for more than 25 percent of the total pharmaceutical market.

For biopharma manufacturers, this massive growth has led to a marked increase in demand for their services, which has made the adoption of more innovative and efficient technologies and processes necessary. With growth expected to continue at an accelerated rate in the foreseeable future, the skill level of many manufacturing teams cannot keep up with the pace.

As a consequence, many manufacturers are faced with this significant challenge — how to take on lower skilled operators and quickly train them to run sophisticated biopharmaceutical facilities? And what training strategies can effectively upskill a workforce fast enough to meet such industry demands?

Building capability quickly and effectively

At the start of the biopharmaceutical industry, the skill level was high and bioprocessing chemists ran the facilities. From changing raw materials, to cleaning and setup work, discharging and packing the finished products, and responding to adverse process conditions reported by the control system — they were responsible, and they developed the institutional capability for the entire industry as it grew.

As the demand for the number of biopharma facilities rapidly increased, partly due to the success of monoclonal antibody (mAb) products, the demand for the number of operators also rose, yet their typical starting skill level was below required standards. To quickly upskill low skilled operators, effective training strategies are required to address the growing talent gap.

With the industry expanding at a rapid rate, there is a clear regulatory and commercial obligation to continuously build capability in the workforce to ensure that demands can be met. Training in all its forms is a key feature of capability building and to be effective, training must:

- Be appropriate and specific to the duties assigned to the personnel
- Incorporate regular refresher training
- Be reviewed periodically to ensure continued effectiveness
- Utilise training material that is up to date and reflects the dynamic nature of the business

Zenith’s Learning and Capability Services

Zenith Technologies, a Cognizant company, is a globally trusted provider of high quality online, classroom and blended learning and capability services for customers in Life Science industries. Our training experts can create both generic and customised course solutions to suit every system training need.

- Expert Training
  Delivering expert training to develop knowledge with competency based training as well as multiple platform technology training.

- Customised System Training
  Truly bespoke training created based on your site and your control systems into a virtual training environment, delivered via a combination of e-learning and instructor led learning.

- Cross Training
  Driving cross training to retain knowledge, reduce resource single point of failure and increase team effectiveness and flexibility.

- Graduate and Young Engineer Training
  Training programme designed to both develop talent and reduce costs with no headcount risk and the time to select the perfect fit for your organisation. We also help develop an organisational learning capability based on the reflective action learning cycle.

- Targeted Online Learning Modules
  Online learning to reduce overall cost as well as targeted training modules for use in GMP quality systems to avoid non-compliance.
Developing effective and unique training strategies

To plug the skills gap, biopharma companies must move away from traditional and generic pharmaceutical industry training that focuses on a ‘read and understand’ approach. To establish knowledge, build capacity, and cater to different learning styles and adult learning preferences, training must be role-specific, interactive and hands-on, taking into account that adult learners:

- Need to know the benefits of learning
- Like to learn experientially
- Approach learning as problem-solving
- Learn better when they can see the immediate value and application of content
- Prefer to study at a time, place and pace convenient for them

Beyond this, a high level of customisation is vital when developing training programs. For example, in a standard introduction to the DeltaV™ course, students learn by using a generic system, rather than using a system that is representative of the production system that they will ultimately need to operate.

Simple differences such as naming conventions, site specific recipe structures and integration with other systems create knowledge gaps, which ultimately become a barrier for operators when they return to their site systems.

Blazing a new training trail

A truly effective training strategy requires courses and tools that provide a more authentic experience for users to allow them to mimic real-life scenarios more closely. Only quality, highly focused, role specific, bespoke training tools that accurately reflect the look and feel of the system that operators will use should be implemented. This is how Cognizant and Zenith Technologies lead the way.

Create cost-effective, customised training

We can create cost-effective, customised training appropriate for each user role that is delivered by engineering-based trainers. Through our Customised Training Service, we collaboratively storyboard with customers and once the content is agreed, we design a training manual and a virtual training environment that meets their exact requirements based on their operating practices and control system technology.

Simulate large and complex systems

We can simulate large and complex systems in high definition using real world examples of workflows and sequences. This software can produce training environments for instructor-led courses or add captions and narration for deployment as an e-learning module.

Inexpensive licence

Customers only pay a one-off fee and once designed, trainees simply download the virtual training environment to their business computer and with no installation required, the HTML software will launch within their web browser.

Customizable Learning Paths

To elevate training, businesses can set up learning paths which can incorporate instructor-led, e-learning or a blend of modalities. A typical learning path delivers modular role-specific courses, which are particularly effective at building capability as they are based on client’s systems and can include short continuous learning, to target pain points and process changes.

Augmenting a Mixed Reality

Incorporating technologies such as Mixed Reality, Augmented Reality and Assisted Reality takes customisation of training programs for operators and maintenance staff to the next level—imagine bringing an interactive hologram of a cleanroom and its equipment into the classroom and how this could transform teaching. With such exciting developments, the revolution in operator training has only just begun.
Benefits

110 personnel were trained on the new DCS system prior to it being operational. Key features of the training are:

- **Customization** - Allowed the client to specifically target the training to the precise skills required by the differing team roles
- **Increased Manufacturing Reliability** - Through operator confidence and increased skills of the maintenance workforce which ensured quick diagnostics of equipment failures and interruptions
- **Improved Skills** - Teams are now familiar with the implementation of the DeltaV™ system and the specific maintenance functions they are expected to execute
- **Lower Costs** - By reducing the number of interventions, helpdesk calls and increased learning
- **Improved Training Experience** - Through expert delivery and face-to-face practical sessions
- **Reporting** - Measured the effectiveness of the course against key learning outcomes

Challenges

- The Commissioning, Maintenance and Operations teams required training on the new DeltaV™ system
- Each role needed a bespoke course that fitted with their activities and responsibilities, for example, the Commissioning Team needed – ‘An introduction to the new Process Control System’, ‘An understanding of hardware and software elements’, ‘ISA 88 Structure’, ‘Equipment module operation states’, ‘Loop tuning’, ‘Alarms events’ and ‘Diagnostics’
- As well as role specific, training needed to be site specific

Solutions

- Designing bespoke DeltaV™ training programmes that were customised to the needs of the Commissioning, Maintenance and Operations teams
- The training was carried out on a system reflective of the client sites DeltaV™ solution (Graphics, Toolbars, & Units etc.)
- Face-to-face training was delivered by an expert Senior DeltaV™ trainer with extensive knowledge
- Comprehensive training manuals were provided to help keep skills refreshed post-training
- Short assessments after training ensured competency levels were met

The Author

Jonathan Woolliss
*External Training Lead*

Jonathan is an industry expert with vast experience in developing learning solutions for some of the largest companies in biomanufacturing. Over the last few years, he has focused on designing and implementing customized training solutions for different job roles, spanning commissioning engineers, operators and maintenance technicians. Jonathan has also deployed multiple virtual training environments and is heavily involved in augmented reality research and development.