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Outstanding Teaching, Learning and Assessment (OTLA) Technical Skills National Programme: sharing and developing effective practice

The Lean Process
December 2017



OTLA PROJECT



Programme aims

- Systematic improvement of teaching, learning and assessment
- Focus on technical skills teaching
- Centred on cross-provider collaboration
- Enhancement of employer-provider partnerships

Working towards outstanding provision for all learners on technical routes

Key principles

- Enhancing teaching, learning and assessment towards outstanding
- Focusing on technical skills teaching
- Implementing and promoting the use of the Professional Standards
- Offering peer-led, collaborative development of teaching for leaders and practitioners
- Creating sector-led solutions to sector defined problems
- Evidence based, research informed
- Supporting equa

Industry drivers shaping the project



Q. What are the significant challenges UK Agriculture is going to face over the next few years?

A. BREXIT

AHDB Horizons estimates in the worst case a 50% fall in average farm business income (significantly higher in certain sectors)

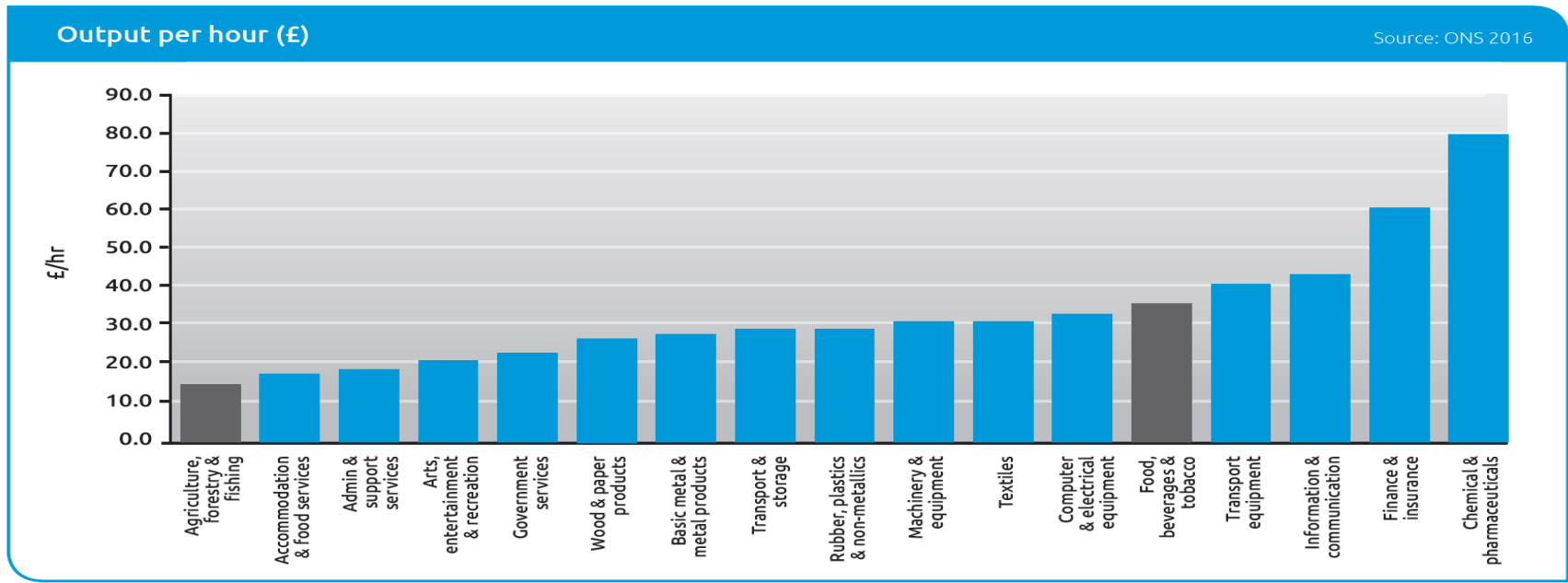
Loss of Subsidies – As of 2020 UK agricultural subsidies will most likely end or be reduced.

Price Volatility – In an open market prices will continue to vary significantly

Q. How can we address these sector challenges and deliver Outstanding Teaching Learning and Assessment?

A. Through the integration of Lean Management tools, and the culture of continuous improvement

WHY LEAN MANAGEMENT?



- UK Agriculture makes significantly less money per hour of labour than any other sector – this needs to change
- Using data and LEAN management allows rapid assessment of efficiency and value creation in current and future markets
- LEAN Management skills and culture are found in the leading businesses across all sectors as they are proven tools that drive efficiency



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THE LEAN PROCESS

Reaseheath agriculture



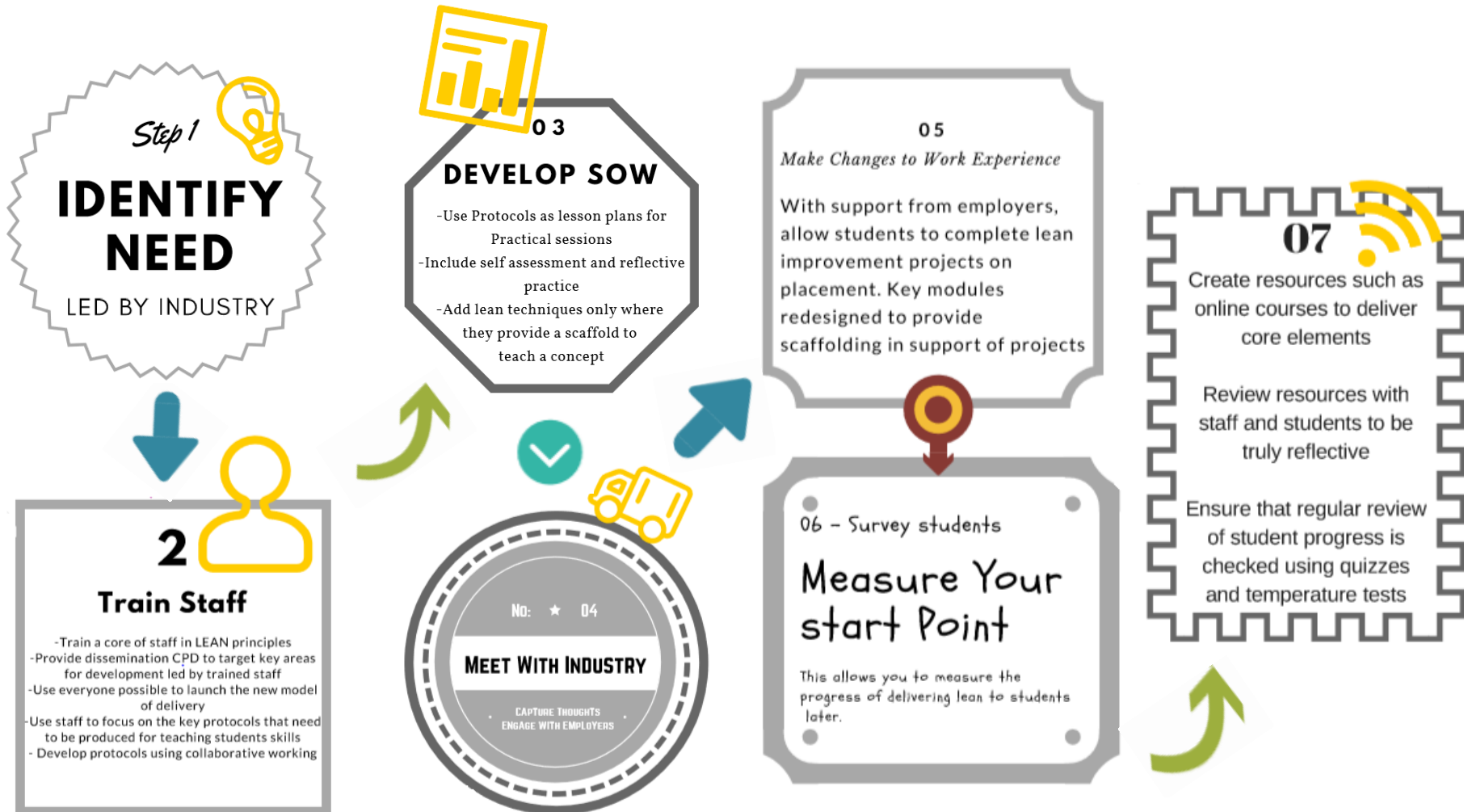
CONTENT



- The road map to LEAN management
- The Importance of Data
- Meeting with Industry
- Training core staff
- Implementing change
- Integrating LEAN tools into curriculum design
- Creating new resources
- Evaluation and review
- Achievement to date

Road Map to:

LEAN MANAGEMENT



THE IMPORTANCE OF DATA

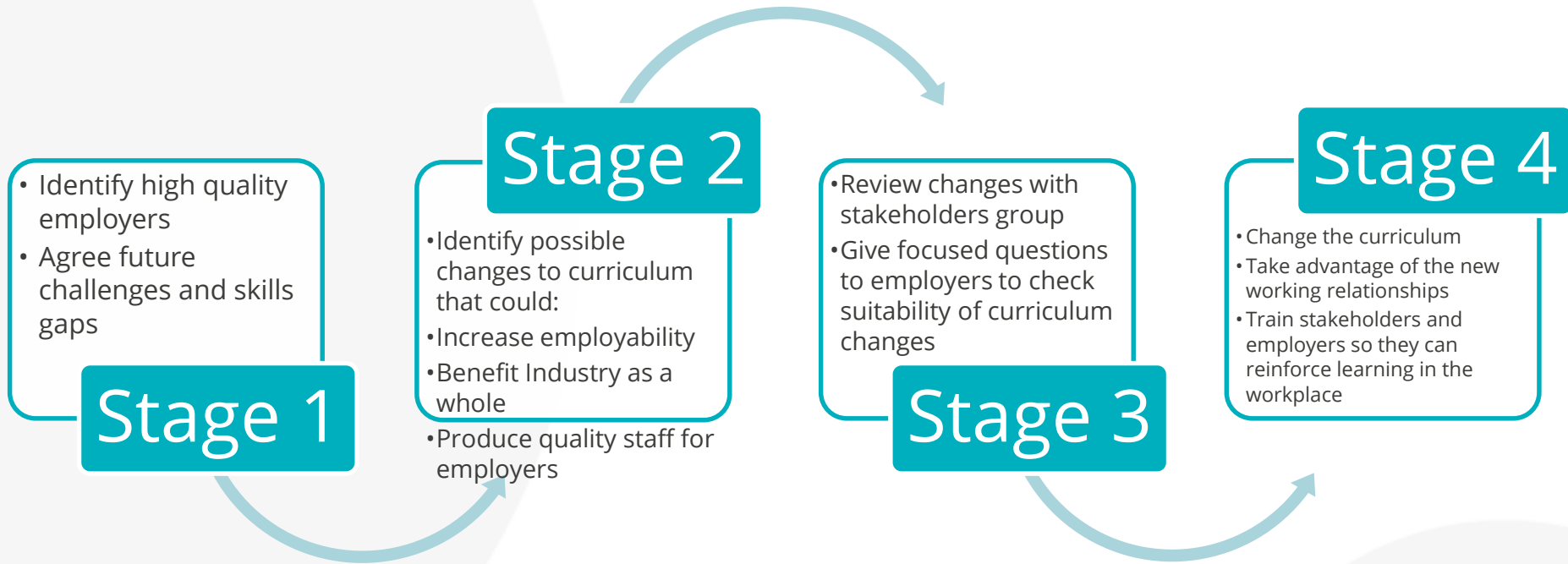


21/6 18-10-17	KPI	THU 12-10	FRI	SAT	SUN	MON	TUE	WED 18-10	WEEK TOTAL
LITRES TO TANK	51700	7275		14714		14665		49749	51403
COWS MILKED (TOTAL)	235								238
WASTE LITRES	800	180	180	180	180	120	120	120	1080
OUT OF TANK COWS	5	6	6	6	6	4	4	4	5-14
- - REASONS									
COW SERVICES	10	2	3	4					7
COWS PD+	5						3		3/6
HEIFER SERVICES	2								0
HEIFER PD+	2								0/1
FERT TREATMENTS	10						20		20
BF/PROT	30.9	30.8		30.9		30.8		30.3	30.7
SCC/BC	20	27		14		12		8	22
UREA	250	197		230		237		237	225
KG DMI	25.95								23.89
CALVED DOWN		1			1	1			3
DEATHS & CULLS	0.5								1
HERD AVERAGE YEND		31.66	31.64	31.82	31.82	31.65			
HIGHS AVE YEND		41	40.3	40.9	41.4	40.9			
HEIFER AVE YEND		30.7	30.3	30.6	30.0	30.6			
LOWES AVE YEND		20.5	22.0	20.7	20.2	20.2			
W/E		20/9	27/9	4/10	11/10	18/10			

Farm KPI board

- Engaging - we wanted students to gain access to real time data rather than learning from modelled scenarios
- Dynamic - data review meetings occurred all the way through the process
- Why data? – not just numbers, but Key Performance Indicators!
- Practical application – all stock students and practical's on College farm exposed to and involved in collection of data to monitor farm performance
- Making a difference - students included in farm weekly LEAN KPI meetings – linking data intel to management actions on farm
- Embedding the culture - extra sessions added to allow for reflective review of KPIs for the unit on which they are working

MEETING WITH INDUSTRY



TRAINING CORE STAFF (ILM)



5 key members of staff put through intensive ILM level 5 in Dairy LEAN Management

Why?

- Someone must be a core to build these changes around
- They must know the topic well and keep pushing the message
- Demonstrate the lean tools to the whole of the team
- Ability to mentor other staff and build capacity

UNCONCIOUS INCOMPETENCE

You are unaware of the skill and your lack of proficiency.

UNCONCIOUS COMPETENCE

Performing the skill becomes automatic.

CONCIOUS INCOMPETENCE

You are aware of the skill and your lack of proficiency.

CONCIOUS COMPETENCE

You are able to use the skill but only with effort.

IMPLEMENTING CHANGE



- Integrating farm and curriculum staff as cohesive team
- Creation of protocols (standard operating procedures) for all processes on farm to set standards and ensure consistent delivery
- Integrate LEAN into schemes of work where relevant and adds value
- Review and amend *how* we teach –what is excellence from a student perspective?
- Changing practicals and work experience – adding value
- New dynamic learning materials – real time data, live vlogs
- Increase student engagement - problem led projects that are implemented and drive measureable change

CURRICULUM AND UNIT STAFF WORK COLLABORATIVELY



Data Link



Biosecurity – Dairy Unit

Objective

To maintain a high standard of biosecurity to ensure a healthy and productive dairy herd.

Scope

The successful maintenance of a healthy herd via biosecurity measures depends on:

- The maintenance of PPE equipment to a high standard
- The successful monitoring of staff (Farm and curriculum) of students entering and exiting the unit and the completion of the protocol
- The following of guidelines laid out under Control of Animal Diseases Act 1966

Protocol Description

Timing: Daily

1. Students are to enter the dairy changing room with an instructor
2. Students should use the clearly labelled sizes to choose a clean and appropriately sized set of overalls
3. Once appropriately dressed in their overalls, students should sit on the bench seat and discuss the dynamic risk assessment under the health and safety protocol. This should include instances of

- Use the whole team to identify all of the protocols which are followed by the business
- Everyone possible involved to launch the process
- Convey the importance of protocols as building blocks of any task
- Use the protocols as a scaffold to encourage students to engage in reflective practice

DEVELOP SCHEMES OF WORK

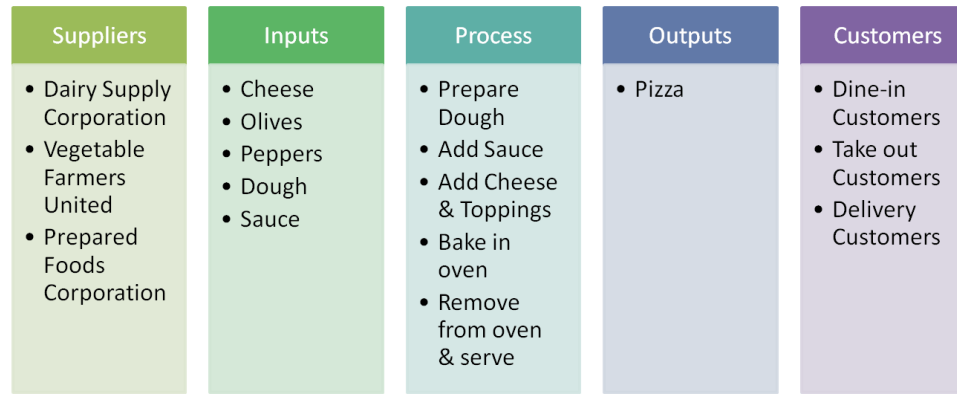
- Classroom based staff looking for opportunities to add LEAN principles to delivery – added where relevant. This is part of the sustainability of the project. LEAN tools are valued for their ability to aid teaching.
- Must be started whilst the topic is still fresh in peoples' minds

	structure					
17	<ol style="list-style-type: none"> 1. Students can identify the reproduction and life stages in a production animal 2. Students can recognise the KPIs that are required for the monitoring of herd health in a production animal 	<ol style="list-style-type: none"> 1. Students have a tour of the dairy unit at each stage of the production system 2. Students are encouraged to identify the major KPIs that would be recorded and benchmarked against in the case of dairy cattle 	Assessment on going	Lean: Use of KPIs to assess performance	Access to dairy unit Access to dairy unit KPI data	
18	<ol style="list-style-type: none"> 1. Students can evaluate the performance of a species of livestock used in production 	<ol style="list-style-type: none"> 1. Students will be given a species of animal that is not traditionally farmed in the UK. They will be expected to research and present to the class their KPIs for that species 	Peer reviewed Presentations	Lean: Use of KPIs to assess performance	Laptops	

FRAMING CURRICULUM

SIPOC Diagram

Pizza Process



- Now incorporate LEAN techniques across levels 2 - 6 into as many sessions as possible, making sure there is value in the technique.
- Core group of staff provide continuing CPD for wider delivery staff

CHANGES TO WORK EXPERIENCE AND PRACTICAL SESSIONS



In College:

- After practical sessions instigate some reflective practice with the students
- After stock duties tutorial the students to capture and be coached through the reflective process

In the Workplace:

- Develop work experience tasks which challenge the students to make changes in their workplace. Students will produce a LEAN improvement project supported by the employer during their placements
- Link assessment of workplace skills with requirements of the employers

USE OF VBLOGS



Regular vBlogs are used to convey new projects on the farm that link to LEAN management.

- How are we monitoring data?
- What management actions are driven by weekly KPI meetings on the farm?
- What is the relevance to the students?



CREATE AND USE MOOC – Massive Open Online Course

A screenshot of a MOOC interface for a Lean Management course. The interface features a sidebar with a 'CONTENTS' section listing 11 topics with progress indicators. The main content area displays the first topic, '1. How does the course operate?', with a progress bar and a 'Create a new section' button. The background of the interface is decorated with large, semi-transparent text: 'DEFINE', 'MEASURE', 'ANALYZE', 'IMPROVE', and 'CONTROL'. A 'LEAN' logo is also visible in the center of the interface.

CONTENTS

To do

1. How does the course operate?
Progress: 0 / 1
2. Welcome to the course
Progress: 0 / 2
3. Why do we need lean management?
Progress: 0 / 4
4. History of Lean Management
Progress: 0 / 2
5. What is Lean Management?
Progress: 0 / 2
6. Process mapping
Progress: 0 / 2
7. Protocols and KPIs
Progress: 0 / 3
8. Regular Meetings and Data Reviews
Progress: 0 / 1
9. Case study 1: Threshold (dairy)
Progress: 0 / 3
10. Case study 2: Ensiled Maize trail (Pigs)
Progress: 0 / 2
11. Summary
Progress: 0 / 3

1. How does the course operate?

→ ⓘ ✕ ⌂

Create a new section Course Dashboard

This MOOC makes use of case studies delivered at Reaseheath College to introduce lean management techniques and highlight how they can benefit agricultural businesses.

Video, external links, case studies and published journals will be used to show the benefit of a lean management approach to managing agricultural enterprises. An accompanying discussion forum will allow you to discuss your views as you progress through the course. Look in the 'DISCUSSION' sections for ideas to discuss in the forum. Please share your views and experiences of lean management and other techniques used to improve the production efficiency of agricultural business.

- An online course providing topic based information is an excellent grounding and base for students and staff
- Share the key information related to LEAN so that students have a dedicated course to make sense of the features of lessons
- Allow CPD for staff and students across the college and if needed, the whole sector

DEVELOP AND EVALUATE CURRICULUM IMPACT WITH ALL STAFF



- In theory sessions students should be involved with the development of protocols
- Develop the key higher level skills associated with management and therefore employability
- Evaluate the impact of taught sessions on student understanding with increased use of formative assessment to measure progress and as preparation for new models of summative assessment.

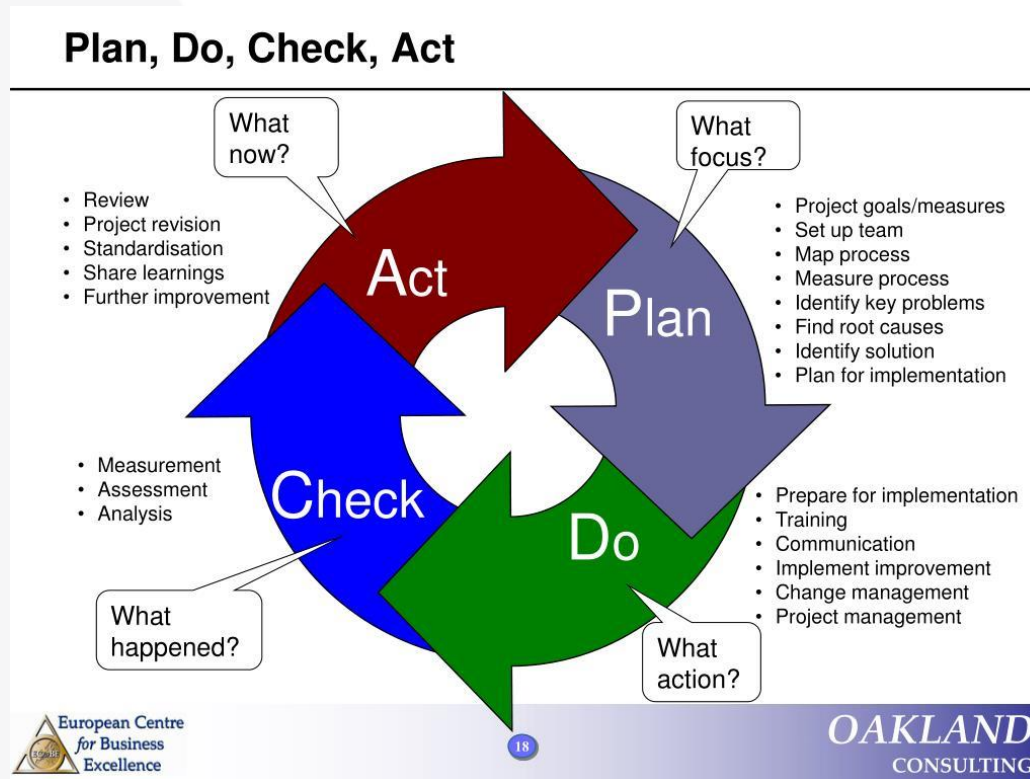
- Disinfectant foot dips provided on the unit.
- Sign in/Out sheet provided on unit.
- Disinfectant hand wash
- Pressure Washer
- Paper Towels
- Latex Gloves
- Brush and Pan

Other relevant protocols

PPE protocol

Review: What sources of WASTE have you identified in this protocol? Could you have collected any other data? What issues might this data help identify i.e. What is the Value of completing this task?

ADJUST PROTOCOLS TO CLOSE THE REFLECTIVE LOOP



- All protocols/SOP's should be adjustable
- They won't be spot on to begin with
- Discussion must be separate to KPI meetings

ACHIEVEMENT TO DATE



- 228.5 hours of teaching per week now has an element of lean embedded within the delivery
- 4 brand new teaching modules that have been developed specifically on lean to enhance the students learning experience
- 84 hours of brand new teaching
- 80 protocols have been written and are being used by curriculum and staff for practical and theoretical delivery

PRACTITIONERS POINT OF VIEW...



- 'it makes delivering the lesson so easy, everything drops out of the process map and it is really easy for the student to follow and understand'
- 'I am using process maps in all my delivery, the students are really used to them now and are completing that logical thought process almost automatically'

STUDENT'S POINT OF VIEW...



- 'The job sheets are really great, I know exactly what to do and how, so there is much less hanging around waiting to be given a job.'
- 'The protocols have helped give us a sense of satisfaction when we know we have completed the job just right. Its great we can talk to the farm staff if we think there is an improvement that we have noticed, and they listen.'
- 'Sitting in the LEAN meetings has helped us understand what is going on, on the farm and why the data is what it is. This has really helped with the completion of our practical assignments. It was all a bit over my head at the beginning but it is making sense now.'
- 'Every lesson the staff are making us calculate something, whether its working out the most efficient way to plough a field, and what that means in terms of fuel costs...'



EMPLOYERS POINT OF VIEW...

- 'We are really looking forward to working with our placement students on our improvement project. Both sides are going to learn a lot from this process'
- 'We are already using some elements of LEAN, but know we need to embed across our business, having a LEAN student is giving us the impetus to do this'
- 'Despite being a very successful business, we have skills gaps, particularly around interpretation and use of data. This is the first year we will take a placement student as we can see how it could add value to our business'