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Prifysgol Abertawe



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Swansea University
Prifysgol Abertawe

SIM Wales



Swansea University
Prifysgol Abertawe

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Skills for Innovation in Manufacturing

Leadership
 Innovation Open Culture
 Vision
 Process Communication
 Data Driven New Product
 Development
 Continuous
 Improvement Analysing
 Learning Engaging
 People Solving People
 Solution Shopfloor Ideas

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The Skills for Innovation in Manufacturing Wales project was funded by UK Commission for Employment and Skills (UKCES) as part of the UK Futures Programme. The SIM Wales project was Swansea University's response and contribution to Productivity Challenge 4: Skills for innovation in manufacturing. SIM Wales was led by Gary Walpole and delivered by Tony Burnett, Professor Nick Rich, Dr Thomas Bortolotti as well as partner organisations.



The SIM Wales project was delivered by Swansea University in partnership with the Engineering Employers Forum (EEF) and Industry Wales. It was developed through consultation with a small group of manufacturers around their current challenges with implementing and managing innovation in their organisations. The project focused primarily on developing the broader organisational innovation knowledge of senior managers in ten participating manufacturers based in Wales. The project also aimed to develop the leadership and change management skills of the participants.



“ Five years ago, the full force of the Global recession had hit home, and the manufacturing world was in a very bad place.

Taking part in a Swansea University programme was a genuine lifeline; we met with other businesses facing similar challenges and worked through problems together, sharing experiences and learning a huge amount from the programme’s delivery team.

Fitting in time and space for innovation is a challenge we all face, and one we’ve recently looked to tackle with the employment of a dedicated Continuous Improvement Coordinator.”

Mike E
MD, EBS



The project gave employers a clear understanding of the challenges of commercially exploiting innovation and a means for implementation. The issues of each employer were addressed by their individual innovation projects and the use of action learning to discuss their challenges.



Gary Walpole
BA (Hons), PgD HRM, PgD SSRM, MBA,
Project Manager, Swansea University

Gary has twenty years' experience in business and education, with fourteen of these in Higher Education institutions and the remainder in the private sector working as a recruitment consultant and in sales positions. He is passionate about organisational development through the development of leadership and management skills. Gary has spent the last ten years designing, delivering and managing organisational development programmes and projects.

Tony Burnett
Leadership Development Specialist,
Institute for Entrepreneurial Leadership,
Swansea University

Tony has over 30 years' experience in leadership and senior management roles in the UK, Europe and Brazil. He has developed businesses, programmes and projects in public, private and third sector organisations including Coca Cola Schweppes and the British Council. His "know how" includes business development techniques and leadership & management skills development through facilitating experiential learning events. Tony is enthusiastic about improving people's understanding and practice as catalysts for organisational and behavioural development.



Dr Thomas Bortolotti
Lecturer, School of Management,
Swansea University

Thomas is the UK leader of the "High Performance Manufacturing" (HPM) international research project. His work has been published in a range of leading academic journals. Thomas has presented his research at key international conferences in Asia, Europe and North America and received the World P&OM Conference Best Paper Award (July 2012, Amsterdam, Netherlands) and the Best Paper Award at the International Conference on Advances in Production Management Systems (September 2009, Bordeaux, France). He is an annual member of the European Operations Management Association (EurOMA), and the Production Operations Management Society (POMS).

Professor Nick Rich
Professor in Operations management,
Swansea University

Nick is a socio-technical systems researcher, meaning he has an interest in how people and technology work together to generate high performance organisations and highly reliable organisations. Nick is a renowned academic, a polymath, and his interests cover healthcare systems reliability and high performance manufacturing and service operations. His work is some of the best cited in his field and he was seconded to Toyota in Japan as a Research Fellow to understand lean systems.

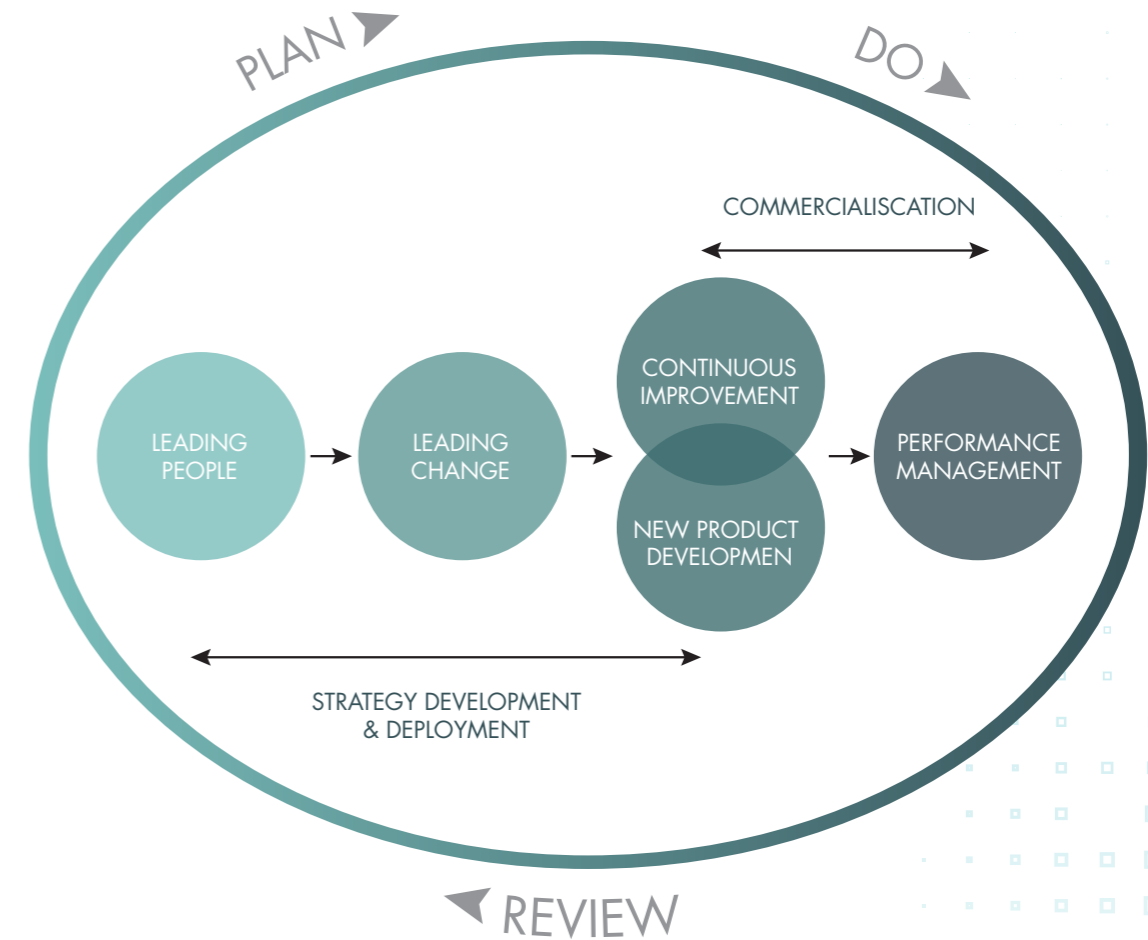


“ Specialist Precast greatly appreciate the opportunity of participating in the SIM Wales course. It has helped us keep focussed on changing our business to be in good shape for the coming years and proved a good follow-on to the LEAD Wales course both Martyn and Ray completed last year. Thanks to all the team, especially Tony, Gary and Nick. ”

Martyn F
MD, Specialist Precast



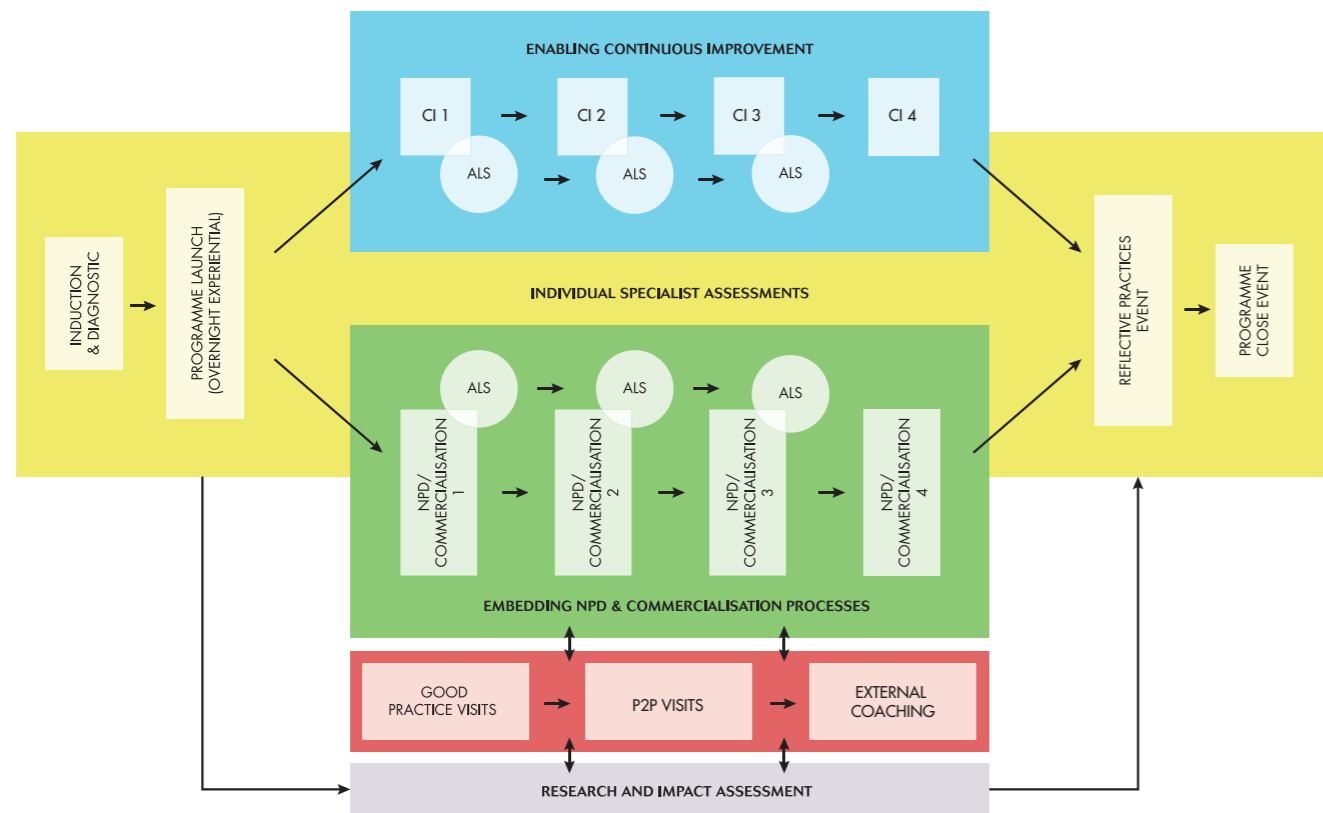
SIM WALES CONTENT AND CONCEPTUAL FRAMEWORK



This was achieved through a pilot practical development course that incorporated:

- An overnight experiential learning event
- A diagnostic that allowed participants to articulate their innovation management challenges
- Benchmarking tools that allowed participants to articulate current and future states of management of innovation
- The introduction of appropriate innovation management methodologies, tools and techniques
- Workshops that incorporated action learning sets, and peer to peer learning
- Good practice visits, critical friend exchanges, as well as coaching and mentor opportunities
- A robust process benchmarking methodology that can be used beyond the programme
- Reflective learning logs to enhance the participants' ability to reflect on practice and in practice
- Organisational development plans that were shared with group/peer network through an open presentation
- Metrics that will inform a report that details the impact of the programme.

SIM WALES PROGRAMME SCHEMATIC



Experiential Learning Event

This overnight experiential was an opportunity to develop understanding and practice of leading change within the participants' organisations. The clustering of participants in a professional and semi-formal setting also allowed them to build confident and trusting relationships which could be relied on later to deliver frank and honest collaborative learning.

Workshops

To allow the participants to gain the maximum benefit from SIM Wales, the programme was broken down into 10 monthly learning days. Invariably the learning days included workshops to raise awareness of continuous improvement tools, new product development techniques and implementation methods to facilitate roll out into their organisations.

Action Learning

Learning days also included an opportunity for participants to present their challenges in the implementation of innovation and business development issues. Within a facilitated coaching framework, peer-participants probed and questioned each other to help reach workable solutions and action plans to address operational issues.

Good Practice Visits

Good Practice Visits allowed participants to view first-hand practical models to contribute to their experiential learning experience. Visits were arranged to Abbey Glass, Admiral Group (Cardiff), BAE Systems (Glasgow) and Bisley Industrial Storage (Newport, South Wales). The participants found them interesting and informative, the visits resulted in direct action from participants to transfer knowledge into their individual businesses.

Critical Friend Exchanges

Participants were paired off as critical friends within the group. The critical friends then visited one another's work places to provide feedback on their innovation processes.

Coaching and Mentoring

The programme included Coaching methodology and practice to allow the participants to develop their coaching and facilitation skills and activate that learning into their working environments. Individual participants were also offered confidential one to one coaching from a commercially experienced professional coach.

Learning Days



Experiential Learning Event (2 Days Residential)

OVERALL AIM

The primary aim of this two-day workshop was to develop delegates' knowledge and skills around the behavioural dynamics of change and leading people. The secondary aim was to allow all of the delegates to work with each other in small groups in order to build trust and help them start to become 'critical friends'.

INTENDED LEARNING OUTCOMES

- Knowledge and Understanding:
- Develop delegates' knowledge and understanding of current theories around leading change and leading people.
 - Develop delegates' knowledge and understanding of current theories of organisational development.

INTELLECTUAL SKILLS:

- Use these differing theories and models to inform and evaluate their personal practice.
- Critically debate the nature of professional practice, and the role reflection can play in helping analyse situations and cope with complex problems in the workplace.

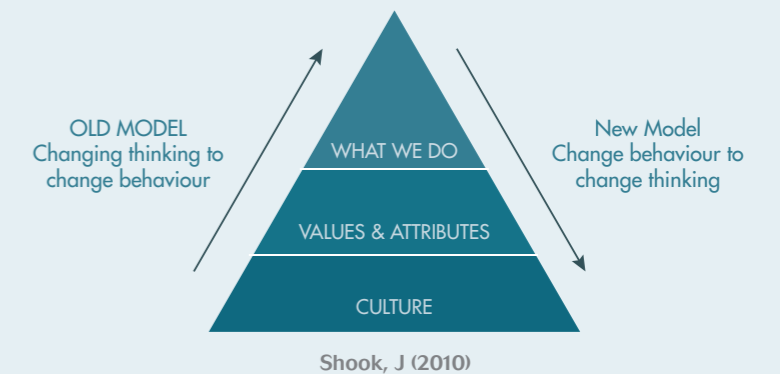
PRACTICAL SKILLS:

- Self-awareness and critical self-analysis.
- Communication, facilitation, problem-solving and decision-making.

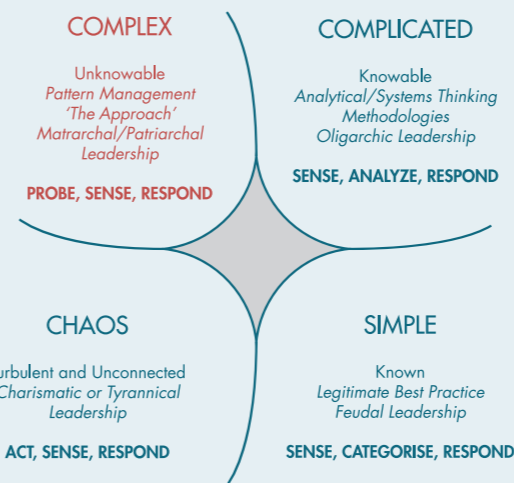
TRANSFERABLE SKILLS:

- Application of knowledge and skills into the workplace.
- Active reflection on personal experience and application of action-learning skills.
- Increased ability to integrate learning into practice.

Shook's Change Model

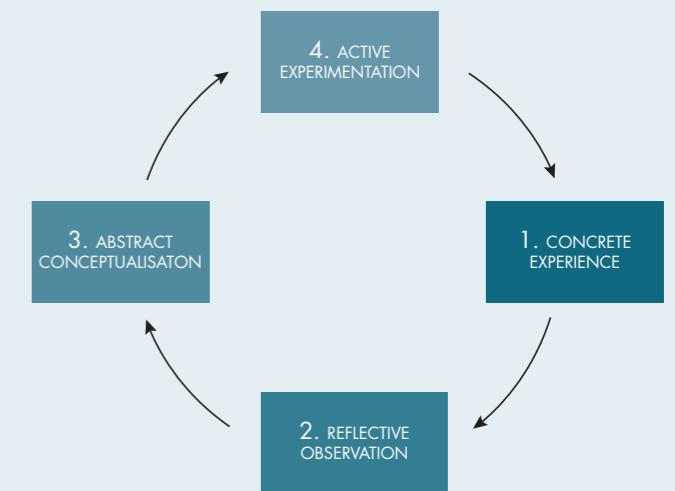


Snowden's Four Ontologies



Snowden's, D & Boone, M (2007)

Kolb's Learning Cycle



Kolb, DA (1993)

Creating the Right Conditions for Change

OVERALL AIM

The aim of the workshop was to highlight the participants' role as a coach in transferring knowledge and good practice into their organisations. It was also designed to introduce the leadership and change management skills required to support workforce engagement of novel ideas and practices into their companies. The workshop was also to raise awareness of change and prepare the participants' for the challenges their implementation of change may present.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegates' knowledge and understanding of how coaching fits into working lives.
- Develop knowledge and understanding of the supporting change management methods and the challenges embedding change into their workplaces.

INTELLECTUAL SKILLS:

- Evaluate the delegates' current business practice in reference to coaching as a leadership and management tool.
- Evaluate the understanding of coaching and how it fits into a range of developmental tools.
- Introduce an understanding of the GROW model of coaching.
- Understand how organisational change effects operations and individuals.
- Evaluate the inherent challenges organisational change presents.

PRACTICAL SKILLS:

- Ability to utilise the GROW model of coaching.
- Experience and evaluate the coaching skills required to support change and business development.

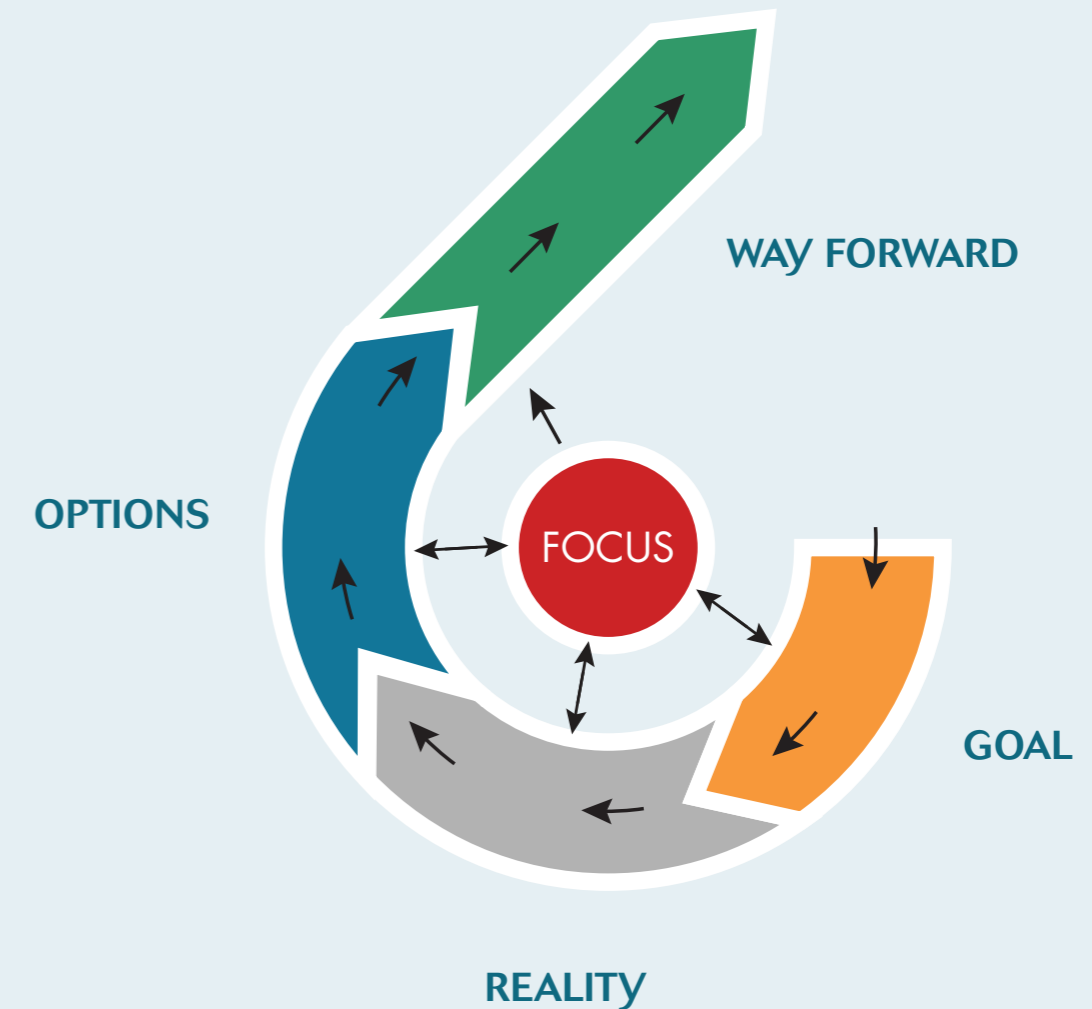
- Know and have the confidence to apply the coaching techniques at work to generate a collaborative and engaged workforce.
- Experience and be able to apply team-based improvements.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for workplace management.
- Reflection on the usefulness of techniques and how to introduce these in an action-learning approach within the factory.
- To apply learning to practice and 'routinise' good practice.



GROW MODEL



Whitmore, J (2009)

“ ... organisations where people continually expand their capacity to create results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together. ”

'The Learning Organisation', Peter Senge, (1990)

Seeing Flow – An Introduction to Value Stream Mapping

OVERALL AIM

The workshop was designed to introduce the group to mapping the flow of goods and information linkages that support the business with its customers and suppliers. The session shows delegates how to map and understand “current state” flows (the ‘as is’ situation) and then to use the same methods to create a “future state” and improved business flows. The technique allows managers and teams to identify improvement opportunities and build a robust sequence of changes to the business that improves performance, improves cash flow and reduces delays and errors in the flow system.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegate knowledge of ‘end to end’ mapping to identify improvement opportunities.
- Apply the methodology to maximise the value of improvements.

INTELLECTUAL SKILLS:

- Use these methods of business-level mapping.
- Identify the key changes in business policies and practices to release improvements in product flow.
- To critically evaluate the performance of the business within the supply chain.
- To understand how a lean system can be employed to improve business performance.

PRACTICAL SKILLS:

- Awareness of the Value Stream Mapping approach and how it supports improvement.
- The ability to identify weaknesses in the current flow of goods and highlight areas of opportunity.
- To quantify the business benefits of change.
- To work with business teams to find new ways of improving workflow.

TRANSFERABLE SKILLS:

- Application of mapping processes for the business and its supply chain.
- Reflect on the options open to the business when engaging with customers and/or suppliers.
- To apply learning to practice.



Visual Production Mapping & Problem Solving Techniques

OVERALL AIM

The workshop focused on the workplace management techniques supporting high flow and improving quality in the workplace. The factory should be the showroom of the business and allow customers to see the production process and how well it is controlled.

The mapping methods explored included process activity maps, spaghetti mapping and the 7 Value Stream Mapping tools. The Problem-Solving methods included root cause analysis and the 7 Quality Tools. The CANDO (5S) process is a means of controlling the workplace so that it is clean, bright, well presented and controlled (so everything has a place and everything is in its place 100% of the time). The whole session is aimed at creating a standardised and learning workplace.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegate knowledge and understanding of the power or the well organised workplace (wow) and how this is used to create good staff morale and sell the business during customer visits.
- Develop knowledge and understanding of the systematic methodology for problem solving so team members can learn how to “do tasks right” and then to find ways of “doing them better”.
- To understand the role of mapping as a means of understanding the business (internal consultancy approach).

INTELLECTUAL SKILLS:

- Use the principles of the well organised workplace to engage staff and sell the business to its customers.
- To analyse the business and seek out its weaknesses and potential for improvement.
- To understand how root cause problem solving can be applied to all tasks and processes so that it should be adopted as a company-wide methodology.

PRACTICAL SKILLS:

- Awareness of the CANDO 5S approach and its application.
- The ability to apply the problem-solving method.
- The ability to map and find improvement opportunities within the business.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for improvement and visual management.
- Mapping key business processes and standardising practices.
- To apply learning to practice.

The Mapping Tools introduced

Visualising Flow: Mapping

- Value Stream Maps
 - Current and Future states
- Process Activity Maps
- Spaghetti Maps
- Quality Maps
- Product Variety Funnel
- Demand Variation
- Customer Decoupling Point
- Four Fields Mapping

Quality Function Deployment (QFD): A Framework for Innovation

OVERALL AIM

The workshop focused on the design of products/services and the integration of customer demands in design. The session was designed to identify the key customers to a business (segment) and to capture the strength of expressed and non-verbalised product needs. The purpose of the session was to formally and systematically understand customer and consumer needs and to use these as the beginning of a process to determine the exact characteristics needed (in a product) to provide exceptional customer satisfaction.

The Quality Function Deployment method was explained and practiced so that the members could apply the method to understanding customer needs and to customise product/service offerings.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegates, knowledge and understanding of successful product /service design.
- Develop knowledge and understanding of the systematic methodology used to provide an alignment in design and the details of the product that result in high levels of satisfaction.

INTELLECTUAL SKILLS:

- Use these principles of lean design to support current business practice and use these methods to compress time in the design process (and de-risk the process).
- To apply a stage-gate process to business design practices.
- To understand how the various aspects of product/service design support competitive advantage and market differentiation.

PRACTICAL SKILLS:

- Awareness of the QFD approach and how it applies in practice.
- The ability to apply the method.
- The ability to benchmark company performance in design against competitor offerings.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for design management.
- Reflection on customer needs and how to engage with customers.
- To apply learning to practice.



CANDO / 5S in action

OVERALL AIM

Both the workshop and follow up 'practice' implementation within a participant's workplace were to further develop the participants' knowledge and practice of key Lean tools. This exercise was also intended to give the participants first-hand experience of the challenges the tools' implementation presents and encourage an empathic approach to knowledge and skills transfer into their organisations.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Further develop delegates' knowledge and understanding of Lean manufacturing tools and methods.
- Develop knowledge and understanding of the supporting implementation of Lean methods and the challenges embedding the methods into their workplaces.

INTELLECTUAL SKILLS:

- Evaluate the delegates' current skills development, practice and attitude with reference to CANDO / 5S.
- Evaluate the barriers implementation of the LEAN tools was presenting.
- Develop understanding of how Kaizen can affect their workplaces.

PRACTICAL SKILLS:

- Ability to utilise the CANDO / 5S tools more effectively.
- Experience and evaluate the challenges, knowledge and skills transfer LEAN tools would present in a "real" scenario.
- Know and have the confidence to apply the CANDO / 5S techniques in a collaborative and engaging manner.
- Experience and be able to apply team based improvements.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for workplace management.
- Reflection on the usefulness of techniques and how to introduce these in an action-learning approach within their operational environment.
- To apply learning to practice and 'routinise' good practice.

KAI ZEN
 改善
 CHANGE GOOD



SIM Wales (2016)

“ Why not make the work easier and more interesting so that people do not have to sweat? The Toyota style is not to create results by working hard. It is a system that says there is no limit to people's creativity. People don't go to Toyota to 'work' they go there to 'think'. ”

Taiichi Ohno

Addressing Barriers to Change

OVERALL AIM

The workshop was designed to consolidate, develop and strengthen the participants' coaching skills to support staff engagement within their organisations. The workshop was also to offer tools and support methods to enable the participants to implement change projects within their workplaces. Furthermore the workshop included development of communication and presentation skills to facilitate the implementation of change initiatives in a collaborative and staff engaged environment.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop knowledge and understanding of how coaching fits into developing change within their organisations.
- Develop knowledge and understanding of models to support change projects.
- Develop knowledge and understanding of communication and presentation methods to support workforce engagement in change initiatives.

INTELLECTUAL SKILLS:

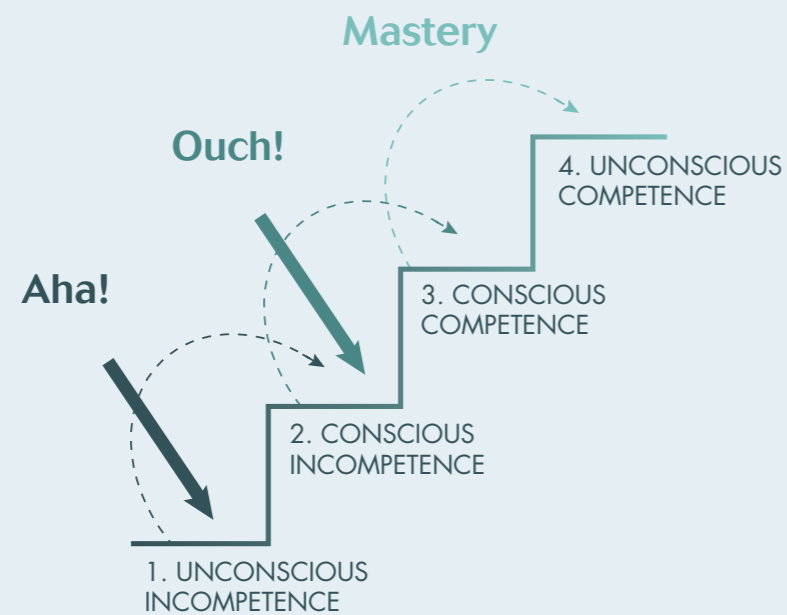
- Evaluate the delegates' development in coaching as a leadership and management tool and offer further support and practice where necessary.
- Evaluate the challenges participants were facing in activating coaching in their workplaces.
- Introduce and understand models and frameworks to manage change in a business setting.
- Introduce and evaluate a range of skills to facilitate communication.
- Introduce a range of skills and techniques to improve presentations.
- Evaluate the "Cycle of Development" as a tool to establish challenges presented when facilitating change in the workplace.

PRACTICAL SKILLS:

- Proficiency in the use of the GROW model of coaching and adapting it as a facilitation tool for staff engagement in group activities.
- Identify and utilise a tool to initiate and manage a change project.
- Improve outbound and inbound communication to facilitate a change project.
- Evaluate presentation tools and techniques to facilitate staff engagement in a change project.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for workplace management.
- Reflection on the usefulness of techniques and how to introduce these in an action-learning approach within the factory.
- To apply learning to practice and 'routinise' good practice.



Adapted from Burch, N (1970)

Generating and Managing Creativity

OVERALL AIM

The workshop was planned to introduce and discuss an Innovation framework while assessing which systems and processes the participant companies utilised. Secondary objectives included developing an Innovation process which might be applicable to the participants' workplace reality. Furthermore the workshop was to support the participants through the challenges the processes of implementation of new product development and commercialisation may present.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegates' knowledge and understanding of assessing, refining and processing new ideas.
- Develop knowledge and understanding of Innovation in a commercial setting.
- Progress knowledge and understanding of facilitating groups of colleagues to assess and develop ideas.

INTELLECTUAL SKILLS:

- Evaluate the delegates' current business practice in reference to innovation systems and processes.
- Evaluate a successful Innovation process.
- Introduce an understanding of facilitating a group towards a focussed outcome.
- Understand how the implementation of innovation systems and processes effect operational team and individuals.
- Evaluate the inherent challenges implementing innovation presents.

PRACTICAL SKILLS:

- Ability to facilitate a workshop to assess and develop ideas.
- Experience and evaluate the development of and innovation processes.
- Know and have the confidence to apply Innovation processes and systems to support a collaborative and engaged workforce.
- Experience and be able to apply team-based improvements.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for workplace management.
- Reflection on the usefulness of techniques and how to introduce these in an action-learning approach within the factory.
- To apply learning to practice and 'routinise' good practice.



Business Modelling for Innovation

OVERALL AIM

The workshop planned to introduce the Business Model Canvas as a system of collaborative analysis to assess an idea's commercial potential. The workshop content was planned to further develop the participants' skills as facilitators in their workplace.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegates' knowledge and understanding of business modelling as an assessment tool for commercial potential and feasibility of new product ideas.
- Develop knowledge and understanding of Innovation in a commercial setting.
- Progress knowledge and understanding of facilitating groups of colleagues to assess and develop ideas.

INTELLECTUAL SKILLS:

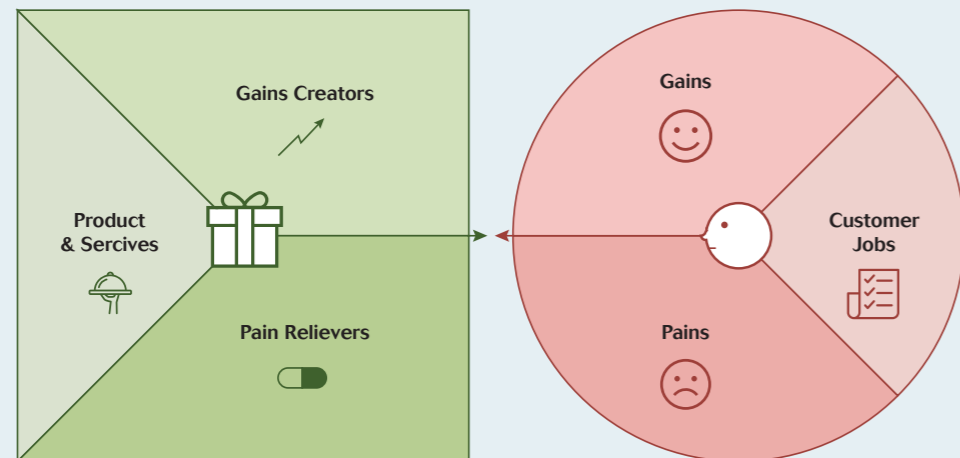
- Evaluate business modelling as a mechanism to assess Innovation.
- Develop understanding and practice of facilitating a group towards a focussed outcome.
- Understand how the assessment of innovation can be in operational team and individuals.
- Evaluate the inherent challenges of facilitating innovation.

PRACTICAL SKILLS:

- Ability to facilitate a workshop to assess and develop ideas.
- Experience and evaluate the Business Model Canvas as an Innovation tool.
- Experience and be able to apply team-based improvements.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for workplace management.
- Reflection on the usefulness of techniques and how to introduce these in an action-learning approach within the factory.
- To apply learning to practice and 'routinise' good practice.



Strategyzer, AG (2016)

Learning and Practice

OVERALL AIM

This final learning day was planned as an opportunity for peer to peer dissemination of action taken and impact of the SIM Wales programme within their individual businesses.

INTENDED LEARNING OUTCOMES

Knowledge and Understanding:

- Develop delegates' knowledge and understanding of other participants' progress in a predefined action plan.
- Develop knowledge and understanding of learning during the programme.

INTELLECTUAL SKILLS:

- Evaluate progress during the programme and benchmark against peers.
- Further evaluate the inherent challenges of facilitating change and innovation.

PRACTICAL SKILLS:

- Ability to facilitate plan an innovation project and assess learning.
- Experience and evaluate individuals' presentations.

TRANSFERABLE SKILLS:

- Application of knowledge and skills for workplace management.
- Reflection on the usefulness of techniques and how to introduce these in an action-learning approach within the factory.
- To apply learning to practice and 'routinise' good practice.



Key Theories and Models

The Group were introduced to academic theories and models, and taught how those theories can help in the day to day management of innovation.

Furthermore participants were shown how to use the models to enhance productivity, sustainability and profitability through the implementation of continuous improvement and new product development tools and techniques.

In the Learning and Reflection workshop (May 2016) each participant was given the opportunity to present on how they had put theory and learning from the programme into practice within the workplace.

Some of the key models introduced during the programme are listed below:



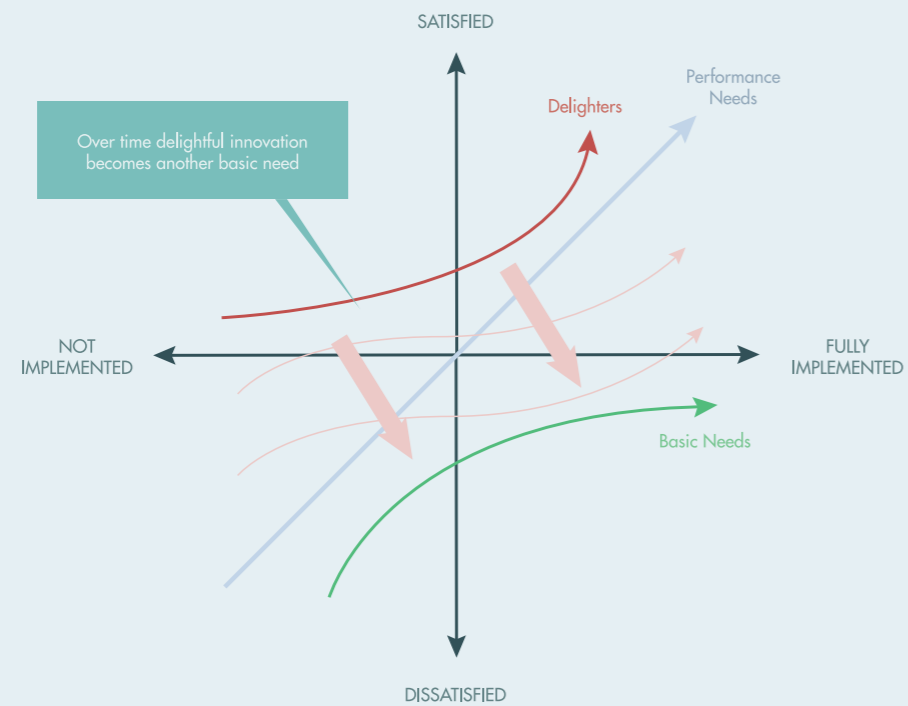
- GROW Model
- Change Project Template
- Problem Solving Techniques
- Creating 'Flow'
- Kano Analysis
- The Change Curve

- Leaders, Engagement, & Meaning
- Project Planning Template
- Quality Functional Deployment
- The 4 Phases of Learning
- The CANDO/5S Tool
- The UKCES Logic Chain

A small number of the models participants found of value are reproduced on the following pages.

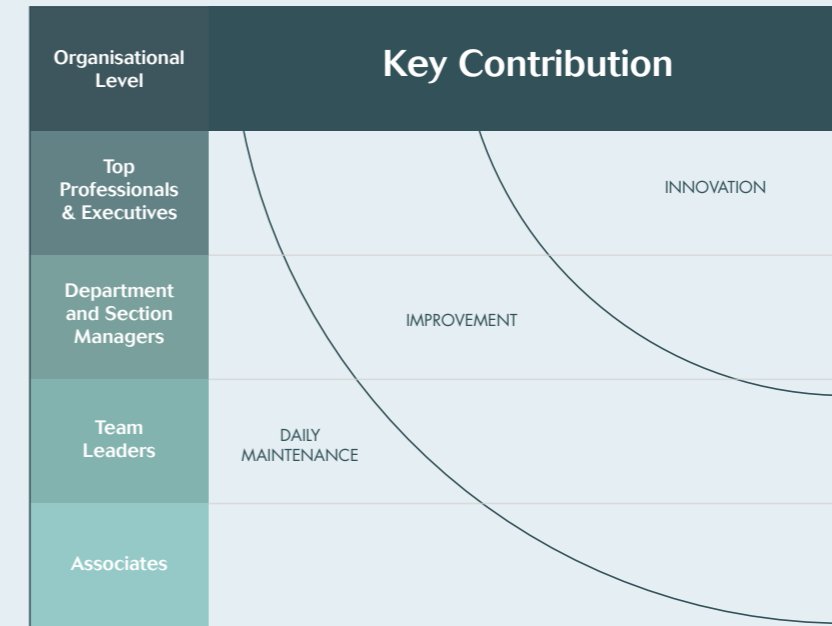


Kano Analysis



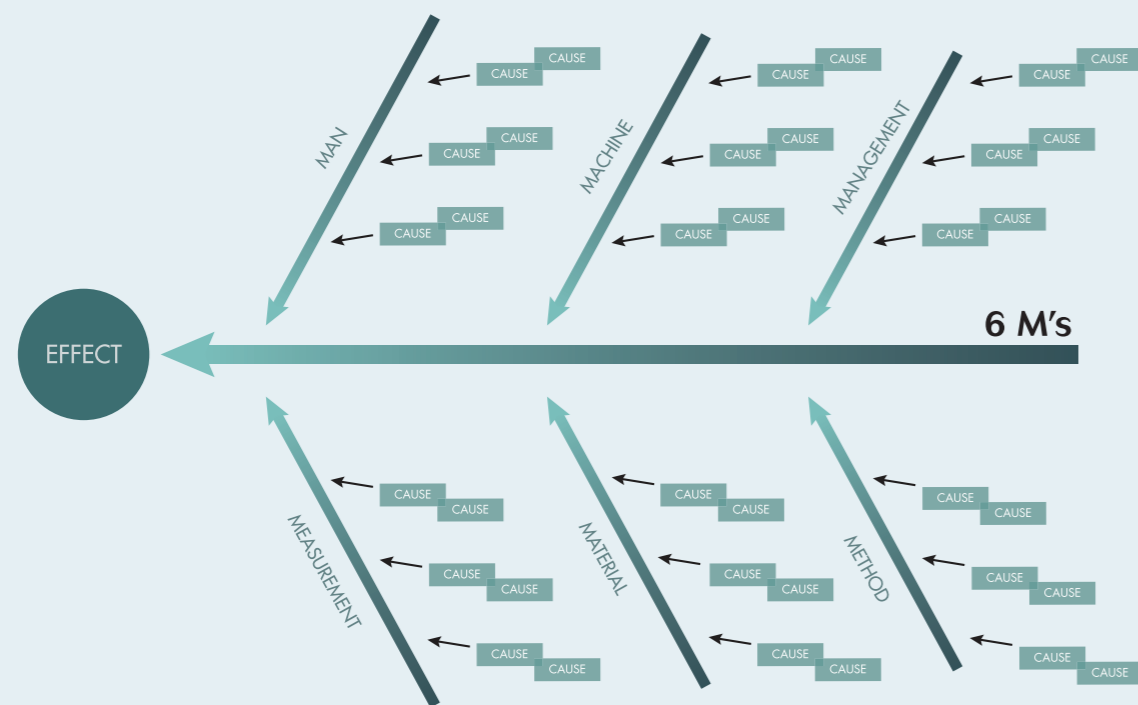
Bicheno, J & Catherwood, P (2005)

Leaders, Engagement & Meaning



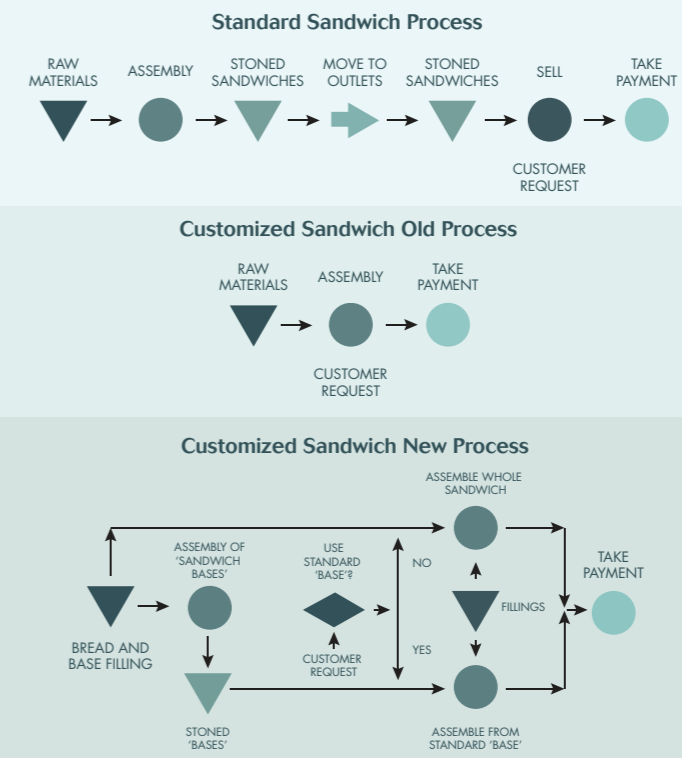
Toyota Motor Corporation (1993)

Break Down the Problem



Ishikawa, K (1985)

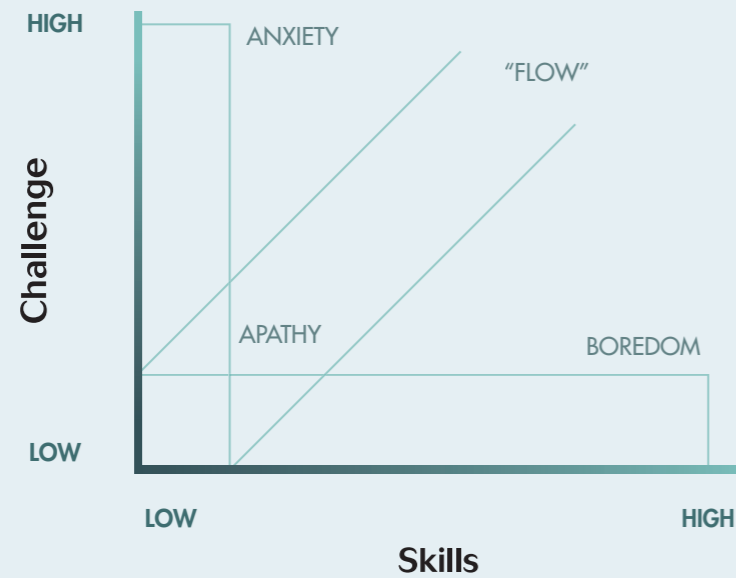
Localise the Problem



McCarthy & Rich (2015)

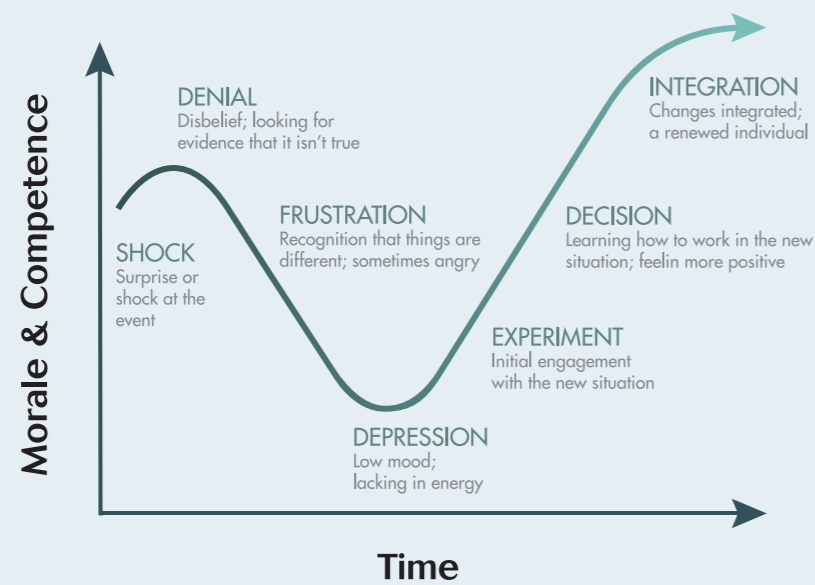


Flow (Csikszentmihalyi, 1990)



Csikszentmihalyi, M (1990) Flow: The Psychology of Optimal Performance. New York, Harper and Row

The Change Curve (Kubler-Ross, 1969)



Kubler-Ross, E. (1969). On death and dying. New York: Macmillan

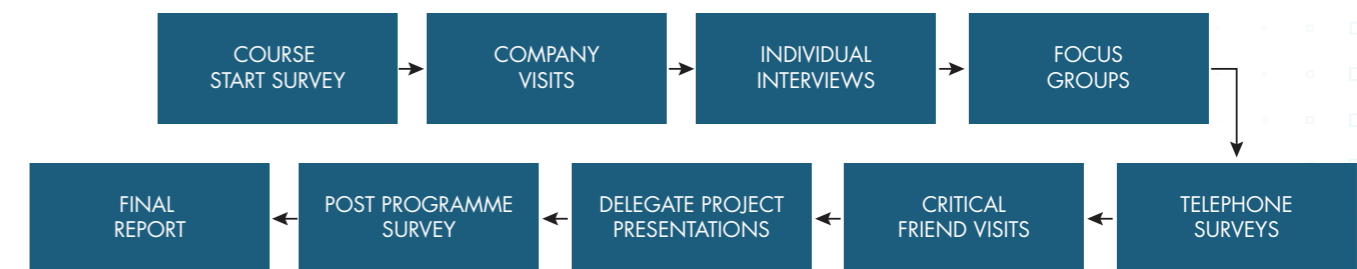
Change Project Template

- WHY** Vision / Purpose – Story, Sell it! What's In it for me
- WHAT** Knowledge, Skills, Attitude needed to succeed
- HOW** Tool or Methodology (5S, CRM)
- WHO** Should be involved/engaged?
 - Direct or Indirect
 - Internal and External
 - Influencers, Gatekeepers, Resistors

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SIM Data Gathering Model



Companies who Participated in the SIM Wales Programme

Ten manufacturing companies with bases in South Wales completed the SIM Wales programme.

The type of manufacturer varied significantly and included a food manufacturer, a recycling plant, a specialist concrete producer, a bespoke glass and glazing company, a firm manufacturing machines for the automotive industry, a flood defence producer and a company producing semiconductor and system solutions.

The following pages provide background on the participating companies.

“ I loved this programme. It was great to meet and discuss all matters of business with others. Creating new ideas and fixing old problems. The support was welcomed and extremely helpful. With this help our business has improved. Thank you to all involved. ”

Helen Smallman, Abbey Glass

Abbey Glass UK



COMPANY

Abbey Glass UK

DIRECTOR

John Hunter

NUMBER OF EMPLOYEES

37

ANNUAL TURNOVER

£4.4 million

Abbey Glass UK is based in Llantrisant and for over 20 years has provided a bespoke glass and glazing service for both commercial and domestic clients. Their aim is to provide the best quality product for their customers no matter the size of the project. Abbey Glass' in house processes are able to manufacture to their clients exact needs. Curved glass, balustrades, mirrors and back painted glass are only a small selection of the products they create.

The business has gone from strength to strength building partnerships with the Whitbread group and working closely with the Premier Inn, Brewers Fayre, Table Table, Costa Coffee, Beefeater and many more. Abbey Glass are proud of the innovations they have made in partnership with Premier Inn to deliver their 'Good Night's Sleep' promise to their customers all over the UK. We have recently upgraded our machinery to keep us at the forefront of the industry and continue to produce innovative products for our clients.



COMPANY

Axiom Process Ltd

DIRECTOR

Dave Houldsworth

NUMBER OF EMPLOYEES

44

ANNUAL TURNOVER

Unreported



Axiom Process has earned a reputation as a major player in the field of membrane and filtration technologies and is one of the UK's leading hygienic stainless steel fabricators specialising in the design and manufacture of customised hygienic stainless steel equipment and filtration systems.

Axiom Process Ltd commitment to customers is to provide the best possible service in terms of design, fabrication, product quality, delivery and traceability. They operate across a wide range of industries delivering a complete engineering service that incorporates:

- Product and process equipment development
- Product filtration and separation technology
- Effluent filtration and water recycling technology
- Project design and management capabilities, technical training and support
- Hygienic stainless steel engineering and fabrications
- Full materials traceability, validation, testing and qualification to the highest levels
- 3D drawings to customer specification
- Stainless steel metal polishing
- Comprehensive CNC equipped machine shop
- Comprehensive stock of filters, valves, manways, tube and pipe fittings

Axiom Process Ltd

“ The program was both challenging and rewarding. It has given me the tools to manage innovation and change. It was nice to see that most companies from all sectors face similar challenges. Thank you to all the SIM wales team for unforgettable and enjoyable experience. ”

Paul Taylor,
Manufacturing Director Axiom Process Ltd

“ The course benefitted me by giving me more structure to change management as I managed 80 projects in my time whilst being on the course and it helped me get more people involved and setting out the goals from the offset. The company benefitted from this by increased production and efficiency and reducing our cost base. I learnt a lot about coaching others and taking people on the journey with us to grow the business, where in the past I have been a manager that does things myself and tell people what to do. I would recommend this for all my line managers for them to grow and have an understanding of our vision and goals. Having been to other companies not from the same sector it shows that whatever you manufacture we all face the same challenges. ”

Jas Singh, Beacon Foods

Beacon Foods



COMPANY

Beacon Foods

DIRECTOR

Edward Gough

NUMBER OF EMPLOYEES

130

ANNUAL TURNOVER

£9.4 million



Beacon Foods has been based in Brecon since 1993. It is family owned and supplies specialist cooked ingredients to major UK food manufacturers, food service industries, and small independent companies.

The portfolio of products is diverse and their ingredients become an integral part of sandwiches, prepared meals and pizzas, along with sauces, soups, dips and dressings, pastry products, desserts, drinks and even cosmetics.

By cutting and cooking in a variety of ways they are able to offer an extensive range of roast, chargrilled, smoked and caramelised fruit and vegetables as well as chutney, relishes, purees, compotes, zests and garnishes.

Beacon Foods source very carefully to avoid air miles whenever possible and use British growers whenever they can. Their customers often request seasonality and provenance in fruit and vegetables and availability of these may include potatoes from Lincolnshire, Kentish bramley apples, Hereford asparagus or Cornish carrots.

Their garlic is specially grown for them in the Minaya region of Spain and harvested in May and June. The method of dedicated cultivation allows the company to trace every consignment back to the field where it was grown.

Beacon Foods are now the UK's leading independent supplier of processed and cooked garlic.



COMPANY

DTR Medical

DIRECTOR

Andrew Davidson

NUMBER OF EMPLOYEES

37

ANNUAL TURNOVER

Unreported

DTR Medical has two distinct sides to the business: They manufacture their own DTR Medical branded single-use surgical instruments, and also provide cleanroom contract manufacturing services for a wide range of pharmaceutical and medical device manufacturers

Their vision is to become a successful medical device manufacturer of own branded sterile single use products for use in selected surgical specialities.

DTR Medical's mission is to provide high quality single use sterile products that deliver clinical value combined with exceptional levels of service.

Their key values are prompt delivery/low back order; listening to needs of the client; continual trial & feedback; and marketing leading standards.

At DTR Medical they recognise the importance for providing surgical instruments with careful use of precious resources

DTR Medical

“ SIM Wales is a great way to meet likeminded people who want to learn for themselves and their teams, how to deliver tangible benefits for the company. We found that the opportunity for the group sharing of common issues and experiences provided a great basis for learning. The taught skills opened our eyes to new ways of operating, the questions of “how” have been answered, it is now just a question of when! ”

Matt Franks, Lead Product Engineer,
DTR Medical

“ The programme was an eye opener for me, it has given me the opportunity to see things in a different way and it has helped me to approach things differently in general not only from a continuous improvement point of view. ”

Laila Saikaki, EBS Automation

EBS Automation



COMPANY

EBS Automation

DIRECTOR

Michael Evans

NUMBER OF EMPLOYEES

33

ANNUAL TURNOVER

£2,000,000

EBS Automation based in Llanelli design and manufacture special purpose machines and automation systems tailored to meet the specification and requirements of their customers, always undertaking to further improve and constantly review the value that their customers get from any system.

EBS pride themselves on their ability to take a blank sheet of paper and deliver a manufacturing solution that will surpass client expectation with the level of quality, innovation, efficiency, robustness and productivity.

Initially EBS sales engineers visit the client to establish their needs. This information is brought to a carefully selected project management group chosen from our highly skilled and experienced design engineering and manufacturing teams. This group will review the enquiry and will discuss with the client different options, to ensure that the client has the optimum engineered proposal to meet their requirements.

All of their Machines and Automation Systems are delivered with comprehensive machine manuals.



COMPANY

Envirowales Ltd

DIRECTOR

Mr Maurice Elliot Sherling
Mr Carl Phillip Green
Mr James Flood
Dr Anthony Patrick Mullins
Mr Stephen Brian Kelly

NUMBER OF EMPLOYEES

In excess of 100

ANNUAL TURNOVER

£52.49 million



Envirowales Limited is an industry-leading, lead acid battery recycling plant located in Ebbw Vale, South Wales. Our aim is to recycle as many of the constituent parts of the battery as possible. Currently we are achieving a recycling efficiency of over 95% and are continuing to work to increase this figure.

Lead enjoys one of the highest recycling rates in the world, with an estimated 50% annual worldwide consumption being satisfied by recycled material. It will continue to play its part for the environment, with the use of lead in electric vehicles becoming more prominent. In fact, 80% of the lead produced worldwide is used for batteries, 6% for building products and the rest used for smaller applications such as shielding, ballast etc.

Recycling of lead requires only around one third of the energy needed to produce lead from its ores, resulting in major energy savings and fewer carbon emissions.

Besides lead alloys, which are sold throughout Europe mainly in the manufacture of building products, the plant produces two other products; sodium sulphate, used in glass manufacturing, washing powder and animal feeds and secondly, polypropylene which is further recycled to produce a variety of products.

Envirowales podcast can be viewed here:
www.youtube.com/watch?feature=player_embedded&v=JLJL2MTczw

Envirowales Ltd

“ The continuous improvements concepts introduced by the SIM Wales programme have been implemented in the polypropylene recycling plant. There was an observed reduction in downtime of 20%, which resulted in a 10% increase on productivity over the duration on the course. The annual savings as a result of these changes is estimated to be in the region of £27,000. It is intended to roll out these changes across the whole site. ”

Chris Sharland, Envirowales Ltd

“ I unfortunately was unable to complete the course but found the sessions I did attend insightful and a great way to inspire change. ”

Nick Gibbons,
Strategy and Business Development Manager,
Gwent Cables

Gwent Cables



COMPANY
Gwent Cables

DIRECTOR
Keith Gibbons

NUMBER OF EMPLOYEES
20

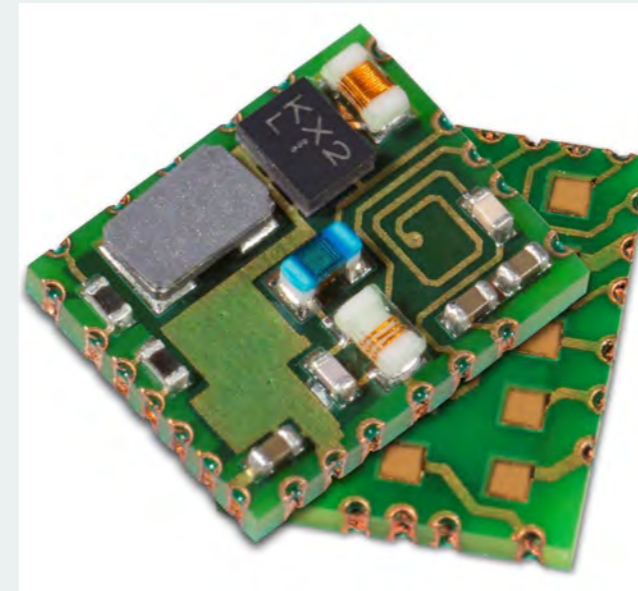
ANNUAL TURNOVER
Unreported

Gwent Cable manufacture cable assemblies and wiring harnesses with quality at the heart of everything they do. They don't believe in compromise and won't settle for anything but the best. These high expectations and standards stem from the awareness they have for the responsibility to their customers and staff.

The issues, demands and specific requirements of customers are what matter to them and to achieve this they hold themselves and their suppliers responsible for high standards of execution and performance.

Gwent Cable pride themselves on their high levels of expertise, customer service and industry experience. It's this knowledge, along with their agile and responsive approach, that allows them to tackle challenges whether large or small, simple or complex, for some of the leading names in many sectors of the electronics industry.

Gwent Cable's commitment to solving problems paired with their friendly and proactive attitude has allowed them to maintain long-standing relationships with their customers for over 23 years.



COMPANY
Microsemi Semiconductor Ltd

CEO
Jim Peterson

NUMBER OF EMPLOYEES
4,800 worldwide

ANNUAL TURNOVER
1,245.60 (US\$m) worldwide



Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defence, communications, data centre and industrial markets. Products include high performance and radiation hardened analogue mixed signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronisation devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions, security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services.

Microsemi is headquartered in Aliso Viejo, Calif., and has approximately 4,800 employees globally

Microsemi Ltd

“ Engagement is the key to a successful CI activity... That's partly what I have learnt from SIM...Involve and engage with staff, frame it well – sell it. Gather views and formulate plan, manage expectations, explain full process – tease out what is possible. ”

Matt Postle Microsemi Ltd

“ Specialist Precast greatly appreciate the opportunity of participating in the SIM Wales course. It has helped us keep focussed on changing our business to be in good shape for the coming years and proved a good follow-on to the LEAD Wales course both Martyn and Ray completed last year. Thanks to all the team, especially Tony, Gary and Nick. ”

Martyn Fear, Specialist Precast Products

Specialist Precast Products



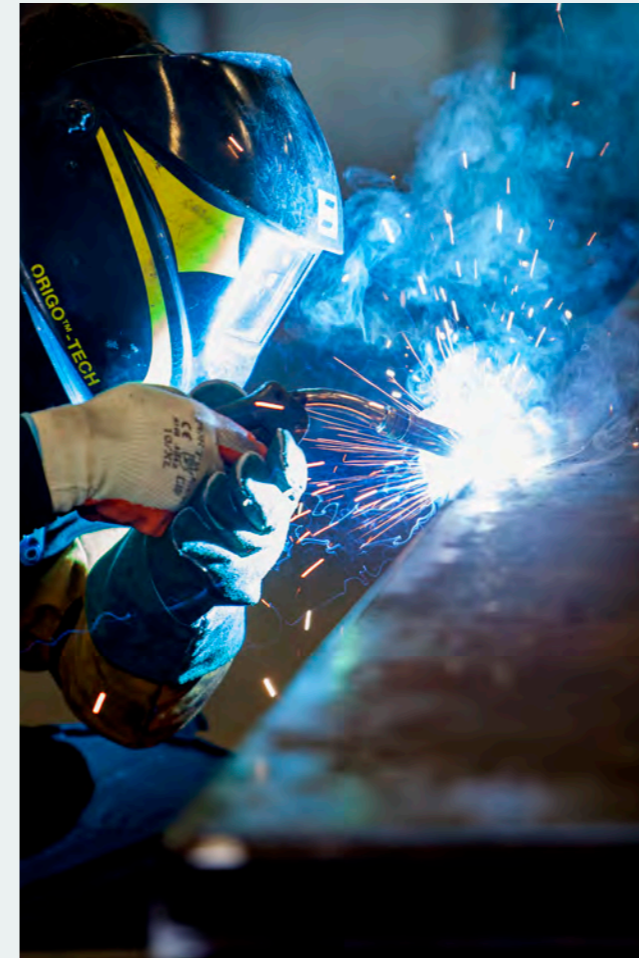
- COMPANY
- Specialist Precast Products
- DIRECTOR
- Martyn Fear
- Martin Beechey
- Ray Lazenby



Specialist Precast Products (SPP) are based in Bedwas near Caerphilly and offer services and expertise across the UK and internationally. They use state of the art technology and offer a complete start to finish process from the discussion and development of initial ideas, prototyping and samples, production development, manufacture, delivery and installation.

Directors Martyn Fear and Ray Lazenby have over 60 years combined experience in the concrete industry. The Specialist Precast Products team include technical advisers, project managers and production crew. In 2015 Martyn Fear became the President of the Concrete Society, and was delighted for Specialist Precast Products to be the winner of a Design Management Europe Award 2014/15.

SPP also offer training sessions and tours at their production facility by pre-arrangement.



- COMPANY
- Total Flood Solutions
- DIRECTOR
- Neil McDermid
- NUMBER OF EMPLOYEES
- 54
- ANNUAL TURNOVER
- £6 million



When it comes to flood defence, TFS (Total Flood Solutions) are the experts. They employ highly skilled staff to cover every element of flood defence, from flood risk assessment and consultancy through to the design, manufacture and installation of custom built flood defence products. Such is the unique nature of each property and site's flood risk, a one size fits all approach is not suitable for the flood protection of critical assets.

Working closely with their clients, TFS tailor their products and services to ensure they provide a comprehensive defence of the highest quality. They specialise in the protection of critical infrastructure, particularly utility sites. To date TFS have installed flood defence systems in over 200 electrical, water and gas utility sites across the UK.

Innovation is at the heart of their organisation. TFS are continuously developing new systems to meet the needs of customers across the UK. Recent examples include a bespoke flood glazing system, security rated flood doors and bespoke flood cabinets for use in protecting standalone, critical assets.

Total Flood Solutions

“ Whilst we pride ourselves on innovation, we never considered the process we use to innovate. This has lead to several bad projects and some hard lessons in keeping ahead of the curve in the industry. SIM Wales has provided us with the tools we need to refine our innovation process and begin creating an innovative culture within the organisation, helping us to ‘walk the walk’ not just ‘talk the talk’. ”

Chris McDermid,
Total Flood Solutions



Conclusion

The aim of this programme, funded by the UK Commission for Employment and Skills was to “pilot new ways of boosting the skills and business practices needed to maximise the value of UK innovation” UKCES (2015) p2.

Furthermore “The importance of innovation to the UK economy cannot be understated”, a recent report suggested “innovation is vital for our national prosperity due to its critical role in productivity and job creation” UKCES (2015) p2. An increasing body of evidence (Bloom et al, 2014) suggests that the heterogeneity of management practices across firms is a major contributor to different productivity levels, “In summary, management does indeed appear to be important in accounting for the large differences in cross-country Total Factor Productivity (TFP) as well as within-country differences.” Bloom et al (2014) p4.

The aim of this report was to outline the design, development and delivery of a pilot programme that would boost the innovation knowledge and skills of a small group of manufacturers. The design of the programme is outlined in the above conceptual framework and programme schemata. The programme was innovative as it developed the knowledge and skills of participants around the

behavioural aspects of leading change, through experiential teaching methods, prior to introducing innovation theories and models. We aimed to enhance participants’ ability to create an environment where creativity and change could flourish (Amabile, 1998).

We also believed that building a small community of practice, in the form of a group of leaders and change agents from a small number of manufacturers. These leaders and change agents would support one another in implementing change, would facilitate and accelerate innovation implementation. The above-mentioned data collection model allowed the programme to introduce models and theories that could help address the knowledge gaps identified. The data feedback loops also allowed the programme to introduce new content when participants articulated implementation challenges. The data gathered throughout the programme will allow the report authors to develop a separate impact and evaluation report.

An initial analysis of the data suggests the participants and their organisations have significantly benefitted, from the programme. The participants highlighted both personal and organisational benefits in their

‘innovation project’ presentations. One participant suggested: “In the first 13 weeks of this year we’ve seen an 6% increase in efficiency, with downtime reduced from 24 to 19 minutes per tonne, this equates to a saving of 31 days or £27,500 per year’ (CE). Another participant suggested “When our Change Project is fully operational, we expect to increase production by 500,000 kilos of food a year at about £3 a kilo!” (JB)

In summary:

- The SIM Wales programme has achieved its primary aim of testing and learning what methods can have a positive impact in boosting the innovation skills and practices of UK firms.
- The secondary aim of developing the innovation knowledge and skills of a small group of manufacturers, in order to improve their productivity, was successful.
- Additionally, the programme found that it is important to develop the leadership and change management skills of leaders’ in order to increase the ‘innovation management’ capacity of manufacturing firms.

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 Microsemi Semiconductor Ltd
 Specialist Precast Products
 Total Flood Solutions

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Swansea University
Prifysgol Abertawe

SIM Wales



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